

Annual Report

2015-2016



Indian School of Mines

Dhanbad - 826004 (Jharkhand)

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Foreword

Indian School of Mines (ISM) was established in 1926 to address the need for trained manpower related to mining activities in the country with disciplines of Mining Engineering and Applied Geology. In 1967, it was granted the status of a Deemed to be University under Section 3 of UGC Act, 1956. Over the last nine decades, ISM has incorporated important core engineering disciplines and has acquired the status of full-fledged institute of global standing for imparting higher education in engineering, science and management.

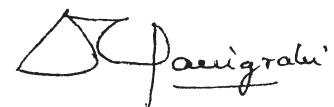
The present report encapsulates research, academic and related activities of the Institute for the period 1st April 2015 to 31st March 2016. During this period, there have been substantial developments in all fronts such as student strength, number of research scholars, infrastructure development, research publications, external cash flow from projects sponsored by industries and national funding agencies. The campus placement continued to remain high with increase in the highest and the average pay packages. Further, the Institute was involved in several executive training programmes and industry sponsored project work from across the country and overseas organizations in bridging the gap between industry and academia.

This year marked a new beginning in the area of international relations with signing of MOUs with different universities across the globe. During this academic year, 68 international students have joined ISM. Various international collaborations have facilitated visit of 28 students and 60 faculty members of ISM to different foreign universities for research collaborations and consultation activities spanning from one month to one year duration including participation in International Conferences. In this year the institute mentored the establishment of “Afghan Institute of Mining” at Kabul, as entrusted by Ministry of External Affairs, Government of India. This may further augment bilateral diplomacy between Government of India and Islamic Republic of Afghanistan.

ISM has established India-Australia joint Research Centre for Clean Coal & Energy Technology in collaboration with Australian Universities like Curtin University of Technology, University of New Castle and CSIRO, Australia under PM mandated Indo-Australian Joint Research Initiative.

The Institute is making foray into newer areas of academic endeavors in tune with the changing times. The year registered 47% increase in cash flow from sponsored projects and 35% increase in number of Ph.D. degrees awarded as compared to the previous year. These developments are the outcome of numerous innovative steps taken during the year and in the recent past.

I would like to express my deep appreciation and special thanks to the students, faculty members and all the employees of ISM for their commitment in bringing about these achievements during the past year. Their dedication and hard work would always pave the way for institute's journey towards emergence as a nationally and globally acclaimed premier institution of higher technical education.



(D. C. Panigrahi)
Director

Vision

To be an internationally acclaimed premier institution of higher technical and scientific education with social commitment having an ethos for intellectual excellence, where initiative is nurtured, where new ideas, research and scholarship flourish and intellectual honesty is the norm, and from which will emerge the leaders and innovators of tomorrow in the realms of technology. While serving as a catalyst in a developing society, its goal as one of the premier technology education institution of the country would be to intimately involve itself not just in the technological development of the Nation but also in its overall development.

Mission

- To educate and train manpower in various disciplines of engineering and technology, applied sciences, management and applied arts at the graduate, postgraduate and research levels;
- To foster the creation of new and relevant technologies in the areas of its core competency and to transfer them to industry for effective utilization;
- To participate directly in the planning and solving of engineering and managerial problems of relevance to industry and the society at large;
- To develop and conduct continuing education programmes for practicing engineers and managers;
- To develop strong collaborative and cooperative links with private and public sector industries and government user departments;
- To develop comprehensive and intimate interaction with premier academic and research institutions within the country and abroad for mutual benefit;
- To develop programmes for faculty growth and development;
- To anticipate the technological needs of the Nation and to plan and prepare to cater to them;
- To interact with the community/society at large with a view to inculcate in them a feel for scientific and technological thoughts and endeavours; and
- To develop the region in which the Institute is located through community development programmes including training and education.

Summary of Activities

Innovations and Marching Ahead towards Excellence

The institute made rapid strides in its pursuit for academic and research excellence through implementation of a number of innovative schemes and initiatives in the following major areas:

Development in Research & Industry Interface

- Operationalization of state-of-the-art Central Research Facility (CRF).
- Execution of Post-Doctoral Fellowship programme.
- Fully functional Industry-Institute Interface Facility at Kolkata.
- Development of Industry-Institute Interface Facility at New Delhi.
- Research Centers established and operationalised in 2015-16:
 - Center for Renewable Energy
 - Center of Excellence in Safety, Occupational Health and Disaster Management
 - Center for Innovation, Incubation & Entrepreneurship
 - Center for Societal Mission
- Enhancement in publication of research papers in SCI/SSCI journals.
- Conferment of industry sponsored awards to faculty members for excellence in research.
- Indo-Australian Joint Research Initiative

Development in Academic

- Diversified academic programmes offered:
 - Three year M.Tech Programmes in:
 - Electrical: M. Tech in Power System Engineering
M.Tech in Power Electronics and Electrical Drives
 - Mechanical: M.Tech in Mechanical Engineering
 - Electronics: M.Tech in Electronics and Communication Engineering
 - Computer Science: M.Tech in Computer Science and Engineering
- Establishing new industry sponsored professorial chairs and enhancement of funding for the existing chair positions.
- Conferment of industry sponsored awards to students.
- Appointment of eminent persons including Padmashri awardees and retired faculty members from established IITs & IISc as adjunct/re-employed Professors.
- Implementation of Major, Minor and Honours for undergraduate courses.
- Implementation of foreign language, leadership development and entrepreneurship development programmes.
- Implementation of summer semester for academically weak students to improve the learning process.
- Implementation of relative grading system.

Infrastructure

- New Academic Complex which houses five departments has been made functional.
- Fully functional Student Activity Centre with swimming pool and other sporting/counselling facilities.
- An integrated approach to address the space and laboratory requirements of different Departments & Centres.
- Construction of 1000 capacity girls' hostel, 2000 capacity boys' hostel, 120 “Type V” flats, and 60 “Type VI” flats.
- Transfer of 9 acres of land from the Government of Jharkhand to ISM and initiative to acquire another 166 acres.
- Self contained students' amenities in the hostel complexes.
- Central Library, centrally air-conditioned seven storeyed building, automated in terms of record management, information retrieval and service delivery is nearing completion.

Organizational Development & Administration

- In-house development of Office Automation System.
- Institutionalized goal setting system for faculty members and departments.
- Streamlining of the promotional avenue of staff members and implementation of DPC.
- Selection of 39 LDCs through open selection
- Improvement Group for formulating policy frame-work for all round growth.
- Implementation of new Store & Purchase manual to streamline purchase process and disposal of dead stocks occupying valuable space.

International Endeavour

- Mentoring to establish Afghan Institute of Mining at Kabul assigned by Ministry of External Affairs, Government of India to augment bilateral diplomacy between Government of India and Islamic Republic of Afghanistan.
- Commencement of International Executive Development Centre.
- Admission of foreign students in post graduate programmes of ISM.
- Reciprocal mobility of students of ISM and foreign universities and transfer of credits earned.

Summary of the significant events and achievements of Indian School of Mines in Academic Activities, R&D Activities, Continuing Education, Industry-Institute Interaction and others for the period 1st April 2015 to 31st March 2016 is presented below:

1. Academic Activities

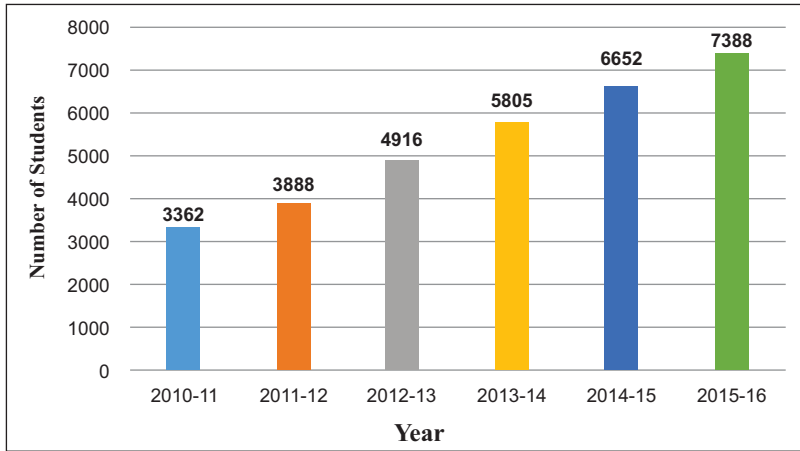
1.1 New Programmes/Courses Launched

Three year M.Tech Programmes have been launched in:

- Electrical Engineering: M. Tech in Power System Engineering
M.Tech in Power Electronics and Electrical Drives
- Mechanical Engineering: M.Tech in Mechanical Engineering
- Electronics Engineering: M.Tech in Electronics and Communication Engineering
- Computer Science & Engineering: M.Tech in Computer Science and Engineering

1.2 Student Strength

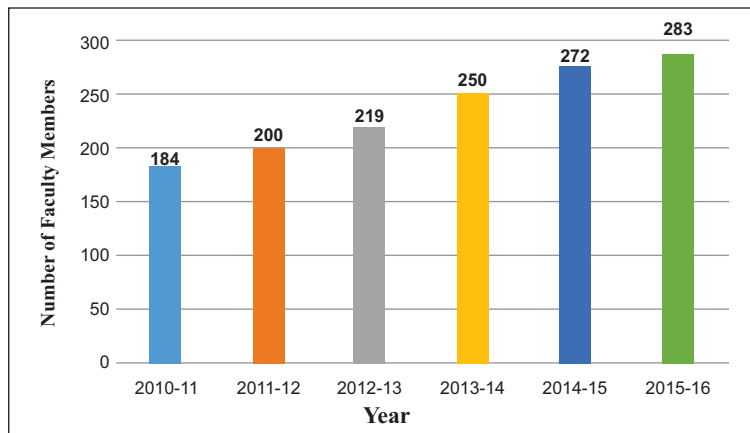
The total student strength in the campus increased to 7388 as on 31st March 2016. The growth of student strength in the last six years is shown below:



1.3 Faculty Strength

- 13 faculty members, 5 officers and 51 staff joined during the year
- Total faculty strength in the campus during the year was 283.

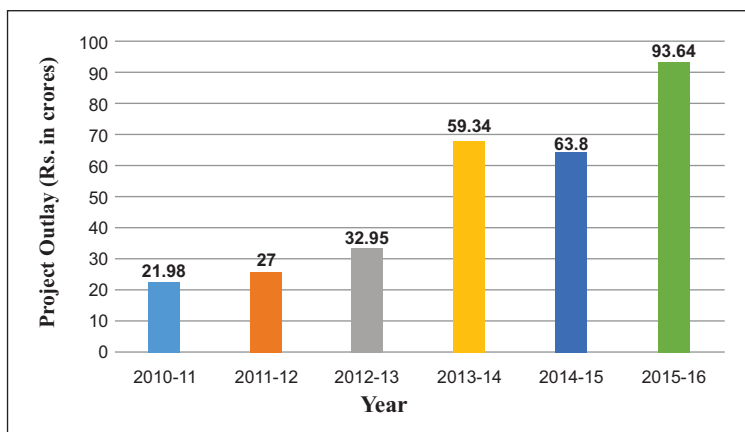
The increase in faculty strength for last six years is shown below:



2 R&D and Industry-Institute Interaction Activities

2.1 R&D and Industry Sponsored Projects & Outlay

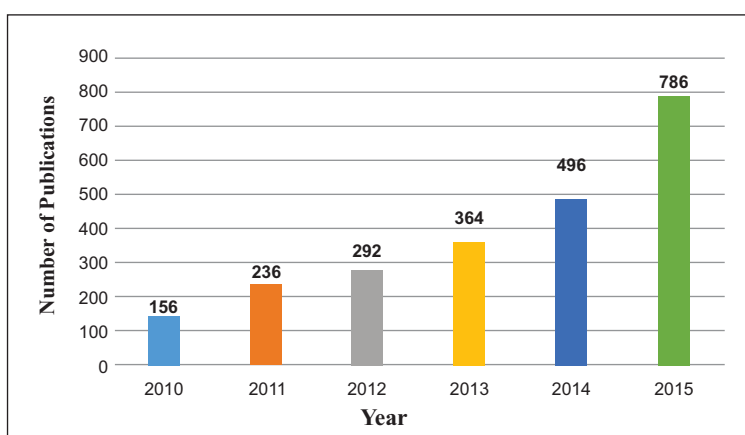
The Institute continued its growth in R&D and Industry sponsored projects. It executed 886 projects worth Rs. 93.64 crores during the year. The comparison of last six years in terms of number of projects and their outlay is presented below:



Year	Number of R&D and Industry Sponsored Projects	Project Outlay (Rs. in Crores)	Yearly Growth	Overall Growth
2015-16	886	93.64	47%	326%
2014-15	852	63.8	08%	190%
2013-14	913	59.34	80%	170%
2012-13	629	32.95	22%	50%
2011-12	586	27.00	23%	23%
2010-11	617	21.98	Base Year	

2.2 Research Publications and Books Contribution

- Growth of Research Publications (indexed in Scopus database maintained by Elsevier in Amsterdam, Netherlands) for last six calendar years is presented below:



Year	2010	2011	2012	2013	2014	2015
No of Publications	156	236	292	364	496	786
Growth rate over 2010	Base Year	51.28%	87.17%	133.34%	205%	404%
Yearly growth	Base Year	51.28%	23.72%	24.65%	30.76%	65.17%

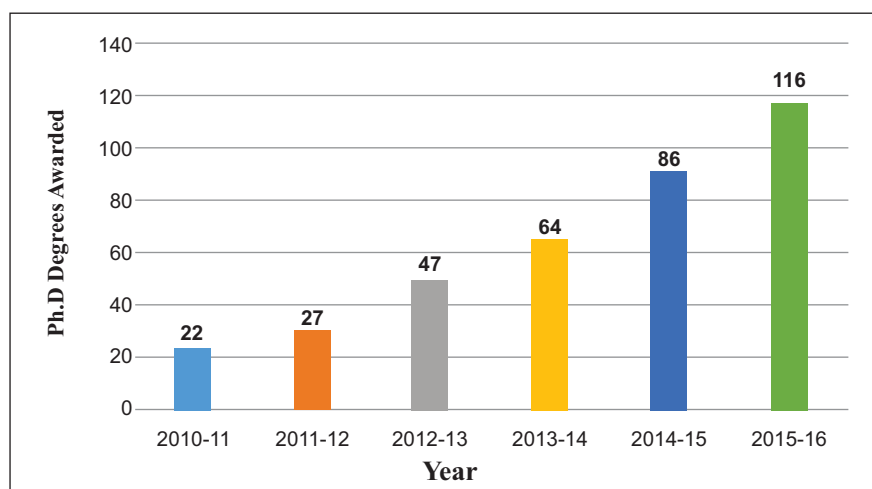
- The outcome of research resulted in publication of research work in International & National Journals, and International & National Conference proceedings. The details of total publications of the last six years are as follows:

Publications during last five years					
Year	International Journal	National Journal	International Conference	National Conference	Total Publications
2015	732	84	393	163	1372
2014	656	72	337	110	1175
2013	426	67	387	193	1073
2012	406	71	245	147	869
2011	312	42	256	177	787
2010	206	52	177	128	563

- The faculty members were also involved in book writing/book reviews/contribution of chapters in books. This year the contributions made in this field were forty two.

2.3 Ph.Ds Awarded

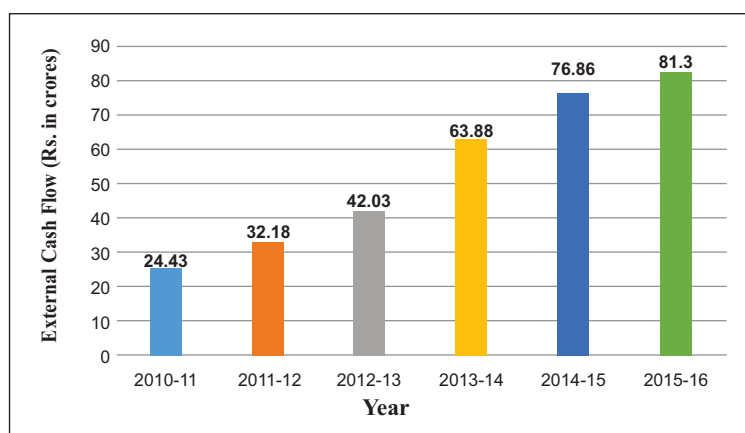
The faculty members were also involved in research guidance resulting in the award of 116 Ph.D degrees this year, the highest so far. The comparison of last six years is presented below:



Year	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Number	22	27	43	64	86	116

3. External Cash Flow

Growth in External Cash Flow (ECF), other than grant-in-aid of MHRD, for last six years is presented below:



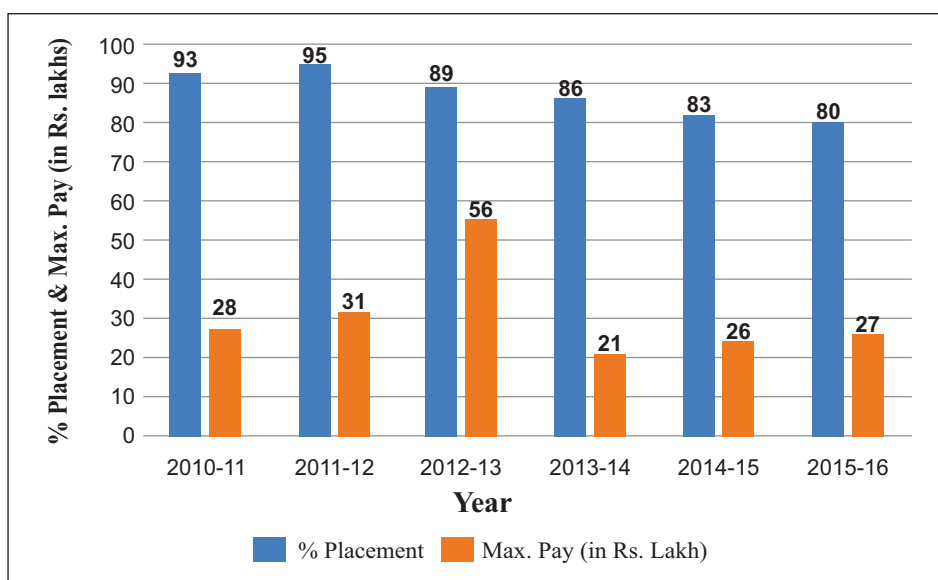
Year	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16
Cash Flow (Rs. in Crore)	24.43	32.18	42.03	63.88	76.86	81.30
Overall Growth	Base Year	32%	72%	161%	215%	233%
Yearly Growth	Base Year	32%	31%	52%	20%	6%

4. Students' Activities

- The institute organized various co-curricular activities such as NCC, NSS, NSO, Yoga, etc. Special welfare measures were taken to help academically weak students by arranging special classes beyond academic hours and special counseling by teachers.
- The students were involved in organization of Technical, Cultural and Sports events, viz. Srijan, Conchetto, Parakram, Annual Sports etc.
- Students were encouraged to manage their campus affairs through the Students' Society in a democratic manner.
- Students were also involved in organizing various academic and extra curricular activities in association with International Societies, viz. Society of Petroleum Engineers (SPE), Society for Mining, Metallurgy and Exploration (SME), Society for *American Association of Petroleum Geologists* (AAPG), Institute of Electrical and Electronics Engineers (IEEE), Association for Computing Machinery (ACM), Society of Exploration Geophysicists (SEG), Society for *European Association of Geoscientists and Engineers* (EAGE), Optical Society of America (OSA), International Society of Optics & Photonics (SPIE), American Society of Mechanical Engineers (ASME).

5. Campus Placement

The Training and Placement Cell maintains active association and excellent rapport with the industry and corporate sectors. The students are properly trained and assisted in securing employment through in-campus and off-campus interviews. The percentage placement of students admitted through IIT-JEE with their maximum pay package over the last six years is presented below:



6. International Collaborations

(a) International Student/Faculty Exchange Projects:

- Erasmus Mundus AREAS+ Project: 15 mobilities; 117 man-months
- Erasmus Mundus EMINTE Project: 1 mobility; 6 man-months
- Erasmus + with UPM, Madrid, Spain
- Mobile+ with UOP, Porto, Portugal

(b) Indo-Australian Joint Research Initiative

Under Indo-Australian Joint Research initiative, Dr. B.K. Nandi, Deptt. of Fuel & Mineral Engg, is working on a project on Clean Water and Health Treatment of Contaminated Water using a Hybrid Low-cost Process” and a number of collaborative projects are under consideration of different funding agencies.

(c) Admission of Foreign Students

Despite the Institute being situated in a remotely located city like Dhanbad (Jharkhand), the number of International students in the campus has increased substantially from 05 in 2010-11 to 68 in 2015-16, which includes students from USA, Italy, Spain, Venezuela, Ghana, Tanzania, Nigeria, Uganda and Afghanistan. These students are mainly pursuing their Masters and Doctoral studies apart from some short term - study abroad programmes.

(d) New Agreements Signed

A collaborative Ph.D. Programme was initiated with Curtin University, Australia.

7. Educational and Welfare Facilities

- The inventory of the learning resources of the **Central Library** is as follows:

Books	124093
Bound Volumes of Journals	39480
Current Journals	291
Theses & Dissertations	10642

- The **Computer Centre** provides intranet and internet services 24 hours a day, 365 days a year. It supports campus wide fiber optic LAN comprising of 5000 nodes.
- The **Central Workshop** has a wide range of manufacturing facilities catering to the needs of undergraduate and postgraduate students as well as research scholars.
- The **ISM Health Centre** provides medical care to students, teachers, officers and staff including their dependent family members, and also to the retired employees and their spouses.
- The **Sports and Physical Education Centre** facilitates the students with several sports activities. The ISM Annual Sports Meet is one of the major events organized by the centre.
- The Institute has **Gender Sensitization Cell** in the campus to empower girl students and women employees to enhance gender sensitivity in the campus.
- The **SC/ST Cell** of the institute functions to effectively implement the reservation policy of the Government of India. A liaison officer of the rank of Assistant Registrar is looking after the activities of the Cell.
- The **Hindi Cell** has been playing a vital role in ensuring the progressive use of Hindi in day-to-day official work. It has been organizing meetings of Official Language Implementation Committee, Hindi Workshops among others.

8. Financial Outlay

8.1 Non-Plan Fund

The total income was ₹ 12137.73 lakh, which includes irrevocable Non-Plan Grant-in-Aid of Rs.7450.00 lakh from Ministry of Human Resource Development, Government of India, New Delhi. The total Non-Plan expenditure was ₹ 12137.96 lakh. A deficit of ₹ 0.23 lakh was transferred to ISM Capital Account.

8.2 Plan Fund

The total Plan income was Rs. 10113.64 lakh including irrevocable Plan Grant-in-Aid of ₹ 10000.00 lakh from Ministry of Human Resource Development, Government of India, New Delhi. The total Plan expenditure was ₹ 10113.70 lakh including adjustment / advances under Plan Fund with an excess expenditure of ₹ 0.06 lakh.

1.0 ABOUT ISM

The Indian School of Mines was formally opened by His Excellency the Viceroy Lord Irwin on 9th December 1926 and commenced functioning since 10th December 1926 in its premises at Dhanbad with Dr. D. Penman as its first Principal. On completion of first 25 years of its existence, the Silver Jubilee celebration was inaugurated by Dr. Rajendra Prasad, the first and the then President of India, which gave a fresh fillip to this Institution. The Institute celebrated its Golden Jubilee in 1976, Diamond Jubilee in 1986 and Platinum Jubilee in 2001.

The Institute is located at Dhanbad to facilitate education & research in Earth and its allied Engineering branches, appropriately leveraging its locational advantage in a mineral rich state Jharkhand. The province of Jharkhand and its surroundings are unrivalled in its variety of geological formations, in multiplicity of structural and field characteristics and unbounded richness of the metallic and non-metallic mineral resources. The locational advantage of ISM is its location at the core of industrial base of the region which hosts a number of coal mines, steel plants, fertilizer plants, refractory industries, and heavy machine building plant. It has 88-hectare residential campus of its own consisting of graceful blend of old and new style buildings. The serene campus comprises academic buildings, students' hostels, faculty and staff quarters, health centre, workshop, canteen and other infrastructural facilities that nurture a cosmopolitan culture. The Institute is about three kilometers to the north of Dhanbad railway station; the altitude of the place is 212 m above MSL; average rainfall is around 148 cm; and the minimum and maximum temperatures range between 05 to 45 °C respectively.

Present scenario

ISM caters to human resource needs of the nation in areas of mining, petroleum, mining machinery, mineral engineering and earth sciences besides developing manpower in the related disciplines of management and branches of engineering such as electronics, electrical, mechanical, environmental sciences and engineering, computer science and engineering, applied sciences, and humanities & social sciences. In due recognition of its vital role in service of the nation, ISM was granted autonomy by the Government of India and has now been conferred the status of Indian Institute of Technology (IIT) since September 06, 2016. It has a general council, which comprises members from various industrial and governmental institutes, academia and the parliament.

The Institute has eighteen departments and 278 faculty members as on 31-03-2016. A list of the Departments is stated below:

Department	Year of Establishment
Department of Applied Geology	1926
Department of Mining Engineering	1926
Department of Humanities and Social Sciences	1926
Department of Applied Geophysics	1957
Department of Petroleum Engineering	1957
Department of Mining Machinery Engineering	1975
Department of Fuel and Mineral Engineering	1976
Department of Management Studies (Erstwhile Industrial Engineering and Management)	1976
Department of Electronics Engineering	1977
Department of Applied Chemistry	1989
Department of Applied Physics	1989
Department of Applied Mathematics	1989
Department of Computer Science and Engineering	1997
Department of Mechanical Engineering	1999
Department of Electrical Engineering	2005
Department of Environmental Science and Engineering	2007
Department of Chemical Engineering	2010
Department of Civil Engineering	2013

2.0 ACADEMIC ACTIVITIES

2.1 Academic Programmes

ISM offers twelve 4-years B.Tech. programmes in various branches of Engineering like Chemical, Civil, Computer Science, Electrical, Electronics & Communication, Electronics & Instrumentation, Environmental Science, Mechanical, Fuel & Mineral, Mining Machinery, Mining, and Petroleum. It also offers five 5-years Dual Degree programmes in B.Tech (Mining Engineering) with MBA, B.Tech (Mineral Engineering) with M.Tech (Materials Technology), B.Tech (Mineral Engineering) with M.Tech (Mineral Resource Management), B.Tech (Mining Engineering) with M.Tech (Mining Engineering) and B.Tech (Petroleum Engineering) with M.Tech (Petroleum Management). Apart from these, it also offers three 5-years Integrated M.Tech programme in Applied Geology, Applied Geophysics, and Mathematics & Computing; two 5-years Integrated M.Sc. in Applied Physics. Admission to these B.Tech, Dual Degree, and Integrated courses is through IIT-JEE (Advanced).

Apart from these, the institute offers 3-years Masters programmes leading to M.Sc. (Tech.) in Applied Geology and Applied Geophysics and 2-years M.Sc. programmes in Applied Chemistry, Applied Physics, and Mathematics & Computing. Admission to all these programmes is through all-India competitive examination. Seats in these courses are reserved for Scheduled Caste, Scheduled Tribe, OBC, specially abled candidates, wards of Jammu and Kashmir migrants and Defence Personnel as per Government of India norms.

Admissions to a number of post-graduation courses leading to award of M. Tech., MBA, Executive MBA, and Ph.D. degrees are conducted through all-India level examinations and personal interviews.

Total Student Strength in 4 year B.Tech Programme 2015-16							
Sl. No.	Discipline	Sanctioned Strength	I Sem	III Sem	V Sem	VII Sem	Total
1	Chemical Engineering	40	37	31	33	21	122
2	Computer Science & Engineering	103	99	133	113	94	439
3	Electrical Engineering	92	90	106	88	93	377
4	Electronic & Communication Engineering	92	89	105	87	89	370
5	Environmental Science & Engineering	40	36	24	30	53	143
6	Mechanical Engineering	103	101	118	116	106	441
7	Mineral Engineering	45	43	25	44	57	169
8	Mining Machinery Engineering	40	40	32	40	35	147
9	Mining Engineering	92	89	89	113	120	411
11	Petroleum Engineering	65	63	94	99	97	353
12	Engineering Physics	22	18	14	-	-	32
13	Civil Engineering	40	40	43	40	-	123
14	Electronic Instrumentation Engineering	40	37	29	26	-	92
16	Total	814	782	843	829	765	3219
Prep			24				
Gen			381	449	459	423	1712
SC			119	122	113	110	464
ST			60	60	58	59	237
OBC			222	212	199	173	806
Girl			40	50	39	50	179

Total Student Strength in 5 year Dual Degree Programme 2015-16								
Sl. No.	Discipline	Sanctioned Strength	I	III	V	VII	IX	Total
1	5yr. Dual Degree Mineral Engg.	15	11	10	12	12	3	48
2	5yr. Dual Degree Mining Engg.	18	16	12	14	16	6	64
3	5yr. Dual Degree Mining with MBA	Discontinue	-	2	13	16	2	33
4	5yr. Dual Degree Petroleum Engg.	Discontinue	-	-	16	17	13	46
5	5yr. Dual Degree Computer Science & Engg.	18	18	24	16	-	-	40
6	5yr. Dual Degree Mineral with MBA	Discontinue	-	-	2	7	4	13
Total			45	48	73	68	28	262
Gen			20	22	42	31	12	127
SC			8	9	12	12	15	56
ST			3	4	4	4	0	15
OBC			14	13	15	21	1	64
Girl			1	1	2	6	1	11

Total Student Strength in 5 year Integrated M.Tech Programme 2015-16								
Sl. No.	Discipline	Sanctioned Strength	I	III	V	VII	IX	Total
1	5yr. Intt. M.Tech Applied Geology	15	13	13	13	21	14	74
2	5yr. Intt. M.Tech Applied Geophysics	15	11	9	10	14	6	50
3	5yr. Intt. M.Tech Math & Computing	40	40	40	26	22	7	135
Total			70	64	62	49	57	259
Gen			32	35	33	33	14	147
SC			10	10	4	10	11	45
ST			4	4	0	1	2	11
OBC			18	13	12	13	0	56
Girl			6	10	4	13	2	35

Total Student Strength in 2 year M.Sc/ 3 year M.Sc Tech Programme 2015-16						
Sl No.	Discipline	Sanctioned Strength	I Sem	III Sem	V Sem	Total
1	M.Sc Applied Physics	44	40	43		83
2	M.Sc Applied Chemistry	62	62	53		115
3	M.Sc Math & Computing	44	42	36		78
4	M.Sc Tech Applied Geology	62	62	49	44	155
5	M.Sc Tech Applied Geophysics	44	44	36	57	137
Total		256	250	217	101	568
Gen			109	116	53	278
SC			39	28	14	81
ST			16	17	8	41
OBC			86	56	26	168
Girl			81	73	35	189

Total Student Strength in 2 year MBA Programme 2015-16								
Sl. No.	Sanctioned Strength	Semester	Total	Gen	SC	ST	OBC	Girl
1	62	I	35	21	3	4	7	10
2		III	56	36	11	3	6	15
Total			91	57	14	7	13	25

Total Student Strength in 3 year Ex-MBA Programme 2015-16							
Sl. No	Semester	Total	Gen	SC	ST	OBC	Girl
1	I	18	13	3	2	0	0
2	III	17	14	1	0	2	1
3	V	23	19	1	0	3	2
Total		58	46	5	2	5	3

Total Student Strength in 2 year M.Tech Programme 2015-16						
Sl. No.	Discipline	Sanctioned Strength	Sanctioned Strength Sponsored	I Semester	III Semester	Total
1	Chemical Engg.	22	3	19	18	37
2	Computer Science & Engineering	51	6	51	45	96
3	Computer Science & Engg. (Information Security)	51	3	50	39	89
4	Petroleum Engineering	42	5	40	34	74
5	Industrial Engineering & Management	40	5	35	29	64
6	Environmental Science & Engg.	45	5	44	34	78
7	Petroleum Exploration	26	4	5	5	10
8	Mineral Exploration	14	4	7	4	11
9	Maintenance Engineering & Tribology	40	4	38	36	74
10	Electronic & Communication Engineering	60	6	63	41	104
11	Mineral Engineering	28	5	24	18	42
12	Fuel Engineering	16	3	8	9	17
13	Mining Machinery Engg.	30	4	23	17	40
14	Mine Electrical Engineering	15	3	13	-	13
15	Mining Engineering	11	3	10	8	18
16	Power System Engineering	40	3	40	34	74
17	Power Electronic & Electrical Drives	40	3	38	32	70
18	Mechanical Engineering Manufacturing	40	4	39	38	77
19	Mechanical Engineering Thermal	40	3	42	37	79
20	Mechanical Engineering Desing	40	5	40	37	77
21	Opencast Mining	15	3	6	8	14
22	Geomatics	11	3	9	10	19
23	Engineering Geology	14	3	4	3	7
24	Underground Space Technology	11	3	5	0	5
25	Earthquake Disaster, Hazards and Mitigation	22	4	6	-	6
26	Structural Engineering	22	3	20	-	20
Total		720	100	679	536	1215
Gen				343	276	619
SC				28	77	105
ST				99	21	120
OBC				208	162	370
Girl				120	108	228

Total Student Strength in 3 year M.Tech Programme 2015-16 at Industry Institute Interaction Facility, Kolkata		
Sl.No.	Discipline	I Semester
1	Mechanical Engineering	21
2	Power System Engineering	20
3	Power Electronic & Electrical Drives	8
4	Computer Science & Engineering	19
5	Electronic & Communication Engineering	9
Total		77
Gen		68
SC		2
ST		0
OBC		7
Girl		10

Total Student Strength in Ph.D Programme 2015-16						
	Total	Gen	SC	ST	OBC	Girl
Ph.D (Full Time)	958	503	140	52	263	282
Ph.D (Part Time)	592	-	-	-	-	104
Total	1550	503	140	52	263	386

Total Foreign Students Strength 2015-16			
Sl. No.	Discipline	I Semester	3rd Semester
1	5 year BE (Mining Engineering)	-	46
2	M.Tech Computer Science & Engineering	1	-
3	M.Tech Petroleum Engineering	10	1
4	M.Tech Electronic & Communication Engineering	-	1
5	M.Tech Underground Space Technology	-	1
6	M.Tech Petroleum Exploration	2	-
7	M.Sc Tech Applied Geology	1	-
8	MBA	2	-
Total		16	49

2.2 Research Programmes

ISM continues to support increasing level of research activities in regular academic curricula leading to the award of research degree. The significant feature of this programme is external registration of Ph. D. scholars through approved research centres. Under the research programme 116 Ph.D. degrees were awarded during 2015-16. The following list provides a detailed account of the research degrees awarded during 2015-16:

Sl No	Name of the candidate	Department/ Discipline	Guide(s)	Title of the thesis
1	Dhrubojyoti Roy	Applied Physics	Prof P S Gupta	Synthesis and characterization of ultra- thin film using Langmuir – blodgett apparatus and its applications
2	Tapas Kumar Lahiry	Management Studies	Prof Kampan Mukherjee	Study on industrial sickness and turnaround strategy with special reference to Indian public sector enterprises
3	Nishit Kumar Srivastava	Management Studies	Dr Sandeep Mondal	Development of predictive maintenance models – a study on Indian manufacturing sector
4	Sudhangshu Chakraborty	Applied Physics	Prof Amitabha Basu	Investigation of dielectric behaviour of some doped and undoped ceramic materials
5	Raghunath Das	Applied Chemistry	Dr Sagar Pal	Hydroxypropyl methyl cellulose based graft copolymers/ nanocomposite: development and application in the field of controlled drug release
6	Shivanjali Sharma	Petroleum Engg	Prof V P Sharma (Guide) & Dr Vikas Mahato (Co-guide),	Study the effect of polymeric flow improvers on the rheological behaviour of Indian waxy crude oils
7	Col (Retd) Prabhdeep Singh Sandhu	Management Studies	Prof G S Pathak	Corporate social responsibility in the era of globalizaiton: an exploratory study of individual & group level variables
8	Arunangshu Giri	Management Studies	Dr (Mrs) Mrinalini Pandey	Awareness and impact of effective marketing initiatives of yoga and Ayurveda in Indian urban market: a study
9	Sumant Kumar	Applied Mathematics	Dr Akhilesh Prasad	Pseudo-differential operators involving Hankel-Clifford transformations and wavelet transformation
10	Manoj Kumar Shukla	Computer Science & Engg	Dr. Haider Banka	Degraded script identification of Devanagari and Bangla script
11	Karun Kumar Chandan	Applied Geology	Dr Sahendra Singh	Metallogenetic studies of gold mineralization within Lawa-Mayasera region, north Singhbhum mobile belt, eastern India
12	Mukesh Kumar Khandelwal	Electronics & Communication Engg	Dr Santanu Dwari & Dr Binod Kr Kanaujia, AIACTR, Delhi	Low profile microstrip antenna with defected ground plane for wireless applications

13	Yangdup Lama	Environmental Science & Engg	Dr Alok Sinha (Guide) & Prof Gurdeep Singh (Co-guide)	Reduction of chlorinated pesticides by high carbon iron filings (HCIF): kinetics, pathways and long term performance
14	Javid Ahmad Dar	Applied Geology	Dr R K Dubey	Geotechnical facets of seismically induced deformation structures in quaternary sediments of Tethys Himalaya, India
15	Prabhu Nath Singh	Environmental Science & Engg	Dr P K Singh	Study of water resources and its management in and around the Ranchi township area in Jharkhand, india
16	Bodhisatwa Hazra	Applied Geology	Dr Atul Kumar Varma	Geological and petrographical facets for shale gas-a case study of raniganj coal basin, West Bengal, India
17	Rajesh Ranjan Sinha	Applied Chemistry	Dr M Yadav (Internal) & Dr S.P.Mishra, BIT Sindri (External)	Experimental and theoretical studies on corrosion inhibition of mild steel in hydrochloric acid by some organic compounds
18	Sumbul Rahman	Applied Chemistry	Dr Biswajit Chowdhury	Preparation, characterization and catalytic activity studies of different metal doped mesoporous silica catalyst for oxidation reaction
19	Krishna Kumari	Applied Mathematics	DrAnurag Jayswal	Some aspects of minimax programming problems with generalized convexity
20	Tauseef Zia Siddiqui	Management Studies	Prof Pramod Pathak	Developing models of environmental education: focusing on sustainability
21	Riya Dey	Applied Physics	Dr Vineet Kumar Rai	Some rare earth doped upconverting phosphors and their multiutility
22	Ved Prakash Maurya	Applied Geophysics	Prof Shalivahan	Magnetotelluric studies over dalma volcanics, eastern india: inferences on metallogeny
23	Raju Narayanrao Ladhwe	Mechanical Engineering	Dr K Singh (Guide) & Prof P K Sarkar (Co-Guide)	Experimental and numerical study of FRP joints between pipes
24	Vijay Kumar Yadav	Applied Mathematics	Dr S P Tiwari	On algebraic and categorical study of fuzzy automata
25	Somrita Dutta	Applied Physics	Dr S K Sharma	Optical spectroscopic studies of rare earth doped molybdate phosphors
26	Vandana Jha	Applied Geology	Dr Sahendra Singh	Metallotectonic evolution of gold mineralization in and around babaikundi area, north Singhbhum crustal province, eastern India
27	Raja Kumar	Environmental Sc & Engg	Dr Alok Sinha	Enhancing biodegradability of textile effluents containing azo-dyes by high carbon iron filings (HCIF)

28	Shravan Kumar	Fuel & Mineral Engg..	Prof N R Mandre (Guide) & Prof S Bhattacharya(Co-Guide)	Studies on improving the settling characteristics of coal preparation plant tailings by flocculation
29	Sandipan Ray	Environmental Sc & Engg	Prof Gurdeep Singh & Prof P S Gupta	Development of an underground coalmine methane sensor using thin film semiconductor
30	Fozia Homa	Applied Mathematics	Prof G N Singh	Some efficient estimation procedures in sample surveys
31	Surajit Gorain	Applied Geophysics	Prof Shalivahan (Guide) & Dr Prabhakar Thakur, HPCL (Ext. Guide)	Reservoir characterization by attribute based inversion and spectral decomposition with RGB color blending in Kalol reservoir, cambay basin, India
32	Saurabh Dewangan	Mechanical Engg	Dr Somnath Chattopadhyay	Investigation into the performance of conical coal cutting picks
33	Rajendra Kumar Vishwakarma	Electronics Engineering	Dr Jitendra Kumar & Dr Vinayak Ranjan	Experimental investigation of explosion parameters under influence of internal components and external apertures of flameproof electronic apparatus
34	Kisholoy Roy	Management Studies	Dr Somiya Singh (Guide) & Ms. Rita Basu (Ext Guide)	Effect of celebrity endorsements on brands advertised on television: a study of Kolkata market
35	Barun Mandal	Electrical Engineering	Dr Sanjoy Mandal (Guide) & Dr Provas Kumar Roy (Ext-Guide)	Evolutionary algorithms applied to economic load dispatch, optimal power flow and automatic generation control
36	Neetha V Thampi	Applied Chemistry	Dr Mrs Keka Ojha (Guide) & Prof G Udayabhanu (Co-Guide)	Synthesis and characterization of water soluble ves and polymer embedded ves gels for potential applications in hydraulic fracturing
37	Ram Krishna Upadhyay	Mining Machinery Engg	Dr L A Kumaraswamidhas	A study on tribological and mechanical properties of tool steel coated with monolayer-multilayer thin and hard nitride films through physical vapour deposition process
38	Amitava Mandal	Mechanical Engg	Dr A R Dixit	Investigation on machining of nimonic c-263 super alloy using wire-edm process
39	Debishree Khan	Environmental Sc & Engg	Dr S R Samadder	Evaluating the scenario and options of solid waste management using GIS: a case study of Dhanbad city, India
40	Mohammad Sikandar Azam	Mechanical Engg	Dr Vinayak Ranjan	Free vibration analysis of isotropic and functionally graded plates with crack
41	S Vamsi Krishna	Electrical Engg	Dr Nitai Pal	Communication and emergency lighting systems for mines under disaster conditions

42	Shampa Nandi	Management Studies	Prof J K Pattanayak (Guide) & Dr (Mrs) Saumya Singh (Co-guide)	Buying behaviour of young Indian consumers- a study of mobile phones
43	Mujibur Rahman	Management Studies	Dr (Mrs) Saumya Singh (Guide) & Dr Prasant Sarangi (Ext Guide)	CRM in organised retail sector with special reference to lifestyle retail segment in India
44	Amit Saxena	Petroleum Engg.	Prof A K Pathak, ISM(Guide) & Dr (Mrs) Keka Ojha (Co-guide)	Development of foam fluid for drilling of coalbed methane wells
45	Anuradha Kumari	Environmental Sc & Engg	Dr Biswajit Paul (Guide) & Dr Jagdish(Ext Guide)	Investigation into microbial degradation of commercial explosives and their conversion into bio-products
46	Atul	Mechanical Engg	Dr Vinayak Ranjan	Design and analysis of piezoelectric cantilever beam and plate for vibration energy harvesting applications
47	Praveen Kumar Jha	Chemical Engg	Dr Vikas Mahato (Guide) & Prof V K Saxena(Co-Guide)	Studies on rheological and filtration properties of emulsion muds for optimum performance in oil well drilling
48	Dharmendra Kumar	Electronics Engg	Dr Jitendra Kumar	Semiconductor quantum dots and their applications in optoelectronic devices
49	Pritam Singh Bakariya	Electronics Engg	Dr Santanu Dwari	Design and characterization of wideband and multiband microstrip antennas
50	Shankaranand Jha	Electronics Engg	Dr Subindu Kumar	Studies on some performance parameters of mosfets and inverters based on multi-channel gate-all-around architecture
51	Daizy	Management Studies	Dr Niladri Das	Sustainability management and reporting practices in Indian mining companies
52	Rohit Sharma	Applied Mathematics	Prof G S Seth	Theoretical study of hydromagnetic flow problems in continuous media
53	Niranjan Kumar	Mining Machinery Engg	Prof K Dasgupta	Performance investigation of two-motor hydrostatic summation drive used in off-road vehicle
54	Shashikant Kumar	Petroleum Engg	Dr Ajay Mandal (Guide) & Dr Chandan Guria (Co-Guide)	Development of advanced membrane filtration for separation of oil from oil-in-water emulsion
55	Mohd. Azharuddin	Computer Science & Engg	Prof P K Jana	Design of fault tolerant algorithms for wireless sensor networks
56	Mr. Pintu Das	Applied Mathematics	Dr M K Singh	Solute dispersion with unsteady groundwater flow in porous formation
57	Mr. Abhinav Kumar	Civil Engineering	Dr Sarat Kumar Panda	Static and dynamic instability analysis of composite skew plates subjected to non-uniform loading”

58	Sandeep Kumar Aggarwal	Applied Geophysics	Prof P. K. Khan	Seismotectonic and precursor studies in gujarat and adjoining regions
59	Arun Kumar Singh	Management Studies	Prof Pramod Pathak (Guide) & Prof A M Agrawal (Ex-Guide)	Strengths and weaknesses of current value added tax system- a study of Jharkhand region
60	Jitendra Kumar Singh	Electronics Engineering	Prof V Kumar (Guide) & Dr G M Prasad (Ex-Guide)	Optical, elastic and electronic properties of optoelectronic materials
61	Mohd. Naseem	Computer Science & Engg	Dr Chiranjeev Kumar	Study and development of load balancing routing protocols for manets
62	Dhirendra Kumar Sharma	Computer Science & Engg	Dr Chiranjeev Kumar	Study and development of route maintenance techniques for manets
63	Sampurna Nand	Environmental Science & Engg	Dr Biswajit Paul (Guide) & Dr B K Sinha (Ext Guide)	Geotechnical assessment of overburden for utilization as landfill material in Chasnalla opencast mines, jharia coalfield, eastern India
64	Yogendra Singh Dohare	Mining Machinery Engg	Dr Tanmoy Maity (Guide) & Dr P S Paul (Co-guide)	Development of a wireless low cost surveillance and safety system for underground mines workers
65	Ravi Sankar Sangam	Computer Science & Engg	Dr Hari Om	Study and development of clustering algorithms for large datasets
66	Jyoti Sharma	Fuel & Mineral Engg	Prof N R Mandre (Guide) & Prof (Retd) T Sharma (Co-guide)	Beneficiation and pelletization of goethitic iron ore fines
67	Sangeeta Vishwakarma	Applied Chemistry	Prof Ashish Sarkar	Development of potential utilisation channels of fly ash generated at super thermal power plants
68	Pankaj Kumar Singh	Management Studies	Prof J K Pattanayak	Dimensions of consumer based brand equity (CBBE) in fast food sector –a study of select brands operating in India
69	Ajay Kumar	Electronics Engg	Dr S K Raghuwanshi	Design and implementation of some optical logic devices using electro-optic effect based mach-zehnder interferometer structure”
70	Santosh Agarwal	Applied Mathematics	Dr P S Rao	Study of some problems in hydrodynamic lubrication of bearings with couple stress fluids
71	Shilpi Ray	Applied Geology	Dr A K Bhaumik	Paleoceanographic evolution of Peru offshore and surface water variability at Blake ridge: foraminiferal and geochemical evidences

72	Jay Singh	Electrical Engg	Dr K Chatterjee (Guide) & Dr C B Vishwakarma (Ext-Guide)	Model order reduction for power systems control
73	Nand Kishore Singh	Mechanical Engg	Dr K K Singh	Impact analysis of symmetric and asymmetric fiber reinforced polymer laminates
74	Malaya Kumar Panda	Applied Geology	Prof S Mohanty (Guide) Prof A K Mishra (Co-Guide) & Dr B M P Pingua (Ext. Guide)	Influence of geotechnical properties of rock mass and explosive behavior on overbreak in tunnelling with controlled blasting
75	Manoj Kumar Mishra	Computer Science & Engg	Dr S Mukhopadhyay (Guide) & Prof G P Biswas (Co-Guide)	Techniques of compression and encryption for image/video data
76	Praveen Kumar	Applied Mathematics	Dr Akhilesh Prasad	Investigation in the theory of fractional wavelet transform and pseudo-differential operator
77	Subhabrata Banerjee	Environmental Science & Engg	Prof S K Maiti, ESE	Study of pollution load on Subarnarekha river by an industrial town (Jamshedpur) and its impact on biotic components
78	Divya Jyoti	Fuel & Mineral Engg	Prof S Bhattacharya (Guide) & Prof V K Saxena (Co-Guide)	Characterization and assessment of beneficiation and utilization potential of selected seams of low volatile coking coal of Jharia and Bokaro coalfield
79	Parimita Roy	Applied Mathematics	Prof R K Upadhyay	Modeling the spatiotemporal complexity of eco-epidemiological systems
80	Abhimanyu Kumar	Computer Science & Engineering	Dr. Sachin Tripathi	Some group key agreement protocols using elliptic curve cryptography
81	Swagata Ray	Humanities And Social Sciences	Dr.(Mrs.) Rajni Singh	Femisnist/female: a comparative study of fay Weldon and Shashi Deshpande's novels
82	Sanat Kumar	Applied Physics	Dr. Pankaj Mishra	Molecular theory of structure and properties of colloidal dispersions
83	Astha Kumari	Applied Physics	Dr. Vineet Kumar Rai	Frequency upconversion and multicolour emission in some rare earths doped phosphors
84	Mitali Chowdhury	Applied Physics	Dr. S. K. Sharma	Synthesis and characterization of sno2 based nanocomposites for optoelectronic applications
85	Sunil Kumar Tripathy	Fuel & Mineral Engg.	Prof. Nikkam Suresh (Guide) & Dr. P.K. Banerjee (External Guide)	Analysis of separation characteristics of para magnetic minerals in high intensity dry magnetic roll separators
86	Baij Nath Kaushik	Computer Science & Engineering	Dr. Haider Banka	Performance evaluation of approximated artificial neural network for solving some reliability problems in complex networks

87	Ashwani Kumar Tiwari	Environmental Science & Engg.	Dr. P.K. Singh	GIS based aquifer vulnerability assessment and qualitative analysis of water resources in a coal mining area, Jharkhand
88	Santanu Mukherjee	Management Studies	Prof. Kampan Mukherjee	Study on strategic issues relating to offshore outsourcing decisions in information technology sector
89	Keshak Babu	Chemical Engg.	Prof. V. K. Saxena (Guide) & Dr. Ajay Mandal (Co-Guide)	Synthesis and characterization of new surfactant and polymeric surfactant from castor oil for chemical enhanced oil recovery
90	Jaspreet Kaur	Applied Physics	Dr Bobby K Antony	A theoretical pursuit to probe electron-molecule scattering phenomena
91	Pradeep Kumar Saroj	Applied Mathematics	Dr S. A. Sahu	Theoretical study of seismic waves in layered elastic media
92	Sneha Mishra	Humanities & Social Sciences	Dr M. Mojibur Rahman	A descriptive study of the language spoken by the Gulgulia community in Dhanbad
93	Manish Kumar	Applied Mathematics	Dr G. K. Vishwakarma	On the improvement of estimation procedures in sample surveys
94	Ipsita Roy	Humanities & Social Science	Dr. Ajit Kumar Behura	Role of ethics in nature-human relationship: a pragmatic inquiry
95	Rakesh Kant Kamal	Environmental Science & Engineering	Prof. Gurdeep Singh	Impact assessment of mining activities on water quality in goa region
96	Arvind Singh	Applied Geophysics	Dr. Upendra K. Singh	Modeling and inversion of gravity and magnetic data using wavelet transform
97	Manoj Kumar Mahata	Applied Physics	Dr. Kaushal Kumar	Studies on upconversion and other optical emission properties in Er ³⁺ /Yb ³⁺ & Ho ³⁺ /Yb ³⁺ Doped BaTiO ₃ and YVO ₄ Phosphors
98	Mukul Kumar	Mechanical Engineering	Dr. R. K. Das	Numerical and experimental study of absorption refrigeration system utilizing waste heat of engine exhaust gas
99	Samapti Kundu	Applied Mathematics	Prof. Shishir Gupta	Theoretical study of some problems on seismic wave propagation
100	Sanjay Jerath	Management Studies	Dr. Mrinalini Pandey	Study of emotional response of consumers towards Indian television advertisements of automobile sector
101	Kumari Sangita	Applied Chemistry	Prof. G. Udayabhanu (Guide) & Dr (Mrs) Babli Prasad (External Guide)	Study on conversion of fly ash into zeolite and utilization of fly ash zeolite in pollution abatement
102	Rawesh Kumar	Applied Chemistry	Dr. Biswajit Chowdhury	Development of efficient siliceous and non-siliceous mesoporous oxide for vapor phase Beckmann rearrangement reaction

103	Pankaj Kumar	Mechanical Engineering	Dr. A. K. Das	Design, development and performance evaluation of a micro-electrical discharge machine
104	Shweta Maurya	Applied Mathematics	Prof. G. N. Singh	Search of good estimation techniques in sample surveys
105	Chiranjit Santra	Applied Chemistry	Dr. Biswajit Chowdhury	Promotional effect of gold nanoparticles on alcohol oxidation activity of nanoporous metal doped ceria catalyst
106	Rudra Pratap Singh	Electrical Engineering	Dr. Vivekananda Mukherjee (Guide) & Prof. S. P. Ghoshal (External Guide)	Evolutionary optimization techniques applied to optimal power flow of electrical power systems with FACTS devices
107	Subhashish Pradhan	Applied Chemistry	Dr. R. P. John	Synthesis and characterization of metal-organic assemblies of selected dipodal and tripodal ligands and their application in various C-C and C-N coupling reactions
108	Md. Zaheer Ansari	Applied Physics	Prof. Anil Kumar Nirala	Dynamic laser speckle techniques and their applications
109	Sandeep Kumar	Electronics Engineering	Dr. Santanu Dwari (Guide) & Dr B K Kanujia (External Guide)	Design of CMOS transceiver with reconfigurable microstrip antenna for modern wireless communication
110	Gunjan Srivastava	Electronics Engineering	Dr. Santanu Dwari (Guide) & Dr B K Kanujia (External Guide)	Design and analysis of ultra wideband (UWB) antennas for wireless communication applications
111	Praphulla Kumar Adhikari	Applied Geophysics	Prof. Shalivahan (Guide) & Dr. A. K. Sarangi (External Guide)	Geophysical studies over volcanogenic sulfide settings in the northern fringe of Dalma volcanics, eastern India
112	Dwesh K. Singh	Mechanical Engineering	Dr. S. N. Singh	Numerical simulation of combined free convection with surface radiation in cavities
113	Chandravir Narayan	Environmental Science & Engineering	Dr. Anshumali	The study on plant diversity in tropical deciduous forest of Bokaro district, Jharkhand, India
114	Dinesh Kumar Singh	Electronics Engineering	Dr. Santanu Dwari (Guide) & Dr. B.K. Kanaujia (External Guide)	Investigation of microstrip antenna for modern communication system
115	Ram Narayan Tripathy	Management Studies	Prof. Pramod Pathak (Guide) & Dr. M. P. Dikshit (External Guide)	An evaluation of human resource management practices in Indian coal industry – a case study
116	Gauri Shankar	Electrical Engineering	Dr. V. Mukherjee	Load following performance evaluation of power systems with emphasis on distributed generation

3.0 DEPARTMENTAL ACTIVITIES

3.1 APPLIED CHEMISTRY

3.1.1 ABOUT THE DEPARTMENT

The Department of Applied Chemistry was established as a separate Department in the year 1989. The Chemistry Section existed prior to that as a part of the Department of Chemistry, Fuel and Metallurgy / Chemistry, Fuel and Mineral Engineering / Applied Sciences since 1926.

The Department offers three academic programmes: 2-years M.Sc. Chemistry, B. Tech. (Minor) and Ph.D.

3.1.1.1 Vision: To be one of the best departments of the School and the country in terms of teaching and research

3.1.1.2 Mission: To be one of the top centers for teaching and research nationally and internationally

3.1.2 BEST PRACTICES OF THE DEPARTMENT

- i. Goal setting and persuasion by all faculty members.
- ii. Rigorous evaluation of students and timely submission of marks.
- iii. Holding regular DAC meetings and discussions.
- iv. Maintenance, operation and access to all faculty members and research students to all instruments.
- v. Helping outside/other department's researchers in the analysis of their samples.
- vi. Organizing lectures/seminars frequently and inviting the eminent scientist/industrialist/researchers to deliver talks.
- vii. The formation of the departmental ISM Chemical Society to promote science among students and disseminate knowledge.
- viii. Inviting budding students of 12th standard and attract them towards scientific research.
- ix. Efforts to attract the best faculty for the department.
- x. Sending staff members for various training programmes to update their skills.
- xi. Promote national/international collaboration in research.

3.1.3 BRIEF LIST OF ON-GOING R&D PROJECTS (PROJECT VALUE ₹ 5,00,000/- AND ABOVE)

1.	Project Title : Mesoporous mixed oxide supported gold nanoparticle catalyst for oxidant free dehydrogenation reaction of alcohol Sponsoring Agency : DST (SERB) Coordinator (s) : Dr. Biswajit Chowdhury Project Value : ₹ 48.96 lakhs Date of Commencement : 13.08.13 Date of Completion : Ongoing Objective : To develop and characterization of mixed oxide supported gold nanoparticle Status : Ongoing Findings : 09 papers have been published
2.	Project Title : Design of novel bi-functional gold Ti and Fe modified zeolite functional material for the catalytic oxidation of hydrocarbon Sponsoring Agency : DST (International division) India-Netherland bi lateral project Coordinator (s) : Dr. Biswajit Chowdhury (PI) & Dr. V. Prabhakaran (Co-PI) Project Value : ₹ 58.29 lakhs Date of Commencement : 20/12/14 Date of Completion : Ongoing Objective : To develop catalyst for propylene epoxidation reaction Status : Ongoing Findings : 01 paper published
3.	Project Title : Catalytic transformation of glycerol to Acrolein over mesoporous silica supported acid functionalized transition metal Sponsoring Agency : CSIR Coordinator (s) : Dr. Biswajit Chowdhury Project Value : ₹ 17.00 lakhs Date of Commencement : 02.02.2014 Date of Completion : Ongoing Objective : To develop catalyst for glycerol transformation Status : Ongoing Findings : 03 paper communicated
4.	Project Title : High performance modified guar gum ----- industrial effluent treatment. Sponsoring Agency : DST, New Delhi. Coordinator (s) : Dr. Sagar Pal Project Value : ₹ 24.94 Lakhs Date of Commencement : 20.06.2013 Date of Completion : 19.06.2016 Objective : To develop multifunctional guar gum derivatives Status : Ongoing Findings : Published-06 Communicated-NIL
5.	Project Title : Novel modified biopolymer based hydrogels and nanogels: synthesis, characterization and application Sponsoring Agency : SERB, DST, New Delhi Coordinator (s) : Dr. Sagar Pal Project Value : ₹ 35.26 Lakhs Date of Commencement : 22.06.2015 Date of Completion : 21.06.2018 Objective : To develop polymeric hydrogels/nanogels

	Status	:	Ongoing
	Findings	:	Published-02 Communicated-NIL
6.	Project Title	:	A photochemical approach to surfactant free metal nanoparticles and Nanoclusters and their Catalytic Applications in Organic Reactions
	Sponsoring Agency	:	SERB, DST, GOI
	Coordinator (s)	:	Dr. Somnath Yadav
	Project Value	:	₹ 27 Lakhs
	Date of Commencement	:	July, 2012
	Date of Completion	:	August, 2015
	Objective	:	Photochemically synthesize nanoparticles for applications as catalysts
	Status	:	Ongoing
	Findings	:	Nanoparticles have been synthesized and catalytic studies have been carried out.
7.	Project Title	:	Synthesis of Triplesalen-based metal-organic frameworks (MOFs) and investigation on their functional applicability
	Sponsoring Agency	:	DST, New Delhi
	Coordinator (s)	:	Dr. H. P. Nayek
	Project Value	:	₹ 25.4 lakhs
	Date of Commencement	:	25.07.2012
	Date of Completion	:	24.07.2015
	Objective	:	To develop functional MOFs
	Status	:	Ongoing
	Findings	:	MOFS developed and properties investigated
8.	Project Title	:	Syntheses of Polynuclear Metal Complexes from Metalloligands of Group 14 Elements and Their Catalytic Activities
	Sponsoring Agency	:	DST, New Delhi
	Coordinator (s)	:	Dr. H. P. Nayek
	Project Value	:	₹ 52.8 lakhs
	Date of Commencement	:	17.06.2014
	Date of Completion	:	16.06.2018
	Objective	:	To develop polynuclear complexes
	Status	:	Ongoing
	Findings	:	Ligands are synthesized
9.	Project Title	:	Synthesis and Functionalization of Graphene for controlled dispersion in Polymer Blends
	Sponsoring Agency	:	DST New Delhi
	Coordinator (s)	:	Dr. G. C. Nayak
	Project Value	:	Rs. 23.6 Lakhs
	Date of Commencement	:	31-10-2013
	Date of Completion	:	--
	Objective	:	Control dispersion of graphene in polymer blends
	Status	:	Ongoing
	Findings	:	Development of polymer blends going on
10.	Project Title	:	A study of polymeric layer on efficiency enhancement of up conversion nanoparticles for biomedical applications
	Sponsoring Agency	:	DST, New Delhi
	Coordinator (s)	:	Dr. S. K. Sahu
	Project Value	:	₹ 24.8 Lakhs
	Date of Commencement	:	20.05.2014
	Date of Completion	:	19.05.2017

	Objective :	To develop polymer functionalized up conversion nanoparticles
	Status :	Ongoing
	Findings :	Development of the up conversion nanoparticles is going on.
11.	Project Title :	Biodegradable imprinted nanomaterials: A unique combination of selectivity, sensitivity & biocompatibility
	Sponsoring Agency :	DST
	Coordinator (s) :	Dr. R. Madhuri
	Project Value :	₹ 23.18 Lakhs
	Date of Commencement :	23.06.2014
	Date of Completion :	22.06.2017
	Objective :	To develop Biodegradable imprinted nanomaterials
	Status :	Ongoing
	Findings :	--
12.	Project Title :	Catalytic partial oxidation of glycerol to acrylic acid over polymer-bound immobilised metal complexes under mild condition.
	Sponsoring Agency :	DST(SERB), New Delhi
	Coordinator (s) :	Dr. C. Halder
	Project Value :	₹ 24.4 lakhs
	Date of Commencement :	Aug 2014
	Date of Completion :	July 2017
	Objective :	Catalytic conversion of glycerol to acrylic acid
	Status :	Ongoing
	Findings :	Development of Catalyst is going on
13.	Project Title :	Bio-inspired Vanadium and Copper Catalyst Grafted on Graphene Oxide for Oxidation of Hydrocarbons and Alcohols
	Sponsoring Agency :	DST (SERB), New Delhi
	Coordinator (s) :	Dr. C. Halder
	Project Value :	₹ 52.92 lakhs
	Date of Commencement :	July 2015
	Date of Completion :	June 2019
	Objective :	Bio-inspired catalyst for the Oxidation of Hydrocarbons and Alcohols
	Status :	Ongoing
	Findings :	Development of Catalyst is going on
14.	Project Title :	Kinetics and Mechanistic Approach towards Water Splitting by Ruthenium Complexes having Polypyridyl Ligands
	Sponsoring Agency :	DST, New Delhi
	Coordinator (s) :	Dr. S. K. Padhi
	Project Value :	₹ 25.0 lakhs
	Date of Commencement :	Aug 2014
	Date of Completion :	July 2017
	Objective :	To establish the mechanism of water oxidation
	Status :	Ongoing
	Findings :	Published 01 paper in international journal
15.	Project Title :	Metal free oxidative C-N bond formation
	Sponsoring Agency :	DST (INSPIRE) , New Delhi
	Coordinator (s) :	Dr. S. Maity
	Project Value :	₹ 35.0 lakhs
	Date of Commencement :	January 2014
	Date of Completion :	January 2019
	Objective :	To develop new synthetic methods for nitrogen containing heterocycles
	Status :	Ongoing
	Findings :	Developed new methods for sp ² C-O bond

3.1.4 IMPORTANT COLLABORATIVE WORKS

SL. NO.	Organization/ Laboratory	Nature of Interaction
1	SMST, IIT Kharagpur.	Collaborative research work on cell cytotoxicity study
2	CSMSRI, Bhavnagar.	Collaborative research work on Characterization and applications of nanocomposites.
3	Department of Chemical Engineering, Eindhoven University of Technology, Netherland.	Joint research project
4	Solid State Physics Division, BARC, Mumbai.	Collaborative work
5	CNRS-Institut de Recherches sur la Catalyse, 2, avenue Einstein, 69626 Villeurbanne Cédex, France.	Collaborative work
6	Philipps University Marburg, Germany.	Collaborative work for single crystal X-ray diffraction analysis of synthesized compounds
7	Institute for Integrated Cell-Material Sciences, Kyoto University, Japan.	Collaborative research work.
8	Institute for Molecular Science, Okazaki, Japan.	Collaborative research work.
9	Institute of Chemical Research of Catalonia, Spain.	Collaborative research work.
10	IIT Guwahati.	Collaborative research work.
11	Department of Chemistry, University of Eastern Finland, Finland.	Collaborative work for single crystal X-ray diffraction analysis of synthesized compounds
12	Department of Biotechnology, Indian Institute of Technology, Kharagpur.	Collaborative work for biological study
13	Immunology and Microbiology Laboratory, Department of Human Physiology with Community Health, Vidyasagar University.	Collaborative work for biological study
14	Department of Life Science and Biotechnology, Jadavpur University.	Collaborative work for biological study
15	CSIR-Indian Institute of Petroleum Dehradun.	Collaborative work for Catalytic applications
16	Pohang Accelerator Laboratory, POSTECH, Republic of Korea.	Collaborative work for crystallographic study

3.1.5 IMPORTANT NEW EQUIPMENT ACQUISITIONED (ABOVE RS. 5,00,000/-):

Name of the equipment	Purpose	Date of purchase	Value (₹)
1. FAR IR-MIR (Agilent Carry 600)	Teaching and research	19.02.2016	37 lakh
2. Gas Chromatograph; Agilent 7890B	DST project work	15.05.15	16 lakh
3. TPR/TPD (Chemisorb 2750)	DST project work	14.05.15	22 lakh
4. Electrospinning	FRS	March 2016	5.55akhs

3.1.6 RESEARCH PUBLICATIONS

3.1.6.1 Books reviews / contribution of chapters in a book

1. Rawesh Kumar and **Biswajit Chowdhury** The synthetic strategy for developing Mesoporous materials through nanocasting route **Advanced Functional Materials ; Wiley Publishing 2015, Chapter 2; Page 59-116**
2. **Ganesh Chandra Nayak**, Chapal Kumar Das, LCP Based Polymer Blend Nanocomposites in Liquid Crystalline Polymers, Volume 1–Structure and Chemistry, Springer International Publishing, pp 251-272, DOI: 10.1007/978-3-319-22894-5_8. ISBN: 978-3-319-22893-8 (Print) 978-3-319-22894-5 (Online).

3.1.6.2 Papers published in International Journals

1. H. Chaudhuri, S. Dash, and **A. Sarkar**, “Synthesis and use of SBA-15 adsorbent for dye-loaded wastewater treatment”, Journal of Environmental Chemical Engineering, 3 (2015) 2866-2874.
2. H. Chaudhuri, S. Dash, S. Ghorai, S. Pal and **A. Sarkar**, “SBA-16: Application for the removal of neutral, cationic, and anionic dyes from aqueous medium”, Journal of Environmental Chemical Engineering, 4 (2016) 157-166.
3. H. Chaudhuri, S. Dash, and **A. Sarkar**, “SBA-15 functionalised with high loading of amino and carboxylate groups as selective adsorbents for enhanced removal of toxic dyes from aqueous solution”, New Journal of Chemistry, 40 (2016), 3622-3634.
4. H. Chaudhuri, S. Dash, and **A. Sarkar**, “Adsorption of different dyes from wastewater using Si-MCM-41 having very high surface area”, Journal of Porous Material, 23 (2016), 1227.
5. S. K. Ray, D. C. Panigrahi, **G. Udayabhanu** and V. K. Saxena, “Assessment of spontaneous heating susceptibility of Indian coals – A new approach”, Energy Sources Part A: Recovery, Utilization and Environmental Effects. 38, 1 (2016), 59 – 68.
6. Surabhi, **G. Udayabhanu** and S. Nikkam, “Removal of Unburnt Carbon from Fly Ash to Use it as an Adsorbent”, Poll Res. 34, 4 (2015), 687 – 692.
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8. A. Biswas, S. Pal and **G. Udayabhanu**, “Experimental and theoretical studies of xanthan gum and its graft co-polymer as corrosion inhibitor for mild steel in 15% HCl”, Applied Surface Science, 353 (2015) 173-183.
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10. S. Bera, T. K. Rout, **G. Udayabhanu** and R. Narayan, “Comparative Study of Corrosion Protection of Sol-Gel Coatings with Different Organic Functionality on Al-2024 substrate”, Progress in Organic Coatings, 88 (2015) 293 – 303.
11. Anuradha, S. Kumari and **D. D. Pathak**, “Synthesis and development of Chitosan anchored copper(II) Schiff base complexes as heterogeneous catalysts for N-arylation of amines”, Tetrahedron Letters, 56 (2015) 4135–4142.
12. P. K. Choubey, R. Panda, M. K. Jha, J.-C. Lee, and **D. D. Pathak**, “Recovery of copper and recycling of acid from the leach liquor of discarded Printed Circuit Boards (PCBs)”, Sep. Purif. Technol., 156 (2015) 269-275.

13. S. Kumari, A. Shekhar and **D. D. Pathak**, "Synthesis and characterization of Cu(II) Schiff base complex immobilized on graphene oxide and its catalytic application in the green synthesis of propargylamines", *RSC Adv.*, 6 (2016) 15340-15344.
14. S. Kumari, A. Shekhar and **D. D. Pathak**, "Graphene oxide-TiO₂ composites: an efficient heterogeneous catalyst for the green synthesis of pyrazoles and pyridines", *New J. Chem.*, **40** (2016) 5053-5060.
15. **M. Yadav**, S. Kumar, T. Purkait, L.O. Olasunkanmi, I. Bahadur and E.E. Ebenso, "Electrochemical, thermodynamic and quantum chemical studies of synthesized benzimidazole derivatives as corrosion inhibitors for N80 steel in hydrochloric acid", *Journal of Molecular Liquids* 213 (2016) 122–138.
16. **M. Yadav**, L. Gope, N. Kumari and P. Yadav, "Corrosion inhibition performance of pyranopyrazole derivatives for mild steel in HCl solution: Gravimetric, electrochemical and DFT studies", *Journal of Molecular Liquids* 216 (2016) 78–86.
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19. **M. Yadav**, D. Sharma, and T. K. Sarkar, "Adsorption and corrosion inhibitive properties of synthesized hydrazine compounds on N80 steel/hydrochloric acid interface: Electrochemical and DFT studies, *Journal of Molecular Liquids*," 212 (**2015**) 451–460.
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3.1.6.3 Paper presented in International Seminars/Conferences

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2. R. Mohan, **G. Udayabhanu** and N. Suresh, "An electron microprobe microanalysis study of float-sink fractions of the coal middlings from a coking-coal washery", MPT 2016, Jan 5-7, 2016, TCS Sahyadri Park Campus, Hinjewadi, Pune, India.
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9. A. De Adhikari, R. Oraon, S. K. Tiwari, P. Saren and G. C. Nayak, "Hierarchical Zn-doped SnO₂ nanostructured and Zn-doped SnO₂@CNT and Graphene for supercapacitor application, ICEFN-2016, March 27-29 th 2016, Nainital.
10. S. K. Tiwari, R. Oraon, A. De Adhikari and G. C. Nayak, "Effect of mixing sequence of graphene oxide on thermo-mechanical properties of PC/PMMA system" International Conference on Nanostructured Polymeric Materials and Polymer Nanocomposites, Kottayam Kerala, 13-15 November 2015.
11. S. K. Tiwari, R. Oraon, A. De Adhikari and G. C. Nayak, "Effect of different loading of graphene oxide nanosheet on the thermo-mechanical properties of PC/PMMA blend" APM-2016, February 12-14, 2016, Ahmedabad.

3.1.6.4 Paper presented in National Seminars/Conferences:

1. Recent Advances in Chitosan-Anchored Transition Metal Complexes", XXIV ICC Conference 2015, Uka tarsadia University, Bardoli, Surat, 26-28, December, 2015 (Invited Lecture).

2. Synthesis and Development of Chitosen- Anchored Zn(II) Schiff base complexes: An efficient heterogeneous catalysts for the synthesis of amides from ketones via Beckmann rearrangement”, Anuradha, D. D. Pathak, XXIV ICC Conference 2015, Uka tarsadia University, Bardoli, Surat, 26-28,December, IO-CYSA-04,.
3. Synthesis and Crystal structure of Cu(dpp)₂ complex: Used as a catalyst in 1,2,3-Triazole Moieties Formation”, Samaresh Layek D. D. Pathak, XXIV ICC Conference 2015, Uka tarsadia University, Bardoli, Surat, 26-28,December, IO-CYSA-05.

3.1.7 MAJOR ACADEMIC CONTRIBUTIONS:

1. **Dr. Sagar Pal** received CANARA BANK BEST RESEARCHER AWARD for Publication-2014 under the category Applied Chemistry, given by ISM, Dhanbad.

3.1.8 SEMINARS, SYMPOSIA, WORKSHOPS, CONFERENCES ORGANIZED BY THE DEPT/CENTRE:

1. Department of Applied Chemistry has organized three seminars respectively on 7th July 2015, 10th Dec 2015 and 5th February 2016.
2. One mini workshop has been organized on 11th Dec 2015.

3.1.9 VISITS OF FACULTY MEMBERS ABROAD:

1. Dr. Rakesh Ganguly (Department of Chemistry, Nanyang Technological University (NTU), Singapore).
2. Dr. Arghya Dutta (RIKEN, JAPAN).

3.1.10 DISTINGUISHED VISITORS TO THE SCHOOL (INDICATING OCCASION/PURPOSE):

1. **Prof. Asim Bhaumik** (Indian Association for the Cultivation of Science (IACS), Kolkata) on 7th July 2015.
2. **Dr. Rakesh Ganguly** (Department of Chemistry, Nanyang Technological University (NTU), Singapore) on 10-11th Dec 2015.
3. **Dr. Arghya Dutta** (RIKEN, JAPAN) on 5th February 2016.
4. **Prof. M. Lakshmi Kantam**, FNA, FNASc, FRSC, Dr. B. P. Godrej Distinguished Professor, Department of Chemical Engineering, Institute of Chemical Technology, Mumbai.

3.1.11 SPECIAL LECTURES BY DISTINGUISHED GUESTS:

1. **Prof. Asim Bhaumik** (Indian Association for the Cultivation of Science (IACS), Kolkata) delivered a talk in the Department of Applied Chemistry on 7th July 2015 on “Designing functional nanoporous material for eco-friendly catalytic reactions”.
2. **Dr. Rakesh Ganguly** (Department of Chemistry, Nanyang Technological University (NTU), Singapore) on 10th Dec 2015 upon “Single crystal X-ray Crystallography” followed by a workshop on 11th Dec 2015.
3. **Dr. Arghya Dutta** (RIKEN, JAPAN) delivered a talk in the Department of Applied Chemistry on 5th February 2016 upon “Lithium-oxygen battery with high energy storage”.

3.1.12 MISCELLANEOUS

1. Prof. D. D. Pathak acted as the Sectional president for Inorganic Chemistry in the XXIV Annual Conference of the Indian Council of Chemists 2015, held at Uka Tarsadia University, Bardoli, Surat, during December 26 – 28, 2015.

2. Dr. Mahendra yadav Conducted short term course: 01 (02 – 05 February 2016).
3. Dr. Mahendra yadav. Conducted 01 Orientation course under Faculty Development Center (FDC) ISM dhanbad (09-29, February 2016).
4. Dr. Mahendra yadav Organized national Conference on Recent Advances in Science and Engineering, (RASE-2016) 28 – 29 March 2016.

3.2 APPLIED GEOLOGY

3.2.1 About the Department:

The Department of Applied Geology is the pioneering centre of teaching, training and advanced research in the field of Earth Sciences in India. The department currently offers 5-year Integrated M.Tech. (in Applied Geology), 3-year M.Sc. Tech (in Applied Geology), 2-year M.Tech. in Mineral Exploration, Engineering Geology and Petroleum Exploration besides Ph.D and D.Sc. Programmes. The Department has developed a very strong industry-institution relationship which is unique in the country.

3.2.1.1 Vision: The principal long range goal of the department is to establish itself as a center of excellence in Applied Geology with special reference to Mineral Exploration, Coal Geology, Hyperspectral Remote Sensing Geology, Engineering Geology, Petroleum Geology and Hydrology through competitive research in frontier areas. The department endeavours to educate young men, women for professional careers in the fields of Applied Geology, Coal, Petroleum, Mining and Mineral Sciences.

3.2.1.2 Mission: The mission of Department of Applied Geology, serving the nation since 1926, is capacity building through development of trained manpower and expertise in the applied aspects and frontiers of earth sciences such as exploration and utilization of natural resources (coal, mineral and petroleum sector), natural hazards, climatic changes and environmental aspects.

3.2.2 FIELD VISITS/EXCURSIONS/TRAINING PROGRAMMES UNDERTAKEN BY STUDENTS

Particulars	Batch of Students	Place of Visit	Period of visit
Sedimentary terrain mapping Training	II M.Sc.Tech AGL and VI Int. M.Sc.Tech AGL	Raniganj basin, Asansol region	11.12.15 to 21.12.15
Local geological field visit	IV Int. M.Sc. Tech (AGL)	In and around Dhanbad	2 weeks
Sedimentary terrain mapping	II M. Sc. Tech and VI Integrated M. Sc. Tech (AGL)	Ara-Dumerbera, Dudhinala, Kuju	21.12.15 to 31.12.15
Geological Mapping Training (in deformed metamorphic terrain, Group B)	IV th M.Sc.Tech. (AGL) + VIII th integrated M.Sc.Tech (AGL)	Around Jamshedpur (Surda, UCIL areas, Singhbhum shear zone), Jharkhand	18.12.15 to 28.12.15
GPS stations around Jharia Basin	PhD students (ISM JRFs)	In and around Jharia	March 2016
Geological mapping training in deformed metamorphic terrain”	39 students (IV M.Sc. Tech. (AGL) and VIII Integrated M.Sc. Tech. (AGL) students)	Ghatsila and adjoining areas, east Singhbhum District, Jharkhand	14.12.15 to 24.12.15

IV Sem. M.Sc Tech Applied Geology	43 students	Tatanagar, Jharkhand	17.12.15 to 28.12.15
Local geological field excursion.	VI Int. M.Sc. Tech (AGP) and II M.Sc. (AGP)	Areas in the vicinity of Dhanbad (Bhuli-Bansjora Area)	14.12.15 to 23.12.15
Field training on 'Sedimentary terrane mapping'	II sem. M.Sc. Tech. (Applied Geology) and VI sem. Integrated M.Sc. Tech. (Applied Geology)	Raniganj Sedimentary basin	12.12.16 to 21.12.16

3.2.3 BRIEF LIST OF ON-GOING R&D PROJECTS (PROJECT VALUE ₹ 5,00,000/- AND ABOVE)

1.	Project Title	:	Geodynamics and Structural Evolution of Kachchh Province
	Sponsoring Agency	:	Department of Science and Technology. New Delhi
	Coordinator (s)	:	Prof. S. Mohanty
	Project Value	:	₹ 32.00 Lakhs
	Date of Commencement	:	1.9.2014
	Date of Completion	:	1.9.2017
	Objective	:	<ol style="list-style-type: none"> 1. Detailed structural mapping of some of the key sectors of the Kachchh province. 2. Determination of fault slip patterns from the kinematic indicators. 3. Determination of the relative displacement between different fault blocks. 4. Study of some of the igneous units associated with the Mesozoic rocks of Kachchh. 5. Analysis of inversion tectonics, if any, in the area. 6. Identification of areas vulnerable towards Neotectonic fault movements.
Status	:	Ongoing	
Findings	:	Field Mapping and data collections are over. Interpretation of Wagad uplift data continuing.	
2.	Project Title	:	Geochemical and petrographic study of the metamorphosed ultramafic-mafic rock suites of the Sargur Group and the surrounding granitoid rocks exposed at several locations in the western Dharwar craton, south India
	Sponsoring Agency	:	Indian School of Mines, Dhanbad
	Coordinator (s)	:	R. Anand
	Project Value	:	₹ 7.00 Lakhs
	Date of Commencement	:	January 2014
	Date of Completion	:	January 2017
	Objective	:	Understanding the petrogenetic relationship between the rocks of the Sargur supracrustal belt
Status	:	Ongoing	
Findings	:	---	
3.	Project Title	:	Characterization, quantification and genesis of gas hydrate in Krishna-Godavari Basin, Bay of Bengal using benthic foraminiferal, geochemical and geophysical studies
	Sponsoring Agency	:	MoES
	Coordinator (s)	:	Dr. A. K. Bhaumik
	Project Value	:	₹ 86.69 lakhs

	Date of Commencement :	20.03.15
	Date of Completion :	19.3.18
	Objective :	To understand distribution of foraminifera in Krishna-Godavari basin
	Status :	Ongoing
	Findings :	Ongoing
4.	Project Title :	Geospatial Fusion of Parameters Controlling Orogenic Gold Mineralization and Delineation of Gold Prospective Zones within Chandil Formation, North Singhbhum Mobile belt, Eastern Indian Craton. A Regional Scale Analytical Approach through Integrated Application of GIS, GPS and Remote Sensing Technology
	Sponsoring Agency :	Department of Science and Technology.
	Coordinator (s) :	Dr. Sahendra Singh (PI) and Dr. Anup K. Prasad (Co-PI)
	Project Value :	₹ 38.50 Lakhs
	Date of Commencement :	15.01.2016
	Date of Completion :	15.01.2018
	Objective :	Delineation of gold prospective zones using remote sensing and GIS.
	Status :	Equipment acquisition and man-power recruitment process has begun.
	Findings :	None, yet.
5.	Project Title :	Petrological and Tectonic Significance of Archaean Banded Iron Formation (BIF) from parts of the Palghat Cauvery Shear Zone (PCSZ) of South India
	Sponsoring Agency :	Department of Science & Technology (DST)
	Coordinator (s) :	Dr Upama Dutta
	Project Value :	₹ 9.00 Lakhs
	Date of Commencement :	August 2013
	Date of Completion :	July 2016
	Objective :	Identifying petrological and tectonic significance of BIF in the study area
	Status :	Ongoing
	Findings :	Ongoing
6.	Project Title :	Petrology of felsic granulite from parts of the Southern Granulite Terrain
	Sponsoring Agency :	ISM, Dhanbad
	Coordinator (s) :	Dr Upama Dutta
	Project Value :	₹ 5.60 Lakhs
	Date of Commencement :	Dec 2013
	Date of Completion :	Nov 2016
	Objective :	Identifying petrological significance of Enderbite in the study area
	Status :	Ongoing
	Findings :	Ongoing
7.	Project Title :	Survivorship of the Mesozoic bivalves of Kutch, Gujarat
	Sponsoring Agency :	Department of Science and Technology
	Coordinator (s) :	Shubhabrata Paul
	Project Value :	₹ 35 Lakhs
	Date of Commencement :	September 2014
	Date of Completion :	September 2019
	Objective :	Survivorship of the Mesozoic bivalves of Kutch, Gujarat
	Status :	Ongoing
	Findings :	Ongoing
8.	Project Title :	Structural Geometry, Kinematics of Deformation and Metamorphism of the Proterozoic Kaladgi Group, in the eastern parts of Kaladgi Basin, Bagalkot district, Karnataka: implication to basin tectonics

	Sponsoring Agency :	Department of Science and Technology, Govt. of India
	Coordinator (s) :	Dr. M. K. Mukherjee
	Project Value :	₹ 17.44 Lakhs
	Date of Commencement :	01.1.2011
	Date of Completion :	30.06.2014
	Objective :	To work out the deformation geometry and kinematics of the basin
	Status :	Completed
	Findings :	Contractional deformation in the southern parts of the basin and extensional deformation in the northern part of the basin without involvement of the basement. Anchizone Metamorphism and shallow crustal deformation
9.	Project Title :	Geological and Technological Controls for Underground Coal Gasification
	Sponsoring Agency :	CSIR
	Coordinator (s) :	Prof. D.C.Panigrahi; Co-Coordinator: Prof.Atul K. Varma
	Project Value :	₹ 91.60 Lakhs
	Date of Commencement :	01.04.2012
	Date of Completion :	31.03.2017
	Objective :	To provide geological and technical feasibility of coal seam for underground coal gasification
	Status :	Ongoing
	Findings :	Work Plan finalized; Equipments being procured; Intricacies of the Project identified
10.	Project Title :	Landslide risk analysis of road cut hill slopes near Sonapur, Meghalaya, India.
	Sponsoring Agency :	DST (NRDMS)
	Coordinator (s) :	Dr K. Sarkar
	Project Value :	₹ 22.636 Lakhs
	Date of Commencement :	30/09/2014
	Date of Completion :	30/09/2017
	Objective :	Geotechnical investigations, Numerical Simulation and remedial measures of the study area.
	Status :	Ongoing
	Findings :	Ongoing
11.	Project Title :	Comprehensive Monitoring and Assessment of Drought in India: Implications for Process-Based Understanding of Drought Propagation.
	Sponsoring Agency :	Department of Science and Technology, Govt. of India
	Coordinator (s) :	Dr. T. H. Syed
	Project Value :	₹ 17.16 lakhs
	Date of Commencement :	Oct, 2011
	Date of Completion :	Sep, 2015
	Objective :	Understanding the processes that control the extent and recurrence of drought in India
	Status :	Completed
	Findings :	Developed a novel drought monitoring Index using space-based observations of terrestrial water storage
12.	Project Title :	Petrology, geochemistry and age of granite-greenstone assemblages along Rayachoti-Kadiri tract, Andhra Pradesh: window into late Archaean evolution of eastern Dharwar craton and geodynamics
	Sponsoring Agency :	DST
	Coordinator (s) :	S. Dey (P.I) & M. K. Mukherjee (Co-P.I.)
	Project Value :	₹ 13.76 lakhs
	Date of Commencement :	September, 2011

	Date of Completion :	March, 2016 (revised)
	Objective :	To understand petrogenesis of granitoids and volcanic rocks of the Kadiri and Veligallu greenstone belts and their role in Archaean crustal evolution.
	Status :	Completed
	Findings :	The Kadiri greenstone belts contains three types of volcanic rocks viz. plume-related tholeiitic basalts, subduction related high-Mg# andesites and potassic adakites. Different suites of granitoids identified include sanukitoid, transitional TTG, anatectic biotite granite and A-type granite. A convergent orogenic setting characterised by assembly of diverse terranes, repeated slab-break-off and crustal reworking is proposed to interpret the association of various granitoids and volcanic rocks.
13.	Project Title :	Origin and evolution of crust in the NE part of the Singhbhum craton: constraints from geochemistry and geochronology of granitoids
	Sponsoring Agency :	MoES
	Coordinator (s) :	S. Dey (P.I), Prof. E.V.S.S.K. BABU (C.I.), DR. BULUSU SREENIVAS (C.I.), T. VIJAYA KUMAR (C.I.)
	Project Value :	₹ 29.59 lakhs
	Date of Commencement :	Aug. 2015
	Date of Completion :	July 2018
	Objective :	To understand petrogenesis of different suites of granites, their role in crust formation & to suggest a tectonic model
	Status :	Ongoing
	Findings :	Mapping and lithological sampling of the area completed to the extent of 75%.
14.	Project Title :	Artificial Recharge and Rainwater Harvesting Structures within the compounds of Indian School of Mines, Dhanbad
	Sponsoring Agency :	CGWB, MoWR
	Coordinator (s) :	Prof. B. C. Sarkar (PI)
	Project Value :	₹ 1.90 Lakhs
	Date of Commencement :	21.12.2011
	Date of Completion :	04.12.16
	Objective :	To recharge ground water domain for sustainability of weathered zone and deeper fractured aquifer(s)
	Status :	Completed
	Findings :	Rooftop rainwater being harvested : 21,968 m ³ /year. Study revealed a mean rise of 2.29 m in the groundwater level owing to the rain water harvesting.

3.2.4 IMPORTANT COLLABORATIVE WORKS

Organization / Lab	Nature of interaction
Airie Program, Colorado State University, USA	Collaborative research work sponsored by National Science Foundation (NSF), USA, for Re-Os geochronological work in the Central India.
Professor W. Sprigg, University of Arizona, Tucson, AZ, USA	Submitted a project, led by Professor W. Sprigg, related to source characterization of dust storms over SW-USA. Participation as Consultant (on contract). Awaiting review report and result. Working on High resolution dust-source mask using space observations.

Dr. S. Nickovic, WMO, Geneva, Switzerland and Belgrade, Serbia. And Dr. A. Vukovic, University of Belgrade, Serbia	Remote sensing and modeling of dust storms.
Dr. G. Asrar, Pacific Northwest National Laboratory Richland, WA United States	Himalayan Snow and Glacier cover and Impact of climate change.
Dr. H. El-Askary, Chapman University, CA, USA	Remote sensing characterization of African and Asian dust storms.
Dr. J. Luvall, NASA/NSSTC Huntsville, AL, USA	Development of pollen source mask and multi-species pollen phenology using hyperspectral and super-spectral satellite and ground measurements.
Dr. S. Singh, AGL, ISM Dhanbad	Mineral exploration using hyperspectral satellite observations over Singhbhum region, Jharkhand
Dr. P.N.S. Singha Roy, AGP, ISM DhANBAD	Survey grade dual frequency GPS receiver. Application over Jharia Coal Basin.
Central Institute of Mining and Fuel Research, Dhanbad	Adsorption of methane on various geological materials
Northern Carbon Research Laboratories, Newcastle upon Tyne, UK	CO ₂ adsorption on various geological materials
Hokkaido University, Japan	Kerogen Petrology
GSI, IIT-Kharragpur,	Research & Publication work
NGRI-Hyderabad,	Research & Publication work
GeoMysore (India) Pvt Ltd	Research & Publication work
PRL, Ahemdabad	Research & Publication work
Central Ground Water Board	Monitoring of Ground water levels in Artificial Recharge structures in ISM Campus

3.2.5 IMPORTANT NEW EQUIPMENT ACQUISITIONED (ABOVE ₹ 5,00,000/-)

Name of Equipment	Purpose	Date of Purchase	Value (₹)
Stereo-zoom Binocular Microscopes	Class purpose	03.09.2015	JPY11,88,000/-
Binocular Microscope (Leica)	For students of Applied Geology Department, Coal Geology Laboratory.	Feb., 2016	Euro €29,400.
Trinocular polarizing microscope with fluorescence attachment	Petrographic analyses of coal, shale and kerogen	Dec 2015	28,100 Euro (20.80 lakh approx..)
Table Top Thin Sectioning Machine	Teaching and Research	09/02/15	Rs. 14,38,130.00

3.2.6 RESEARCH PUBLICATIONS

3.2.6.1 Book reviews / contribution of chapters in a book

Sukanta Dey (2015) ‘Geological history of the Kaladgi-Badami and Bhima basins, south India: sedimentation in Proterozoic intracratonic set-up’. In: Mazumder, R. & Eriksson, P. G. (eds) 2015. Precambrian Basins of India: Stratigraphic and Tectonic Context. Geological Society, London, Memoirs, 43, 283–296, <http://dx.doi.org/10.1144/M43.19>.

3.2.6.2 Papers published in International Journals

Sl. No.	Author (s)	Year	Title	Journal	Vol. No.	Page No.
1.	Mohanty, S.	2015	Precambrian continent assembly and dispersal events of South Indian and East Antarctic Shields.	International Geology Review	v.57 (16)	1992-2027
2.	Mohanty, S.P., Barik, A., Sarangi, S., and Sarkar, A.	2015	Reply to the discussion on: “Carbon and oxygen isotope systematics of a Paleoproterozoic cap-carbonate sequence from the Sausar Group, Central India” by Anupam Chattopadhyay (2015) published in Palaeogeography, Palaeoclimatology, Palaeoecology 433, 156-157.	Palaeogeography, Palaeoclimatology, Palaeoecology	438	425–427.
3.	Deepanker Asthana, Harshavardhan Kumar, S. Balakrishnan, Qunke Xia and Min Feng	2016	An early Cretaceous analogue of the ~2.5 Ga Malanjkhand porphyry Cu deposit, Central India	Ore Geology Reviews	72	1197-1212
4.	Sunmin Park, Hesham El-Askary, Ismail Sabbah, Hanbin Kwak, Anup K Prasad, Woo-Kyun Lee, Menas Kafatos	2015	Studying Air Pollutants Origin and Associated Meteorological Parameters over Seoul from 2000 to 2009	East Asia	15	24
5.	Hesham el-Askary, SK Park, MH Ahn, A Prasad, Menas Kafatos	2015	On the Detection and Monitoring of the Transport of an Asian Dust Storm Using Multi-Sensor Satellite Remote Sensing	Journal of Environmental Informatics	25(2)	99-116
6.	Sahoo. P.R. and Venkatesh, A.S.	2015	Constraints of mineralogical characterization of gold ore: Implication for genesis, controls and evolution of gold from Kundarkocha gold deposit, eastern India	Journal of Asian Earth Sciences,	v. 97,	136-149

7.	Hazra, B. Varma, A.K., Bandopadhyay, A.K., Mendhe, V.A., Singh, B.D., Saxena, V.K., Samad, S.K., Mishra, D.K.,	2015	Petrographic insights of organic matter conversion of Raniganj basin shales, India.	International Journal of Coal Geology	Vol.15 0-151,	193-209
8.	Mendhe, V.A., Misra, S., Varma. A.K, Singh,A.P.,	2016	Coalbed methane-produced water quality and its management options in Raniganj Basin, West Bengal	App Water Sci	DOI 10.1007/s13201-015-0326-7.	
9.	Kainthola .A, Singh, P.K, Verma, D , Singh, R ., Sarkar,K and Singh,T.N	2015	Prediction of Strength Parameters of Himalayan Rocks: A Statistical and ANFIS Approach	Geotechnical and Geological Engineering	33	1255-1278
10.	Satapathy, I and T. H. Syed	2015	Characterization of groundwater potential and artificial recharge sites in Bokaro District, Jharkhand (India), using remote sensing and GIS-Based techniques	Environmental Earth Sciences	74(5), doi:10.1007/s12665-015-4474-8.	4215-4232,
11.	Soni, A. and T. H. Syed	2015	Diagnosing land water storage variations in major Indian river basins using GRACE observations	Global and Planetary Change	113, doi:10.1016/j.gloplacha.2015.09.007.	263-271
12.	Sethy, S. N., T. H. Syed, A. Kumar and D. Sinha	2016	Hydrogeochemical characterization of groundwater in parts of Southern Gangetic plain	Environmental Earth Sciences	75:232, doi:10.1007/s12665-015-5049-4.	
13.	S. Mohanty, A. Barik, S.Sarang, A.Sarkar	2015	Carbon and oxygen isotope systematics of a Paleoproterozoic cap-carbonate sequence from the Sausar Group, Central India (Reply to comment)	Palaeogeography, Palaeoclimatology, Palaeoecology	438	425-428.
14.	Penelope J. Lancaster , Sukanta Dey, Craig D. Storey, Anirban Mitra, Rakesh K. Bhunia	2015	Contrasting crustal evolution processes in the Dharwar craton: Insights from detrital zircon U–Pb and Hf isotopes	Gondwana Research	28	1361-1372

3.2.6.3 Papers published in National Journals

Sl. No.	Author (s)	Year	Title	Journal	Vol. No.	Page No.
1	Mohanty, S.	2015	Seismotectonics of the Indian Plate Interior: Insights From Geodetic Strain Patterns	Journal of Engineering Geology	Special Publication, October 2015	1175-1181.

2	Khan, I., Sahoo, P.R. and Rai, D. K.	2015	Geological set up of low grade copper ores at Mundiawas-Khera area, Alwar district, Rajasthan.	Geological Survey of India, Special Publication	101	43-58
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3.2.6.4 Paper presented in International Seminars/ Conferences

Sl. No.	Author (s)	Title	Seminar/ Conference	Date	Place
1.	Mohanty, S.	Significance of crustal stress / strain patterns determined from focal mechanism solutions and geodetic movements of the Indian Plate interior	26 th General assembly of International Union of Geodesy and Geophysics (IUGG)	22 nd June to 2 nd July 2015	Prague, Czech Republic
2.	Prasad, A.K., Sahoo, S., Venkatesh, A.S., Vukovic, A., Nickovic, S., Sprigg, W.A.	Oral presentation "Modeling of dust source over southwest USA using multisensor data"	SPIE Asia-Pacific Remote Sensing, International Conference	4 - 7 April 2016	New Delhi, India
3.	Patel, S., Prasad, A.K., Sarkar, B.C., Sprigg, W.A.	Flood risk analysis in the Eastern Ganga Plains: an assessment of flood inundation mapping algorithm using MODIS data (2000-2015)	SPIE Asia-Pacific Remote Sensing, International Conference	4 - 7 April 2016	New Delhi, India
4.	Desinayak, N., Prasad, A.K.; El-Askary, H., Menas Kafatos, M., Asrar, G.	Status of meltwater lakes in Himalaya and Tibetan Plateau using long-term MODIS observations (2000-2015)	SPIE Asia-Pacific Remote Sensing, International Conference	4 - 7 April 2016	New Delhi, India
5.	Dey, A., Mukherjee, S., Sanyal, S., Dutta., U. , Sengupta, P.	Petrology and in situ monazite dating of a suite of metapelites in and around Dindigul, Tamil Nadu, India: Evidence of ultra high temperature metamorphism in parts of Madurai Province during mid Neoproterozoic time	In: Abstract Volume of the International Conference on Electron Microscopy and 36th annual meeting of the Electron microscope society of India.	2015	Indian Institute of Technology, Bombay
6.	Goswami, P., Paul, S., Bardhan, S., Das, S., Mallick, S., Buragohain, D.	Unveiling the lower Miocene gastropod diversity trend of Kutch, India	Annual Meeting of Geological Society of America	1-4 November 2015	Baltimore, Maryland, USA
7.	Goswami, P., Das, S., Bardhan, S., Mallick, S., Paul, S.	Drilling gastropod predation on the lower Miocene gastropod assemblages from Kutch, western India: Spatiotemporal implications	Annual Meeting of Geological Society of America	1-4 November 2015	Baltimore, Maryland, USA

8.	Varma, A.K., Misra, S., Chakraborty, S., Das, S.K., Hazra, B., Patil, D.J., Singh B.D., Biswas, S., Samad, S.K.	Effect of igneous intrusion on hydrocarbon generation behavior of coal seam in Jambad area, Raniganj basin, India. In: J. Kus, P. David, S. Kalaitzidis, H-M. Schulz & R.F. Sachsenhofer (Eds.). Schriftenreihe der Deutschen Gesellschaft für Geowissenschaften, ICCP Program & Abstract Book. Heft 87, 65.	67 th Annual Meeting of the International Committee for Coal and Organic Petrology	September 5-11, 2015	Potsdam, Germany
9.	Sahoo, S.K., Suresh, N., Varma, A.K.	2016. Studies on separation of macerals from coal by froth flotation. Proc. of Int. Seminar on Mineral processing Technology (MPT-2016), pp 98-109.	International Seminar on Mineral Processing Technology (MPT-2016),	5-7 January, 2016	Pune
10.	Varma A.K. , Mishra, D.K., Mendhe, V.A., Samad, S. K.	Hydrocarbon Generation Potential of Shale gas from Auranga Basin, Jharkhand. Poster Presentation at	6 th World PetroCoal Congress	15-17 February 2016,	New Delhi, India
11.	Varma, A. K. , Khatun, M., Mendhe, V.A., Hazra, B., Singh, B.D. and Dayal, A.M.	Petrographic characterization and Langmuir volume of shales from Raniganj coal basin, India.	J.Geol.Soc. India,.	Vol. 86 (3),	283-294
12.	Sinha, D. and Syed, T.H.	Assessment of Drought in the Four Major River Basins of India using Precipitation and Satellite Based Water Storage Variations	International Conference on Water, Environment, Energy & Society, AISECT University, Bhopal	March 15 th - 18 th , 2016.	Bhopal

3.2.6.5 Papers presented in National Seminars/Conferences

Sl. No.	Author (s)	Title	Seminar/Conference	Date	Place
1.	Panigrahi, D.C. and Varma, A.K.	Coal bed methane and shale gas: Opportunities and Challenges	no pohskroW lanoitaN laoC fo segnellaH seirtsudnI saG desaB ,p12-9 ,sevitaretla dna	yaM ht11 .2015	-RISC ,RFMIC dabnahD

2.	Varma, A.K., Satabdi Misra, Supriyo Kumar Das, Sanki Biswas, Bodhisatwa Hazra, Sudeshna Chakraborty,Dattatra y J. Patil, Devleena Mani,Bhagwan D. Singh, Suresh Kumar Samad ,	The hydrocarbon generation potential of coal and shale in Raniganj basin, India.,p.45, Indian Society of Applied Geochemists and Atomic Minerals Directorate for Exploration and Research.	National Symposium on Current trends in Geochemistry and Environment	15-16 October 2015,	Hyderabad
3.	Varma,A.K., Biswas, S., Misra,S., Hazra,B., Saxena,V.K.,Singh, B.D., Patil,D.J. Mani,D.Samad,S.K. Sahoo,A. and Anwita,	Petrographic characteristics for hydrocarbon generation potential of coal, shale and sandstone of Barjora area,Raniganj coal basin,West Bengal. Proceedings of 102 nd Indian Science Congress,Part II: Abstracts of Oral / Poster Presentations, Earth System Sciences, 43/O ,117p.	102 nd Indian Science Congress	3-7 Jan 2016,	Mysuru
4.	Varma,A.K. Samad,S.K., Mendhe,V.A., Hazra,B., Daheria,T.Tiwari,B., and Mishra,D.K.	Petrographic characteristics for hydrocarbon generation potential of coal, shale and sandstone of Barjora area,Raniganj coal basin,West Bengal. Proceedings of 102 nd Indian Science Congress,Part II: Abstracts of Oral / Poster Presentations, Earth System Sciences, 53/P ,130p.,	102 nd Indian Science Congress,	3-7 Jan 2016	Mysuru
5.	Sarkar, B. C.	Geo-statistical modelling and characterization of rainwater harvested ground water level in and around ISM Campus Dhanbad, Jharkhand (Keynote paper)	BHUAL MANTHAN – A National Dialogue on Clean and Sustainable Ground Water (organized by Central Ground Water Board).	August 21, 2015	Kurukshet ra

3.2.7 MAJOR ACADEMIC CONTRIBUTIONS

- Setup of GPS ground stations for field campaigns and working on estimation of surface displacement over Jharia basin using dual frequency survey grade receivers. Quality control and analysis of field GPS data for assessment of movement of stations with accuracy mm level in positioning.
- New adopted algorithm to determine fraction of inundated areas and temporal filling of gaps in satellite data to identify and characterize flood affected regions (Flood Hazard) using daily satellite datasets.

- Assessment of snow cover and melt-water lakes hazard over Himalayan mountain range.
- Prof. A K Varma has observed: Organic matter present in shales control methane sorption significantly. Mineral matter of shales also appears to have influence on methane sorption properties.
- Prof. B. C. Sarkar received Dr. J. Coggin Brown Memorial Gold Medal 2014-15 for outstanding contribution in Geological Sciences from MGMI, Kolkata in September 2015.
- Completed writing and proof reading of the Book on 'Essentials of Mineral Exploration and Evaluation' for publication by Elsevier, USA jointly with Dr. S. M. Gandhi and final acceptance for publication conveyed by Elsevier in March 2016.
- Principal Coordinator and Nodal Officer of the CGWB funded project on Rain Water Harvesting at ISM Campus.
- Geo-mathematical Modelling and Characterization of Rainwater Harvested Groundwater Level in and around ISM Campus Dhanbad, Jharkhand.

3.2.8 SEMINARS, SYMPOSIA, WORKSHOPS, CONFERENCES ORGANIZED BY THE DEPT/CENTRE

Training Course, "Geological Mapping of Jharia Coal field" sponsored by Ministry of Earth Science (MoES), New Delhi, Govt., at EDC, ISM Dhanbad	7-16 March, 2016
INSPIRE Training Camp for School Students. Member of organizing committee (from Applied Geology)	15-19 December, 2016
Organised AAPG student meet at ISM, Dhanbad	13-15 March, 2015 .
Workshop on "Numerical Simulation of Landslide Studies", Organized by Dept. of Mining Engineering, ISM Dhanbad,	15 th February- 17 th February 2016

3.2.9 PARTICIPATION OF FACULTY/OFFICERS/STAFF IN SEMINARS/ CONFERENCES ETC

Prof. S Mohanty	International Conference, 26 th IUGG General Assembly	22.06.2015-02.07.2015	Prague, Czech Republic
Dr. Anup K. Prasad,	SPIE Asia-Pacific Remote Sensing, International Conference	4 - 7 April 2016	New Delhi, India
Dr. Anup K. Prasad	"Geological Mapping of Jharia Coalfield" sponsored by Ministry of Earth Science (MoES), New Delhi, Govt.	March 7-16, 2016	EDC, ISM Dhanbad
Dr M. K. Mukherjee	4 th Annual International Conference on Geological and Earth Sciences (GEOS 2015) Emerging Materials: Characterization and Application at Singapore	5-6 October 2015	Singapore

Prof. Atul K.Varma	Participated in 67 th Annual Meeting of the International Committee for Coal and Organic Petrology	September 5-11, 2015	Potsdam, Germany
Prof. B. C. Sarkar	BHUJAL MANTHAN	August 21, 2015	Kurukshetra
Prof. B. C. Sarkar	Workshop on Proactive Approach Mining & Sustainable Mining India by MEAI MEAI Goa Chapter	January 9, 2016	Goa

3.2.10 VISITS OF FACULTY MEMBERS ABROAD

Prof. Atul K.Varma visited Potsdam, Germany during 3-12 September 2015.

3.2.11 TESTING SERVICES (Lab Facilities Available for Testing in the Department / Centre)

Kerogen Petrology, coal, coke, hydrogenation residue, fly ash and charpetrography. Ore, Coal, Mineral sample preparation, thin section, polished section and mineral separation through equipments procured from DST-FIST Level-II support (Vibratory Cup, Magnetic Barrier Laboratory Separator, Table Top Specimen Cutter, Vacuum Impregnation Instrument, Laboratory Jaw Crusher, Table Top Thin Sectioning Machine, Petro bond Thin Section Fixture, Pulveriser Disc Mill, Mineral Separator, Grinder Polisher).

3.2.12 DISTINGUISHED VISITORS TO THE SCHOOL (INDICATING OCCASION/PURPOSE)

Two Guests from Venezuela.	Organized visit of Guests from Venezuela to AGL department. Primary task was progress and evaluation of Foreign (Venezuelan) M.Tech PEX students.
Dr. N. K. Verma	Director, Oil and Natural Gas Commission visited on 13th March 2015

3.2.13 SPECIAL LECTURES BY DISTINGUISHED GUESTS

N.L.Sharma Memorial lecture by Prof. A.K.Gupta, Director, WIHG, Dehradun	11 th February 2015
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3.2.14 MISCELLANEOUS : ANY OTHER RELEVANT INFORMATION

Prof. S Mohanty:

PhD supervised: Degree Awarded

Panda, M. K. (2016). Influence of Geotechnical Properties of Rock mass and Explosive Behavior on Overbreak in Tunnelling with Controlled Blasting. (183 pages)

Dr. Pranab Das:

Received DST project

DST (SERB) sponsored Project entitled "Geochemical characterization of Malangtoli volcanics and emplacement mechanism over Singhbhum Granite in and around Kendujhar district Odisha" (Money sanctioned Rs. 25, 73, 560).

Dr. A K Prasad:

- Member, Organizing body (from Applied Geology), INSPIRE camp held during 15-19 December 2016. Visiit to Geological Museum, Classroom, Laboratories.
- Progress report and presentation for DST-FIST level-II (Applied Geology).
- M. Tech, Petroleum Exploration, Faculty Course Co-ordinator.
- Treasurer, ISM Alumni Association. Management of SIT grants, Alma Connect and other activities of ISMAA.
- Designed and incorporated two new courses, 'Image Processing' and 'Atmosphere, Ocean and Climate Dynamics' with practical component in the 3 year MScTech and 5 year Integrated M.Tech in Applied Geology.

Dr. P R Sahoo:

- Received National Geoscience Award, 2013 in the field of Mineral Discovery and Exploration. from the Honourable President of India at Rastrapati Bhawan on 06.04.2015.
- Completed two consultancy projects (1.14 laks and 0.85 laks) as CI along with Prof A. S. Venkatesh.
- Co-CI of two ongoing Consultancy projects (total cost Rs. 14,00,000/-). The details of the project has been furnished by Prof. A S Venkatesh, the CI of the consultancy project.

Dr. M K Mukherjee:

- Dr. M. K. Mukherjee won the Best Research Paper Award in the 4th Annual International Conference on Geological and Earth Sciences (GEOS 2015) at Singapore during 5-6 October 2015 for the paper: Deformation scenario and Low-grade metamorphism of the Mesoproterozoic cover rocks of the Kaladgi basin, Southwestern India.
- Dr. M. K Mukherjee as Faculty Advisor of AAPG Students Chapter, Department of Applied Geology, ISM Dhanbad, organized the Annual Students Meet during 13-15th March 2015 which was presided over by Mr. Narendra Kumar Verma, MD & CEO, ONGC Videsh Limited and also organized a talk by him on 13.03.2015 on "Peak oil: Reality or Mirage?".
- Dr. M. K Mukherjee as Faculty Advisor of AAPG Students Chapter, Department of Applied Geology, ISM Dhanbad, organized a distinguished guest lecture by Dr. Jeetendra M Avasthi (AISM 1966 batch), President, Avasthi and Associates Inc. Worldwide Energy Consulting, USA on 8th February 2016 in Department of Applied Geology, ISM Dhanbad. Dr. Avasthi deliberated on "Optimizing Shale Gas and Tight Oil Fields".

- Dr. M. K. Mukherjee as Faculty-in –Charge, Placement in the Department of Applied Geology, has facilitated the placement process with concerted coordination between the industries, the T&P cell and the Students.

Prof. A S Venkatesh:

- Completed two consultancy studies, (One as CI and other as CO-CI).
- Ph D Examiner for Utkal University, March, 2016
- Invited Member, CGPB, GSI, Kolkata
- Resource Person for Trainee Scientific officers of Atomic Minerals Directorate and Exploration (BARC training school) on “ore geology” at Hyderabad in 2015

Prof. A K Varma:

- Delivered lecture on “Origin of Shale Gas and Shale Gas Reservoir Characterization” under Certificate Course on “Advanced shale gas drilling and production techniques” on 1st June 2015 organized in ISM, Dhanbad

Prof. B C Sarkar:

- Prof. B. C. Sarkar was elected as Vice-President of Indian Geological Congress, Roorkee.
- Prof. B. C. Sarkar was assigned as the Chairman, Committee on ISM-Industry Institute Interaction Facility at Kolkata and New Delhi.
- Prof. B. C. Sarkar was the Co-chairman, Technical Session, Workshop on ‘Proactive Approach to Sustainable Mining in India’ by MEAI Goa Chapter, 09 January 2016, Goa.
- Prof. B. C. Sarkar delivered a series of course lectures on ‘Coal Resource Evaluation’ to the participants of Coal India Ltd Training programmes.

3.3 APPLIED GEOPHYSICS

3.3.1 ABOUT THE DEPARTMENT

The Department of Applied Geophysics was established in 1957. The Department offers 5- Year integrated M. Sc. Tech., 3-Years M.Sc.Tech. programme, M.Tech. and Ph. D Programme.

3.3.1.1 Vision: To achieve excellence in academics and research programme for providing technological and societal development of the nation in the field of applied geophysics.

3.3.1.2 Mission:

- (i) To develop a department of premier geophysical education and research to cater the need of the nation in the field of mineral, oil/gas and groundwater exploration.
- (ii) To pursue and excel in identified thrust research areas addressing the challenges of industry and society in the global context.
- (iii) To set up centres of excellence in emerging geophysical technologies.
- (iv) To establish interaction with industry and other premier technical institutes of the country for exchange of ideas and technical expertise.
- (v) To collaborate with foreign universities of repute in the emerging areas of applied geophysics.

3.3.2 FIELD VISITS/EXCURSIONS/TRAINING PROGRAMMES UNDERTAKEN BY STUDENTS

Particulars	Batch of Students	Place of Visit	Period of visit
Three Years M. Sc. Tech (AGP), and Five Years Integrated M. Sc. Tech (AGP) Pre-final Year Winter Geophysical Field Training. Training is conducted by Faculty members: Prof. P.R. Mohanty, Prof. Shalivahan and Dr. Saumen Maiti	36+13=49	Jaduguda-Narwa Phahar, Uranium Corporation of India Limited (UCIL)	December 13, 2015 to December 24, 2015

3.3.3 BRIEF LIST OF ON-GOING R&D PROJECTS(PROJECT VALUE ₹ 5,00,000/- AND ABOVE)

1.	Project Title : Geodynamic Modeling of the Eastern Subduction Margin of India Sponsoring Agency : Department of Science and Technology, Govt. of India, New Delhi Coordinator (s) : Prof. P.K. Khan (Coordinator) Project Value : ₹ 28.44 Lakhs Date of Commencement : 29.07.13 Date of Completion : 28.07.16 Objective : Seismotectonic modeling of the central segment of the eastern subduction margin of India, Gravity modelling of the fine structure of the descending lithosphere and the overriding plate over the central segment, Finite element stress modeling of the descending lithosphere and the overriding plate over the central segment. Status : Continuing Findings : Research works going smoothly, One research paper accepted in international journal
2.	Project Title : Seismic Hazard Estimation for Bihar-Jharkhand Using GPS strain, seismicity and seismic study Sponsoring Agency : Ministry of Earth Sciences(MoES), Govt. of India Coordinator (s) : Principal Investigator Dr. P. N. Singha Roy; Co-PI Dr S. K. Pal Project Value : ₹ 139.786 Lakhs Date of Commencement : 01.09.13 Date of Completion : 31.08.18 Objective : GPS Study for estimating Crustal Deformation related to Bihar Nepal 1934 Earthquake zone. Meteorological study for entire Bihar-Jharkhand region with GPS technology. Status : Ongoing Findings : Ongoing
3.	Project Title : Delineation of blind faults and its geometry around Kishanganj via Bayesian neural network inversion of gravity data Sponsoring Agency : Ministry of Earth Sciences(MoES), Govt. of India Coordinator (s) : Dr. Saumen Maiti (Coordinator) Project Value : ₹ 38.567 Lakhs Date of Commencement : 19.06.15 Date of Completion : 18.06.18 Objective : To delineate blind faults using gravity method. To estimate the possible faults geometry via Bayseain neural network-based global nonlinear inversion scheme. Status : Ongoing Findings : Ongoing
4.	Project Title : Geotechnical characterization of Jharia Coal field area using geophysical techniques Sponsoring Agency : Department of Science and Technology, Govt. of India Coordinator (s) : Dr. S.K. Pal, (PI) and Dr. P. N. S. Roy (Co-PI) Project Value : ₹ 35.55 Lakhs Date of Commencement : 21.05.14 Date of Completion : 20.05.17 Objective : Cavity detection and coal seam characterization Status : Ongoing Findings : Ongoing

5.	Project Title : Estimation of Crustal Stress and Development of Geo-Mechanical Earth models for few oil/gas fields of Eastern India Sponsoring Agency : Ministry of Earth Sciences Coordinator (s) : Prof. Rima Chatterjee Project Value : ₹ 22.8 Lakhs Date of Commencement : 24.11.12 Date of Completion : 24.11.15 Objective : (a) Analysis of Well log data for estimation of petrophysical parameters (b) Determination of rock mechanical parameters, In-situ stress (c) Pore Pressure prediction from seismic and well log data (d) Development of geomechanical models Status : Completed Findings : Evaluation of Petrophysical parameters Rock properties estimation Gemechanical models development Pore pressure prediction from seismic and well logs Estimation of Stress Magnitudes
6.	Project Title : Seismic and resistivity imaging for detection of subsurface cavities associated with coal workings Sponsoring Agency : DST, Newdelhi Coordinator (s) : Prof. P.R.Mohanty Project Value : ₹ 15.62 lakhs Date of Commencement : 1.10.13 Date of Completion : 30.09.16 Objective : Subsurface cavities detection by seismic and resistivity imaging Status : Ongoing Findings : Resistivity modelling results could detect water filled cavities associated with old coal working whereas seismic modelling results indicates presence of air filled and water filled cavities.
7.	Project Title : An integrated geophysical approach for tectonic study in Moher main coal basin of Singrauli coal field using 3D inverse modeling of gravity, magnetic and AMT data Sponsoring Agency : CIL, Kolkata Coordinator (s) : Dr. Upendra K. Singh Project Value : ₹ 351.00 lakhs Date of Commencement : 31.03.15 Date of Completion : Sept., 2017 Objective : Delineation of tectonic features using integrated geophysical approach Preparation of 3D density/susceptibility/resistivity model over the Moher basin Singrauli (Madhya Pradesh) Status : Going on Findings : Data acquisition id going on
8.	Project Title : Magnetotelluric Investigations in the Geothermal Province of Bakreshwar, West Bengal, India Sponsoring Agency : DST Coordinator (s) : Prof. Shalivahan Project Value : ₹ 19.63 Lakhs Date of Commencement : Oct., 2013 Date of Completion : Sep., 2016 Objective : Locating geothermal reservoir, Identification of geologic/tectonic controls of reservoir location, and Delineation of geothermal fluid flow-paths. Status : Going on Findings : Ongoing

3.3.4 IMPORTANT COLLABORATIVE WORKS

Organization/Laboratory	Nature of Interaction
National Geophysical Research Institute (NGRI), Hyderabad	Gravity Modeling, Study of Anisotropy, Petro-physical Inversion, Seismic and Well Data Sharing and interpretation of Seismic data.
Indian Meteorological Department (IMD), New Delhi	Earthquake hazard analysis
Institute of Seismological Research (ISR), Gandhinagar	Seismotectonics
National Institute of Rock Mechanics (NIRM), Bangalore	Geotechnical Modeling
Indian Institute of Geomagnetism (IIG), Navi Mumbai	Water resources modeling
National Remote Sensing Center (NRSC), Indian Space Research Organization (ISRO), Balanagar, Hyderabad	Joint research collaboration
Space Application Center (SAC), Indian Space Research Organization (ISRO), Ahmedabad	Joint research collaboration

3.3.5 IMPORTANT NEW EQUIPMENT ACQUISITIONED (ABOVE ₹ 5,00,000/-)

Name of Equipment	Purpose	Date of Purchase	Value (₹)
Tormino All-in-one Geophone System	Geotechnical characterization, micro seismic studies	December, 2015	15 Lakh
Acelerated Weight Drop	Seismic Energy Source for Geotechnical characterization, micro seismic studies	March, 2016	15 Lakh
Standard Proton Gradiometer, M/S GEM System, Inc., Canada	To measure total intensity of earth's magnetic field for magnetic survey	April, 2016	Approx. ₹ 21,00,000.00
Potassium Vapour Gradiometer, M/S GEM System, Inc., Canada	To measure total intensity of earth's magnetic field for magnetic survey	March, 2016	Approx. ₹ 18,00,000.00
Total Station, Trimble (two systems)	Position, location and navigation	April, 2016	₹ 25,00,000.00
Computer workstation (Dell)	Geophysical computation	May, 2016	₹ 5,47,000.00

3.3.6 RESEARCH PUBLISHED

3.3.6.1 Book reviews/contribution of chapters in a book

Chapters in Book

- (1) Rima Chatterjee, Suman Paul, Dip Kumar Singha, and Manoj Mukhopadhyay, 2015. Over pressure Zones in Relation to In Situ Stress for the Krishna-Godavari Basin, Eastern Continental Margin of India: Implications for Hydrocarbon Prospectivity. In: Soumyajit Mukherjee (Ed.), Petroleum Geosciences: Indian Contexts. Springer Geology, Springer International Publishing, Switzerland, pp127-142. DOI 10.1007/978-3-319-03119-4_5
- (2) Prabir Kumar Pal, Suman Paul and Rima Chatterjee, 2015. Estimation of In-situ Stress and Coal Bed Methane Potential of Coal Seams from Analysis of Well Logs, Ground Mapping and Laboratory Data in Central Part of Jharia Coalfield – An Overview. In: Soumyajit Mukherjee (Ed.), Petroleum Geosciences: Indian Contexts. Springer Geology, Springer International Publishing, Switzerland, pp143-173. DOI 10.1007/978-3-319-03119-4_6

3.3.6.2 Papers published in International Journal

Sl. No.	Authors(s)	Year	Title	Journal	Vol. No.	Page No.
1.	Telesca, L., Lovallo, L., Aggarwal, S.K., Khan, P.K., Rastogi, B.K.	2016	Visibility Graph Analysis of the 2003–2012 Earthquake Sequence in the Kachchh Region of Western India	Pure and Applied Geophysics.	173	125–132
2.	Telesca, L., Lovallo, M., Aggarwal, S.K., Khan, P.K.	2015	Precursory signatures in the visibility graph analysis of seismicity: An application to the Kachchh (Western India) seismicity	Physics and Chemistry of the Earth	85-86	195-200
3.	Aggarwal, S.K., Lovallo, M., Khan, P.K., Rastogi, B.K., Telesca, L.	2015	Multifractal detrended fluctuation analysis of magnitude series of seismicity of Kachchh region, Western India	Physica A	426	56-62
4.	Sharma, N.K., Khan, P.K., Bhukta, K.K.	2015	Nature of the Moho in the mid-eastern part of the Chotanagpur Plateau, India, from a receiver function perspective	Arabian Journal of Geosciences	8	5669-5675
5	Roy, P.N.S., Chowdhury, S., Sarkar, P., and Mondal, S.K.,	2015	Fractal study of Seismicity in order to characterize the various tectonic block of North East Himalaya, India	Natural Hazards	77(1)	S5-S18

6	Gupta, D., Bhowmick, D., and Roy, P.N.S.,	2015	Himalayan hazard study on the basis of stress and strain state of 1991 Uttarkashi earthquake using Coulomb stress transfer model	Geomatics, Natural	6(2)	131-148
7	Roy, P.N.S. and Gupta, D.K.,	2015	Fractal analyzer: A MATLAB application for multifractal seismicity analysis	Seismological Research Letters	86(5)	1-8
8	Mondal, S. K., Borghi, A., Roy, P.N.S., and Aoudia, A.,	2016	GPS, scaling exponent and past seismicity for seismic hazard assessment in Garhwal and Kumaun Himalayan region,	Natural Hazards	80	1349-1367
9	Chingtham, P., Yadav, R.B.S., Chopra, S., Yadav, A.K., Gupta, A.K., Roy, P.N.S.,	2016	Time-dependent seismicity analysis in the Northwest Himalaya and its adjoining regions	Natural Hazards	80	1783-1800
10	Gupta, G., Patil, J.D., Maiti, S., Erram, V.C., Pawar, N.J., Mahajan, S.H., and Suryawanshi, R.A.,	2015	Electrical resistivity imaging for aquifer mapping over Chikotra basin, Kolapur District, Maharashtra.	Environmental Earth Sciences,	73(12),	8125-8143
11	Pal, S. K.; Vaish, J., Kumar, S.; Bharti, A. K	2015	Coalfire mapping of East Basuria Colliery, Jharia coal field using Vertical Derivative Technique of Magnetic data	Journal of Earth System Science	125(1)	165-178
12	Ranjan, S. K., Pal, S. K., and Singh, K. K .K.,	2015	An approach to improve shallow surface investigation using Joint analysis of Rayleigh and Love waves	Current science	109(7)	1239-1242
13	Vaish, J., and Pal, S. K.	2015	subsurface coal fire mapping of East Basuria Colliery, Jharkhand	Journal of the Geological Society of India	86(4)	438-444.
14	Pal, S. K. and Majumdar, T. J.,	2015	Geological appraisal over the Singhbhum-Orissa Craton, India using GOCE, EIGEN6-C2 and in-situ gravity data	International Journal of Applied Earth Observations and Geoinformation	35	96-119.
15	Vaish, J., and Pal, S.K.,	2015	Geological mapping of Jharia Coalfield, India using GRACE EGM2008 gravity data: a vertical derivative approach	Geocarto International	30(4)	388-401

16	Kumar, R., Das, B., Chatterjee, R. and Sain, K	2016	A Methodology of Porosity Estimation from Inversion of Post-Stack Seismic Data	Journal of Natural Gas Science and Engineering	28	356-364
17	Gorain, S., Shalivahan, and Thakur, P	2015	Uncertainty in Attribute Based Inversion for quantification of stock tank oil initially in place (STOIP) estimation in Kalol reservoir, Cambay basin, India	The Leading Edge	34(9)	1058-1060
18	Maurya, V.P., Shalivahan, Bhattacharya, B.B., Adhikari, P.K. and Das, L.K.,	2015	Preliminary magnetotelluric results across Dalma Volcanics, Eastern India: Inferences on metallogeny	Journal of Applied Geophysics	115	171-182
19	Koduru, A and Mohanty,P.R.,	2015	Application of Post stack migration to seismic data associated with fault structures	Open Geosciences	7	162-173
20	Singh, A., and Singh, U.K.,	2015	Wavelet analysis of Residual Gravity Anomaly profiles: Modeling of Jharia Coal Basin, India	Journal of Geological Society of India	86	679-686
21	Ghosh, S., Chatterjee, R. and Shanker, P.,	2016	Estimation of Ash, Moisture Content and Detection of Coal Lithofacies from Well logs using Regression and Artificial Neural Network Modelling	Fuel	177	279-287

3.3.6.3 Papers published in National Journal

Sl. No.	Authors(s)	Year	Title	Journal	Vol. No.	Page No.
1	Gupta, G., Erram, V. C., and Maiti, S.,	2015	Geoelectrical investigation for potential groundwater zones in parts of Ratnagiri and Kolhapur districts, Maharashtra	Journal Indian Geophysical Union	19(1)	27-38
2	Pal S.K., Ranjan, S.K., Kumar Rajwardhan, Yadav R.K., Singh K K K.	2015	Utilization of Multimode Surface Wave Dispersions for Improving of Shallow Surface Characterization	Journal of Engineering Geology	Special Volume 1/2015	61-64

3	Bharti A.K., Pal S.K., Priyam Piyush, Narayan Satya, Pathak, V. K., Sahoo, S.D.	2015	Detection of Illegal Mining over Raniganj Coalfield using Electrical Resistivity Tomography	Journal of Engineering Geology	Special Volume 1/2015	65-69
4	Kumar Sahadev, Pal S.K., Vaish, J., Shalivahan	2015	Utilization of Magnetic Gradient Method for Coal Fire Mapping of Chatabad Area, a Part of Jharia Colafield, India.	Journal of Engineering Geology	Special Volume 1/2015	170-176
5	Chatterjee, R.,and Paul, S.,	2016	Coal Bed Methane Exploration and Possibility for CO ₂ Sequestration in Jharia Coalfield, India	Journal of Indian Geophysical Union	Special Volume 1/2016	37-41
6	Chatterjee, R.,	2015	In-situ Stress, Pore Pressure, Geomechanical Modeling: An Aid to Reservoir Delineation and Development	Journal Indian Geological Congress	7(1)	25-37
7	Sinha B, and Mohanty,P.R	2015	Post stack inversion for reservoir characterization of KG basin associated with gas hydrate prospects	Indian Geophysical Union	19(2)	200-204

3.3.6.4 Papers presented in International Seminars/Conferences

Sl. No.	Authors(s)	Title	Seminar/Conference	Date	Place
1	Pandey, Auchitya and Roy, P. N. S.	Site Characterization of the North-East Region of India using H/V Technique on Earthquake Data.	52 nd Indian Geophysical Union (IGU)-2015	3-5 November, 2015.	NCAOR, Goa, India
2	Mukherjee, Bappa and Roy, P. N. S.	Bed boundary identification using wavelet and Fourier transforms for upper Assam shelf basin, N-E, India.	52 nd Indian Geophysical Union (IGU)-2015	3-5 November, 2015.	NCAOR, Goa, India
3	Sahana, Sonali and Roy, P. N. S.	The seismicity pattern study using scale invariant property of recent 25 th April 2015 Nepal Earthquake (7.8Mw) sequence.	30 th Himalayan-Karakoram-Tibet Workshop-2015	06-08 October, 2015.	WIHG, Dehradun, India
4	Mukherjee, Bappa and Roy, P. N. S.	Comparative study for Unconventional tools application in reservoir characterisations for Bhogpara, N-E,	37 th Annual Convention AEG-2015	15-17 October, 2015.	Jaipur, India
5	Singh, A., and Maiti, S.,	Optimum wavelet selection: Application to geophysical well log data	Indian Geophysical Union (IGU), 2015	November 3-5, 2015	National Centre for Antarctic and Ocean Research (NCAOR), Goa-403804.

6	Maiti, S.,	Fault geometry estimation via Bayesian neural network inversion of gravity data	Indian Geophysical Union (IGU), 2015	November 3-5, 2015	National Centre for Antarctic and Ocean Research (NCAOR), Goa-403804.
7	Singh, A., and Maiti, S.,	Classification of lithology: Use of multivariate statistics and hybrid neural network modelling.	Indian Geophysical Union (IGU), 2015	November 3-5, 2015	National Centre for Antarctic and Ocean Research (NCAOR), Goa-403804.
8	Das, A., Maiti, S., Gupta, G., and Erram, V.C.,	Estimation of aquifer parameters from surface geo-electrical method.	Indian Geophysical Union (IGU), 2015	November 3-5, 2015	National Centre for Antarctic and Ocean Research (NCAOR), Goa-403804.
9	Singh, B., Srivardhan, V., and Maiti, S.,	Detection of minerals using particle swarm optimization based inversion of self potential data.	Indian Geophysical Union (IGU), 2015	November 3-5, 2015	National Centre for Antarctic and Ocean Research (NCAOR), Goa-403804.
10	Maiti, S., Sen, M.K., Das, A., Gupta, G., and Erram, V.C.,	Groundwater quality index forecasting using automatic relevance determination model.	Indian Geophysical Union (IGU), 2015	November 3-5, 2015	National Centre for Antarctic and Ocean Research (NCAOR), Goa-403804.
11	Priyadarshi, S., and Maiti, S.,	Effect of de-noising strategies in seismic wavelet estimation using generalized inversion.	Indian Geophysical Union (IGU), 2015	November 3-5, 2015	National Centre for Antarctic and Ocean Research (NCAOR), Goa-403804.
12	Karmakar, M., Maiti, S., and Ojha, M.,	Pore pressure study using downhole data of integrated ocean drilling program (IODP) Expedition 323	Indian Geophysical Union (IGU), 2015	November 3-5, 2015	National Centre for Antarctic and Ocean Research (NCAOR), Goa-403804.
13	Seth, V., Srivardhan, V., Maiti, S.,	Evaluation of formation shaliness using factor analysis of site –U1344A of IODP expedition 323 in the Bering Sea	77 th EAGE Conference and Exhibition 2015	June 1-4, 2015	Madrid, Spain
14	Maiti, S., and Ojha, M.,	Modeling and classification of marine sediment using multivariate statistics and hybrid neural computation.	Society of Petroleum Geophysicists (SPG),	December 4-6, 2015	Jaipur, India

15	Singh, B.B., Srivardhan, V., Pal, S.K., Kanagaraju, S.K., Kumar S. and Vaish, J.,	Particle Swarm Optimization Inversion of Self Potential Anomaly for Detecting Coal Fires, a Case Study - Jharia Coal Field	Third Sustainable Earth and Sciences conference in Celle, Germany, EAGE, DOI: 10.3997/2214- 4609.201414282	13 October 2015	Celle, Germany
16	Srivardhan, V., and Pal, S. K	Shale Volume Estimation Using Factor Analysis and Neural Network	6th International Geosciences Student Conference	13-16 July, 2015	Prague, the Czech Republic
17	Pal, S. K.,Kumar U, Majumdar, T. J.,	Utilization of High resolution GOCE gravity data for mapping of gravity field and structures Western offshore, India.	5th International GOCE User Workshop	25-28 November	UNESCO, Paris, France.
18	Barala,S.S and Mohanty,P.R.	Effects of different parameters on interferometric redatumed source-receiver array	SEG New Orleans International Exposition and 85 th .Annual meeting,New Orleans,USA	October 18- 23,2015	New Orleans, USA

3.3.6.5 Papers presented in National Seminars/Conferences

Sl. No.	Authors(s)	Title	Seminar/Conference	Date	Place
1	Pathak V.K., Narayan S., Kumar Ujjawal, Goswami O.P. and Pal S.K.,	Structural mapping over Singhbhum- Orissa Craton, India using high resolution EGM2008 gravity data and in situ gravity data.	52 nd Annual Convention of Indian Geophysical Union (IGU)	3-5 November, 2015.	NCAOR, Goa
2	Kumar Rajwardhan, Bharti, A.K. Kumar Sahadev and Pal S.K.,	Delineation of Underground cavities Using Electrical Resistivity Tomography (ERT) method	52 nd Annual Convention of Indian Geophysical Union (IGU)	3-5 November, 2015.	NCAOR, Goa
3	Priyam P., and Pal S.K.,	Interpretation of Bouguer gravity data by spectral analysis and downward continuation, over parts of Rajmahal trap area	52 nd Annual Convention of Indian Geophysical Union (IGU)	3-5 November, 2015	NCAOR, Goa
4	Singh Rashmi and Pal S.K.,	Detection of coal fire zone in Patherdih Colliery, Dhanbad using magnetic modeling.	52 nd Annual Convention of Indian Geophysical Union (IGU)	3-5 November, 2015	NCAOR, Goa
5	Ranjan S. K., Yadav R.K. and Pal S.K.	Near surface characterization using multi modes of love wave.	52 nd Annual Convention of Indian Geophysical Union (IGU)	3-5 November, 2015	NCAOR, Goa

3.3.7 MAJOR ACADEMIC CONTRIBUTIONS

3.3.8 SEMINARS, SYMPOSIA, WORKSHOPS, CONFERENCES ORGANIZED BY THE DEPT/CENTRE

Geoconfluence – 2016, All India Students Meet	January 22-24, 2016
A Short Course on “Application of Advanced Geophysical Methods for Rock Physics Modeling and Monitoring Seismicity in Mines Safety” organized by Dr. Rima Chatterjee	Dec. 7-11, 2015 at ISM Industry Institute Interaction Facility at Kolkata

3.3.9 PARTICIPATION OF FACULTY/OFFICERS/STAFF IN SEMINARS/ CONFERENCES ETC

Dr. S. K. Pal	International Conference on Engineering Geology in New Millennium” (EGNM)	27-29 October, 2015	IIT, Delhi
Prof. Rima Chatterjee	In-situ Stress, Pore Pressure, Geomechanical Modeling: An Aid to Reservoir Delineation and Development	7 th Prof. Prem Bahadur Verma Memorial Lecture, Sept. 11, 2015	Kurukshetra University
Prof. Rima Chatterjee	Estimation of Crustal Stress, Pore Pressure and Development of Geo-Mechanical Earth models for Oil/Gas Bearing Formations of Krishna-Godavari Basin	Invited Lecture, February 12, 2016	IDT, ONGC, DehraDun
Prof. Shalivahan	26th IUGG GENERAL ASSEMBLY 2015, June 22- July 2, 2015	June 22-July 2, 2015	Prague, the Czech Republic
Dr. U. K. Singh	04 lectures were delivered in the Workshop entitle “Application of Wavelet Transform and Development” organised by Dr. Akhilesh Prasad, Associate Professor in the Department of Applied Mathematics, ISM Dhanbad.	December 14-18, 2015	ISM Dhanbad.

3.3.10 VISITS OF FACULTY MEMBERS ABROAD

Special Talk Given by Prof. P.K. Khan in the Department of Mathematics and Geosciences, University of Trieste, Italy

1. Seismic source processes in the Himalayan region: “Challenges for seismic hazard assessment” on 09/12/2015
2. Seismic source processes along the Myanmar-Andaman-Sumatra margin: seismotectonic insights for Tsunami hazard on 16/12/2015

3.3.11 DISTINGUISHED VISITORS TO THE SCHOOL (INDICATING OCCASION/PURPOSE)

Dr O. P. Mishra, DDG/Scientist F, Ministry of Earth Sciences	Chief Guest for “Geoconfluence – 2016” Inaugural Function
Dr D. Haldar, Chief Geophysicist(Wells), ONGC, Bokaro (CBM Asset)	Chief Guest for “Geoconfluence – 2016” Valedictory Function

3.3.12 SPECIAL LECTURES BY DISTINGUISHED GUESTS

Dr. Arindam Guha, Scientist SE, Geosciences Group, NRSC, ISRO, Balanagar, Hyderabad	Guest lecture on “Hyperspectral Remote Sensing”
Padmashree Prof. H. K. Gupta, Distinguished Scientist, NGRI, Hederabad	Guest lecture on “Earthquake awareness and mitigation”.
Dr. Thappar, President International Geophysical Company, Tulsa, USA	Guest lecture on “Fundamental of seismic survey design seismic data acquisition and processing of AVO and seismic attributes”.
Mr. Samit Mandal, Reliance Industries Limited (RIL)	Guest lecture on “Reservoir characterization and formation pressure”.
Dr. Rajib Sinharoy, RIL	Guest lecture on “Control source electromagnetism and marine magneto-telluric for hydrocarbon exploration”.

3.3.13 MISCELLANEOUS: OTHER RELEVANT INFORMATIONS

a. Consultancy project completed

1. Pal, S. K.(CI), Singh, U.K. (Co-CI), Shalivahan(Co-CI),,and Mohanty, P. R. (Co-CI), 2015, Electrical Resistivity Tomography for ground water investigation near Govindpur road, Dhanbad. ISM Ref. No.: CONS/3104/2015-16. Funded by M/s Castron technologies Ltd, Total cost: Rs.50,000.00
2. Pal, S. K.(CI), Singh, U.K. (Co-CI), Shalivahan(Co-CI),,and Mohanty, P. R. (Co-CI), 2015, Observation on the reports of wreck site of River Princes at Siquerim-Candolim Goa. ISM Ref. No.: CONS/3034/2015-16. Funded by Director of Tourism, Govt. of Goa, Total cost: Rs.2,00,000.00
3. Pal, S. K.(CI), Singh, U.K. (Co-CI), Shalivahan(Co-CI),,and Mohanty, P. R. (Co-CI), 2015, Cavity detection study for Rail infrastructure around Maithon Power Plant using Integrated Electrical Resistivity Tomography. ISM Ref. No.: CONS/2707/2014-15. Funded by M/s Larsen & Toubro Limited RC Maithan Project, Total cost: Rs.26,82,000.00

3.4 APPLIED MATHEMATICS

3.4.1 ABOUT THE DEPARTMENT

The Department of Physics and Mathematics was established since the inception of Indian School of Mines in 1926 and was given an independent status in 1989 as Department of Applied Mathematics. The Department provides an outstanding research environment complemented by excellent teaching for its students to flourish in different arena of academics and industry as well. The department offers academic programs leading to the award of M. Sc. (Mathematics and Computing), Integrated M. Tech. (Mathematics and Computing), M. Phil. (Applied Mathematics) and Ph. D. degree. The Department is well equipped with highly qualified faculty members and supportive advanced computational labs. Apart from this, the department takes care of Mathematical input to all undergraduate courses and post graduate courses of Engineering and Science currently running in ISM. It is also leading various sponsored project received by UGC, CSIR, NBHM, DST, ISRO etc. The department provides high quality education, research and training in Applied Mathematics with excellent computing knowledge & practices for its students to flourish in different arena of academics and industry.

3.4.1.1 Vision: To be the best centre in Science faculty for greater application in industry around.

3.4.1.2 Mission:

- i. To provide excellent environment for overall skill development in Mathematics & Computing
- ii. To enrich knowledge of theory and applications of applied mathematics, computing and statistics
- iii. To provide high-performance computing facility for teaching and research.
- iv. To provide workforce for University, reputed technical R&D institutes, research labs in country and abroad

3.4.2 BEST PRACTICES OF THE DEPARTMENT

- i. Organized Workshop on High-Performance Computing (WHPC) in collaboration with C-DAC Pune, Short Term Courses & Science Academy Lectures.
- ii. Conducted lectures of eminent scientists and different events under umbrella of Society of Applied Mathematics(SAM)

3.4.3 BRIEF LIST OF ON-GOING R & D PROJECTS (PROJECT VALUE ₹ 5,00,000/- AND ABOVE)

1.	Project Title : Study of Torsional wave in anisotropy and non-homogeneous media Sponsoring Agency : CSIR, New Delhi Coordinator (s) : Prof. S. Gupta (PI) & Dr. S. Kundu (Co-PI) Project Value : ₹ 10.5 lakhs (approx.) Date of Commencement : December 2013 Date of Completion : December 2016 Objective : Investigation on existence of Torsional wave. Status : Ongoing Findings : Ongoing
2.	Project Title : Modeling the spatiotemporal complexity of Eco-epidemiological systems: A dynamical system Approach. Sponsoring Agency : UGC, New Delhi Coordinator (s) : Prof. R. K. Upadhyay Project Value : ₹. 3.495 Lakhs Date of Commencement : 01.04.2013 Date of Completion : 31.03.2016 Objective : To develop some reaction-diffusion model for epidemiological system and study its spatiotemporal dynamics, wave of chaos phenomena in 1D spatial model system. Also study the conservation dynamics of Iberian Lynx population in Europe. Status : Ongoing Findings : Seven research papers have been published.
3.	Project Title : A Pair of Fractional Powers of Bessel Wavelet Transforms and Pseudo-Differential Operators Sponsoring Agency : CSIR:Project No. 25(0240)/15/ EMR-II Coordinator (s) : Dr. Akhilesh Prasad Project Value : ₹ 15 Lakhs Date of Commencement : October 1, 2015 Date of Completion : September 30, 2018 Objective : To develop the theory of wavelets/wavelet transforms and pseudo-differential operators using the technique of Hankel/fractional Hankel transform. Status : Ongoing Findings : One paper communicated for possible publication in a reputed international journal.
4.	Project Title : Stability and Chaos in Photogravitational N-body Problem with Solar Wind Drag Sponsoring Agency : ISRO-DOS Govt. of India Coordinator (s) : Dr. B.S. Kushvah Project Value : ₹ 16.97 Lakhs Date of Commencement : June 11, 2013 Date of Completion : June 10, 2016 Objective : 1. Formulation of model and integrals of the motion 2. Study of Sun-Earth and Earth-Moon systems: (a) Singularities and existence of equilibrium points (b) Halos and Invariant Manifolds (c)Orbits (periodic/quasi periodic) around equilibrium points (d) Transfer of trajectories

	Status :	3. Stability and Chaos Ongoing
	Findings :	Two papers ready to communicate
5.	Project Title :	Study of various graph domination problems on restricted graph classes
	Sponsoring Agency :	DST-SERB
	Coordinator (s) :	Dr. Dinabandhu Pradhan
	Project Value :	₹ 17.672 Lakhs
	Date of Commencement :	21/08/2015
	Date of Completion :	20/08/2018
	Objective :	Theoretical and algorithmic study of the various domination problems
	Status :	Ongoing
	Findings :	Polynomial time algorithms for the problems

3.4.4 IMPORTANT COLLABORATIVE WORKS

Prof. G. S. Seth

Sl. No	Organization/lab	Nature of Interaction
1	Faculty of Military Science, Stellenbosch University, Private Bag X2, Saldanha 7395, South Africa.	Collaborative Scientific Research work
2	Mechanical Engineering Department, Prince Mohammad Bin Fahd University, Al-Khobar-31952, Kingdom of Saudi Arabia.	Collaborative Scientific Research work

Prof. R. K. Upadhyay

1.	Department of Mathematics, School of Mathematical and Physical Sciences, University of Sussex, Falmer, Brighton, UK, BN1 9RF	Collaborative Scientific research work
2.	Department of Mathematics, Clarkson University, Potsdam, NY 13699, USA	Collaborative Scientific research works.
3.	Mathematics Group, BITS Pilani – 333 031, India	Collaborative Scientific research works.
4.	School of Basic Sciences, Indian Institute of Technology Mandi, Mandi, Himachal Pradesh 175 001, India	Collaborative Scientific research works.
5.	Department of Mathematics, National Institute of Technology, Raipur – 492010, India	Collaborative Scientific research work
6.	Centre for Mathematics, Central University of Orissa, Koraput 764020, Odisha, India	Collaborative Scientific research work
7.	Ecological Modelling Laboratory, Department of Zoology, VisvaBharati University, Santiniketan 731 235, WB, India	Collaborative Scientific research work

Dr. S. Chatterjee

Sl. No	Organization/lab	Nature of Interaction
1	Department of Industrial and Systems Engineering, Rutgers, The State University of New Jersey, USA	Collaborative Scientific research works.

Dr. M. K. Singh

Sl. No	Organization/lab	Nature of Interaction
1	Department of Mathematics, Faculty of Science, BHU, Varanasi	Scientific research and Development of Mathematical techniques under joint research activity
2	Department of Civil & Environmental Engineering, Biological and Agricultural Engineering, Texas A and M University, 321 Scoates Hall, 2117 TAMU, College Station Texas 77843-2117, USA	Scientific research and Development of Mathematical techniques under joint research activity
3	Department of Earth Sciences, Perugia University, Perugia, Italy	Scientific research and Development of Mathematical techniques under joint research activity

Dr. S. P. Tiwari

Sl. No.	Organization/lab	Nature of Interaction
1.	Banaras Hindu University, Varansai	Collaborative research work on fuzzy topology and theoretical computer science is going on. One research papers has been accepted for publication.
2.	Yazd University, Iran	Collaborative research work on theoretical computer science. One research papers has been accepted.
3.	Institute for Research and Applications of Fuzzy Modeling, University of Ostrava, Czech Republic	Collaborative research work on F-transform. Two papers have been submitted for publication.

Dr. P. S. Rao

Sl. No	Organization/lab	Nature of Interaction
1	IIT, Hyderabad, Computing Laboratory. (Prof P A. Laxminarayana, Department of Mathematics).	Stability of Fluid Flow Interactions in Porous Media Heat Transfer

Dr. B. S. Kushvah

Sl. No	Organization/lab	Nature of Interaction
1	IUCAA Pune	Project under India-Japan Cooperative Science Programme (IJCSP) (submitted)

Dr. G. K. Vishwakarma

Sl. No	Organization/lab	Nature of Interaction
1	IIT, Indore	Collaborative research work
2	Vikram University, Ujjain -456010, M.P., India	Collaborative research work
3	Banasthali University, Jaipur- 304022, Rajasthan, INDIA	Collaborative research work

3.4.5 IMPORTANT NEW EQUIPMENT ACQUISITIONED (ABOVE ₹ 5,00,000/-)

High End Workstation with 3 GPUs under DST-FIST Project (₹ 5.40Lakh)

3.4.6 RESEARCH PUBLICATIONS

3.4.6.1 Paper published in International Journals/Conferences

Sl. No.	Author(s)	Year	Title	Journal	Vol. No.	Page No.
1	S.A.Sahu, B.Paswan , A. Chattopadhyay	2016	Reflection and transmission of plane waves through isotropic medium sandwiched between two highly anisotropic half-space	Waves in Random and Complex Media	26 (1)	42-67
2	A.K.Singh , Nirmala Kumari, A. Chattopadhyay &Sanjeev A Sahu	2016	Smooth Moving Punch in an Initially Stressed Transversely Isotropic Magnetoelastic Medium due to Shear Wave	Mechanics of Advanced Materials and Structures	23(7)	774-783
3	M.Chatterjee, S.Dhua, A.Chattopadhyay and S. A. Sahu	2016	Seismic waves in heterogeneous crust-mantle layers under initial stresses	Journal of Earthquake Engineering	20(1)	39-61
4	A.K.Singh, S.Kumar and A.Chattopadhyay	2016	Propagation of Torsional Waves in a Fibre Composite Layer lying over an Initially Stressed Viscoelastic Half-Space	International Journal of Geomechanics.	16(1)	
5	M.Chatterjee, S.Dhua, A. Chattopadhyay	2015	Response of moving load due to irregularity in slightly compressible, finitely deformed elastic media	Mechanics Research Communications	66	49-59
6	P. K. Saroj, S. A. Sahu, S. haudhary, A. Chattopadhyay	2015	Love Type Waves in Functionally Graded Piezoelectric Material (FGPM) Sandwiched Between Initially Stressed Layer and Elastic Substrate	Waves in Random and Complex Media	25(4)	608-627

7	A.K.Singh, Z.Parween, M.Chatterjee and A. Chattopadhyay	2015	Love-type wave propagation in a pre-stressed viscoelastic medium influenced by smooth punch	Waves in Random and Complex Media	25(2)	268-285
8	A.K.Singh, A.Das, Z.Parween & A. Chattopadhyay	2015	Influence of initial stress, irregularity and heterogeneity on Love wave propagation in a double pre-stressed irregular layers lying over a pre-stressed half-space	J Earth SystSci	124	1457-1474
9	S.Dhua, A. Chattopadhyay	2015	Torsional wave in an initially stressed layer lying between two inhomogeneous media	Meccanica	50(7)	1775-1789
10	A.K.Singh, Amrita Das, Amares Chattopadhyay, Sudarshan Dhua	2015	Dispersion of shear wave propagating in vertically heterogeneous double layers overlying an initially stressed isotropic half-space	Soil Dynamics and Earthquake Engineering	69	16-27
11	M.Chatterjee and A. Chattopadhyay	2015	Propagation, reflection and transmission of SH-waves in slightly compressible, finitely deformed elastic media	Applied Mathematics and Mechanics	36(8)	1045-1056
12	A.K.Singh, S.Kumar and A. Chattopadhyay	2015	Love-type wave propagation in a piezoelectric structure with irregularity	International Journal of Engineering Science	89	35-60
13	S. Dhua, A Chattopadhyay and S. A. Sahu	2015	Propagation of Surface Wave in a Fluid Layer Overlying a Slightly Compressible, Finitely Deformed Elastic Medium	Journal of Vibration and Control	21(13)	2697-2704
14	G. S. Seth and S.Sarkar	2015	MHD Natural Convection Heat and Mass Transfer Flow Past a Time Dependent Moving Vertical Plate with Ramped Temperature in a Rotating Medium with Hall Effects, Radiation and Chemical Reaction	J. Mechanics	31	91-104
15	G. S. Seth, S. Sarkar and R. Nandkeolyar	2015	Unsteady Hydromagnetic Natural Convection Flow Past an Impulsively Moving Vertical Plate with Newtonian Heating in a Rotating System	J. Appl. Fluid Mech.	8(3)	623-633

16	G. S. Seth and S. Sarkar	2015	Hydromagnetic Natural Convection Flow with Induced Magnetic Field and nth Order Chemical Reaction of a Heat Absorbing Fluid Past an Impulsively Moving Vertical Plate with Ramped Temperature	Bulg. Chem. Comm.	47 (1)	66-79
17	G. S. Seth, P. K. Mandal and R. Sharma	2015	Hydromagnetic Couette Flow of Class-II and Heat Transfer through a Porous Medium in a Rotating System with Hall Effects	J.Math. Modelling	3(1)	48-74
18	G. S. Seth, B. Kumbhakar and S. Sarkar	2015	Soret and Hall Effects on Unsteady MHD Free Convection Flow of Radiating and Chemically Reactive Fluid past a Moving Vertical Plate with Ramped Temperature in Rotating System	Int. J. Eng. Sci. Tech.	7(2)	94-108
19	G. S.Seth,B. Kumbhakar and R. Sharma.	2015	Unsteady Hydromagnetic Natural Convection Flow of a Heat Absorbing Fluid within a Rotating Vertical Channel in Porous Medium with Hall Effects	J. Appl. Fluid Mech.	8(4)	767-779
20	G. S. Seth, A. K. Singha and R. Sharma	2015	MHD Natural Convection Flow with Hall Effects, Radiation and Heat Absorption over an Exponentially Accelerated Vertical Plate with Ramped Temperature.	Ind. J. Sci. Res. tech.	3(5)	10-22.
21	G. S. Seth, R. Tripathi and R. Sharma	2015	Natural Convection Flow past an Exponentially Accelerated Vertical Ramped Temperature Plate with Hall Effects and Heat Absorption	Int. J. Heat Tech.	33(3)	139-144
22	G. S. Seth, S. Sarkar and J. K. Singh	2015	Hydromagnetic Couette Flow of Class-II in a Rotating System with Hall Effects	OPJIT Int. J. Innovation & Research	4(1)	1-8
23	G. S. Seth and J K Singh	2016	Mixed Convection Hydromagnetic Flow in a Rotating Channel with Hall and Wall Conductance Effects	Appl. Math. Modelling	40(4)	2783-2803

24	R.K. Upadhyay, Rashmi Agrawal	2016	Dynamics and responses of a predator-prey system with competitive interference and time delay	Nonlinear dynamics	83	821-837
25	N.K. Thakur,S.K. Tiwari, R.K.Upadhyay,	2016	Harmful Algal blooms in fresh and marine water systems: the role of TPP	International journal of Biomathematics	9(3)	16500 431-20
26	D. Rana, Parshad, Emmanuel Quansah, Kelly Black, R.K.Upadhyay, S.K. Tiwari, Nitu Kumari	2016	Long time dynamics of a three-species food chain model with Allee effect in the top predator	Computer and Mathematics with Applications	71	503-528
27	D. Jana , Rashmi Agrawal, R.K. Upadhyay	2015	Dynamics of generalist predator in a stochastic environment: Effect of delayed growth and prey refuge	Applied Mathematics and Computation	268	1072-1094
28	R.K. Upadhyay, S.K Tiwari, Parimita Roy	2015	Complex dynamics of wetland ecosystem with nonlinear harvesting: Application to Chilika Lake in Odisha, India	International Journal of Bifurcation and chaos	25(7)	15400 161-25
29	R.K. Upadhyay, ArghaMondal	2015	Dynamics of fractional order Modified Morris Lecar neural model	Network Biology	5(30)	113-136
30	G. N. Singh,D. Majhi, S. Maurya, and A.K. Sharma	2015	Some effective rotation patterns in estimation of population mean in two-occasion successive sampling	Communications in Statistics-Theory & Methods	44 (12)	2571-2585
31	A. A. and G.N. Singh	2015	Estimation of population variance in two-phase sampling in presence of random non-response	Pakistan Journal of Statistics and Operation Research	11(4)	525-542
32	S. Chatterjee, and Arunava Roy	2015	Novel Algorithms for Web Software Fault Prediction	Quality and Reliability Engg. International, John Wiley & Sons	31	1517-1535
33	S. Chatterjee, and Arunava Roy	2015	Application of non-decimated wavelet packet transfer function in web error prediction	Int. Journal of Systems Assurance Engg. & Management Springer	6	407-433
34	S. Chatterjee and A. Shukla	2016	Effect of Test Coverage and Change Point on Software Reliability Growth Based on Time Variable Fault Detection Probability	Journal of Software	11	110-117

35	A. Prasad, P. Kumar and S. Kumar	2015	Pseudo-differential operators associated with the fractional powers of Hankel-Clifford integral transformations	Investigations in Mathematical Sciences	5 (1)	19-27
36	A. Prasad and S. Kumar	2015	Wavelet transformation associated with second Hankel-Clifford transformation	Natl. Acad. Sci., Lett.	38(6)	493–496
37	A. Prasad and K. Mahato	2015	Two variants fractional powers of Hankel integral transforms of arbitrary order	Ann. Univ. Ferrara	61 (2)	309-331
38	A. Prasad and P. Kumar	2015	The continuous fractional wavelet transform on generalized weighted Sobolev spaces	Asian-Eur. J. Math.	8 (3), Article ID: 1550054	11 pages
39	A. Prasad and P. Kumar	2016	Fractional continuous wavelet transform on some function spaces	Proc. Natl. Acad. Sci., Sect. A Phys. Sci.	86(1)	57-64
40	A. Prasad and P. Kumar	2016	Pseudo-differential operator associated with fractional Fourier Transform	Math. Commun.	21	115-126
41	S.P. Tiwari, Vijay K. Yadav and A.K. Singh	2015	Construction of a minimal realization and monoid for a fuzzy language: a categorical approach	Journal of Applied Mathematics and Computing	47	401-416
42	S.P.Tiwari, Anupam K. Singh, Shambhu Sharan and V. K. Yadav	2015	Bifuzzy core of fuzzy automata	Iranian Journal of Fuzzy Systems	12	63-73
43	S. Sharan, S.P. Tiwari and Vijay K. Yadav,	2015	Interval type-2 fuzzy rough sets and interval type-2 fuzzy closure spaces	Iranian Journal of Fuzzy Systems	12	113-125
44	S.P. Tiwari, Vijay K. Yadav and K Anupam Singh,	2015	On algebraic study of fuzzy automata	International Journal of Machine Learning and Cybernetics,	6	479-485
45	I. Perfilieva, A. Pratap Singh and S.P. Tiwari	2015	On the relationship among F-transform, fuzzy rough set and fuzzy topology	Advances in Intelligent Systems Research	89	888-894.
46	S.P. Tiwari and Shambhu Sharan,	2015	Products of rough finite state machines,	Journal of Multiple - Valued Logic and Soft Computing	25	339-356
47	S.P. Tiwari, Vinay Gautam and B. Davvaz	2015	On minimal realization for a fuzzy language and Brzozowski's algorithm	Journal of Intelligent and Fuzzy Systems,	29	1949-1956

48	S.P. Tiwari, Vijay K. Yadav and M.K. Dubey	2016	Minimal realization for fuzzy behaviour: A bicategory-theoretic approach	Journal of Intelligent and Fuzzy Systems,	30	1057-1065
49	V. K. Srivastava, J. Kumar, S. Kulshrestha, B S Kushvah	2016	Mars solar conjunction prediction modeling	ActaAstronautica	118	246-250
50	V. K. Srivastava, J. Kumar, S.Kulshrestha, A. Srivastava, M K Baskar, B S Kushvah, P. Shiggavi, D. A Vallado	2015	Lunar shadow eclipse prediction models for the Earth orbiting spacecraft: Comparison and application to LEO and GEO spacecrafts	ActaAstronautica	110	206-213
51	V. K. Srivastava, J. Kumar, S. Kulshrestha, B S Kushvah, M K Bhaskar, S Somesh, M.V. Roopa, B.N. Ramakrishna	2015	Eclipse modeling for the Mars Orbiter Mission	Advances in Space Research	56(4)	671-679
52	R. Mia, B.S. Kushvah	2016	Orbital Dynamics of Exoplanetary Systems Kepler-62, HD 200964 and Kepler-11	Monthly Notices of the Royal Astronomical Society	457	10892-1100
53	G.K. Vishwakarma and M. Kumar	2015	A general family of dual to ratio-cum-product estimators of population mean in simple random sampling	Chilean Journal of Statistics, ISSN: 0718-7920, Chilean Statistical Society, Chile	6, 2,	69-79
54	G.K. Vishwakarma, R. Singh, P.C. Gupta, and S. Pareek	2016	Improved ratio and product type estimators of finite population mean in simple random sampling	Revista Investigacion Operacional, ISSN: 0257- 4306, Universidad de La Habana, Cuba	37, 1,	70-76
55	G.K. Vishwakarma, Sayed, Md.Z.and M. Kumar	2016	Improved ratio and product type estimators of finite population mean in two-phase sampling	International Journal of Statistics and Economics, ISSN: 0975-556X, CESER Publication, India	17, 1,	31-40
56	P S Rao & S Agarwal	2015	A Comparison of Porous Structure on the Performance of a Slider Bearing with Surface Roughness in Couple Stress Fluid Film Lubrication	Applied Mechanics and Materials	813-814	921-937

57	A.K. Singh, S. Kumar, A. Chattopadhyay,	2015	Love-type wave propagation in a piezoelectric structure with irregularity	International Journal of Engineering Science	89	35-60,
58	A. K. Singh, K.C. Mistri, T. Kaur, & A.Chattopadhyay	2015	Effect of undulation on SH-wave propagation in corrugated magneto-elastic transversely isotropic layer	Mechanics of Advanced Materials and Structures		1-50
59	A.K. Singh, A. Das, A. Chattopadhyay, and S. Dhua	2015	Dispersion of shear wave propagating in vertically heterogeneous double layers overlying an initially stressed isotropic half-space.	Soil Dynamics and Earthquake Engineering	69	16-27.
60	A.K. Singh, A. Das, Z. Parween, and A. Chattopadhyay	2015	Influence of initial stress, irregularity and heterogeneity on Love-type wave propagation in double pre-stressed irregular layers lying over a pre-stressed half-space	Journal of Earth System Science	124(7)	1457-1474
61	A.K. Singh, A. Das, S. Kumar and A. Chattopadhyay	2015	Influence of corrugated boundary surfaces, reinforcement, hydrostatic stress, heterogeneity and anisotropy on Love-type wave propagation	Meccanica	50(12),	2977-2994
62	A. K Singh, R. P. Yadav, S. Kumar, & A. Chattopadhyay	2016	Propagation of crack in a pre-stressed inhomogeneous poroelastic medium influenced by shear wave	Engineering Fracture Mechanics	154	191-206
63	T. Kaur, A.K. Singh, A. Chattopadhyay, and S.K. Sharma	2016	Dynamic response of normal moving load on an irregular fiber-reinforced half-space.	Journal of Vibration and Control	22(1)	77-88
64	N. Kumari, A. Chattopadhyay, Sahu, S. A., and A.K. Singh	2015	Edge waves in an initially stressed visco-elastic plate	Journal of Physics: Conference Series	662(1)	p. 012011
65	Y. Lama, Alok Sinha, Gurdeep Singh, S. A.Sahu B.K. Mishra	2016	Modeling the impacts of corrosion product formation on simultaneous sorption and reductive dehalogenation of organochlorine pesticide aldrin by high carbon iron filings (HCIF)	Desalination and Water Treatment (Taylor & Francis)	57(16)	7155-7165
66	P. K. Saroj, S. A. Sahu, S. Chaudhary, A. Chattopadhyay	2015	Love Type Waves in Functionally Graded Piezoelectric Material (FGPM) Sandwiched Between Initially Stressed Layer and Elastic Substrate	Waves in Random and Complex Media(Taylor & Francis)	25(4)	608-627

67	S. A. Sahu, B. Paswan and A. Chattopadhyay	2015	Reflection and transmission of plane waves through isotropic medium sandwiched between two highly anisotropic half-spaces	Waves in Random and Complex Media(Taylor & Francis)	26(1)	42-67
68	Kundu S., Saha A., Gupta S., s. Manna,	2015	Propagation of torsional wave in a non-homogeneous crustal layer over a dry sandy mantle	Meccanica	50(12)	3029-3040
69	A. Saha, S. Kundu, S. Gupta, P.K. Vaishnav,	2015	Love waves in a heterogeneous orthotropic layer under initial stress overlying a gravitating porous half-space	Proc. Indian National SciAcad	81(5)	1193-1205
70	R.B. Kaligatla, S. Koley, T. Sahoo	2015	Trapping of surface gravity waves by a vertical flexible porous plate near a wall.	(ZAMP) Journal of Applied Mathematics and Physics	66	2677-2702
71	H. Behera, R.B. Kaligatla, T. Sahoo	2015	Wave trapping by porous barrier in the presence of step type bottom.	Wave Motion	57	219-230
72	B. S. Panda and D. Pradhan	2015	A linear time algorithm to compute a minimum restrained dominating set in proper interval graphs	Discrete Mathematics, Algorithms and Applications	07	1550020
73	D. Pradhan	2016	On the complexity of the minimum outer-connected dominating set problem in graphs	Journal of Combinatorial Optimizations	31	1-12

3.4.6.2 Paper Published in National Journals/Conferences

Sl. No.	Author(s)	Year	Title	Journal	Vol. No.	Page No.
1	B. Venkataramana, S. Chatterjee and G.K. Vishwakarma	2015	An efficient algorithm to handle the combinatorial sets of network reliability	Mathematical and Computational Sciences, ISSN: 978-81-8487-456-3, Narosa Publishing House	-	86-92

3.4.6.3 Papers presented in International Conferences

Sl No.	Authors	Title	Seminar/ Conference	Date	Place
1	M. Chatterjee, Sudarshan Dhua and Amare Chattopadhyay.	Propagation of shear waves in visco-elastic heterogeneous layer overlying an initially stressed half space.	12th International Conference on Vibration Problems (ICOVP-2015) organized by Dept. of Mechanical Engineering	December 14	IIT Guwahati, India

2	N. Kumari, Abhishek Kumar Singh, Sanjeev Anand Sahu and Amares Chattopadhyay	Effect of gravity and magnetism on surface wave propagation in heterogeneous earth crust	12th International Conference on Vibration Problems (ICOVP-2015) organized by Dept. of Mechanical Engineering	December 14	IIT Guwahati, India
3	G. S. Seth	Effects of viscous dissipation, thermal radiation and non-uniform heat source/sink on MHD flow over an exponentially stretching sheet with exponentially moving free-stream.	International Conference on Recent Trends in Mathematics (ICRTM 2015)	July 10-12, 2015	Department of Mathematics, University of Allahabad
4	G. S. Seth, R. Tripathi and R. Sharma	MHD Double Diffusive Natural Convection Flow with chemical Reaction of a Heat Absorbing and Radiating Fluid past an Exponentially Accelerated Inclined Plate with Ramped Wall Temperature and Ramped Surface Concentration.	International Conference on Recent Trends in Mathematics (ICRTM 2015)	July 10-12, 2015	Department of Mathematics, University of Allahabad
5	G. S. Seth, M. K. Mishra and R. Sharma	"Finite Element Solution of Hydromagnetic Natural Convection Flow of a Viscoelastic Nanofluid with Convective Thermal Boundary Condition over an Inclined Stretching Sheet.	International Conference on Recent Trends in Mathematics (ICRTM 2015)	July 10-12, 2015	Department of Mathematics, University of Allahabad
6	R.K. Upadhyay	Spatiotemporal transmission dynamics of recent Ebola spread and outbreak in West Africa: Impact of control measure	International conference on recent advances in Math. Biol.	June 3-8 2015	AMU, Aligarh
7	S. Chatterjee and A. Shukla	Effect of Test Coverage and Change Point on Software Reliability Growth Based on Time Variable Fault Detection Probability	7th International Conference on Computer Technology and Development-2015	Nov. 21-23, 2015	Singapore
8	S. Chatterjee and A. Shukla	Software reliability modeling with different type of faults incorporating both imperfect debugging and change point	Proceeding of 4th International Conference on Reliability, Infocom Technologies and Optimization-2015	September 2-4, 2015	Amity University, Noida, U.P
9	B.S. Kushvah	Normalization of Vector Fields: Theory and Applications	International Conference on Celestial Mechanics & Dynamical Astronomy	December 15-17, 2015	Maulana Azad National Urdu University, Hyderabad, India
10	N. Kumari, A. K. Singh, S. A. Sahu and A. Chattopadhyay	Effect of Gravity and Magnetism on Surface wave propagation in homogeneous Earth Crust	12th International Conference on Vibration Problems (ICOVP-2015)	December 14-17, 2015.	Indian Institute of Technology Guwahati, Assam, India

11	P S Rao and S Agarwal	A Comparison of Porous Structure on the Performance of a Slider Bearing with Surface Roughness in Couple Stress Fluid Film Lubrication	Int. Conf on Mechanical and Manufacturing Engg.	April 2-3, 2015	SCSV University, Kanchipuram.
12	S. Kundu, S. Gupta, A. Saha and S. Manna	Propagation of Torsional Surface Wave in An Anisotropic Porous Layer over a Non-Homogeneous Substance	SIAM Conference on Mathematical and Computational Issues in the Geosciences (SIAM GS 15)	29th June to 2nd July, 2015	Stanford University, USA

3.4.6.4 Papers presented in National Seminars/Conferences

Sl No.	Authors	Title	Seminar/Conference	Date	Place
1	G. S. Seth	Analysis of Hydromagnetic Natural Convection radiative flow with Soret and Dufour Effects of a visco-elastic nanofluid.	7th WMVC 2015 National Conference on Wave Mechanics and Vibrations during	December 21-23, 2015	Dept. of Applied ISM Dhanbad.
2	B.Mukherjee and Dharmendar Singh	A Production Inventory Model Of Deteriorating Items With Variable Holding Cost And Stock, Selling Price And Time Dependent Demand	7th National Conference on wave Mechanics and vibration	Dec. 21 - 23, 2015	Dept of Appl Maths, ISM, Dhanbad
3	S. Chatterjee and A. Shukla	Modelling and Analysis of Reliability Growth of Software Through S-shaped Coverage Factor and Change Point	7th National Conference On Wave Mechanics & Vibrations	Dec. 21-23, 2015	ISM, Dhanbad
4	M.K. Singh,	Scale dependent Solute Dispersion in Aquifer Systems	32nd and 33rd AHI Annual Convention and National Seminar on Water Resources with a Colloquium on Interlinking Rivers	July10-11,2015	Andhra University, Vishakhapat nam
5	M.K. Singh	Groundwater Contamination and its Mathematical Approaches	Training Programme on Design and Implementation of Rainwater Harvesting System for Augmentation of Rural Water Supply	January 21-23, 2016	ISM Dhanbad.
6	K.C. Mistri, A.K. Singh,	Love-type wave propagation in a corrugated interface between magneto-elastic transversely isotropic stratum and an isotropic substrate	7th National Conference on Wave Mechanics and Vibrations (WMVC)	December 21-23	ISM Dhanbad
7	S. Kumar and A.K. Singh	Mathematical Modelling of Surface Wave Propagation in an Anisotropic Layered Structure under Initial Stress	7th National Conference on Wave Mechanics and Vibrations (WMVC)	December 21-23	ISM Dhanbad
8	R.P. Yadav and A.K. Singh	Dynamic behavior of crack in a poroelastic medium influenced by shear wave	7th National Conference on Wave Mechanics and Vibrations (WMVC)	December 21-23	ISM Dhanbad
9	A. Negi, S. Kumar, A. K. Verma, A.K. Singh	Mathematical modelling of moving load in irregular initially stressed viscoelastic rock medium	7th National Conference on Wave Mechanics and Vibrations (WMVC)	December 21-23	ISM Dhanbad

10		Effect of irregularity on the stresses developed due to moving load in a self-reinforced half-space	7th National Conference on Wave Mechanics and Vibrations (WMVC)	December 21-23	ISM Dhanbad
11	A. Das, A.K. Singh, A. Mondal	Theoretical Investigation on the Propagation of Rayleigh-type Wave in an anisotropic layer overlying an initially stressed isotropic half-space	7th National Conference on Wave Mechanics and Vibrations (WMVC)	December 21-23	ISM Dhanbad

3.4.7 MAJOR ACADEMIC CONTRIBUTIONS

Prof. A. Chattopadhyay

- 1 One student (Mr. Sudarshan Dhua) was awarded Ph.D. on the topic “Theoretical study of seismic wave propagation in layered media” in 2014-15.
- 2 One student (Ms. Mita Chatterjee) submitted her Ph.D thesis on the topic “Theoretical Study of Seismic Wave Propagation in Anisotropic Media” in December 2015

Prof. G. S. Seth

- 1 Editor of the following peer reviewed international journals
- 2 International Journal of Heat and Technology
- 3 Mathematical Modelling of Engineering Problems
- 4 Associate Editor of peer reviewed international journal “Journal of Applied Fluid Mechanics”.
- 6 Editorial board member of peer reviewed international journal “EUREKA: Physical Sciences and Engineering”
- 7 Editorial board member of peer reviewed international journal “Applied Mathematics”.
- 8 Editorial board member of peer reviewed international journal “International Journal of Applied Mathematical Research”.
- 9 Editorial board member of peer reviewed international journal “OPJIT International Journal of Innovation and Research”.
- 10 Member of Board of Advisors of Peer Reviewed National Journal, “Bulletin of the Gauhati University of Mathematics Association”.
- 11 Reviewer of several International Journals such as :

Sl. No. Name of the Journals

- i. Journal of Applied Fluid Mechanics
- ii. International Journal of Thermal Sciences
- iii. International Journal of Engineering, Science & Technology
- iv. International Journal of Energy & Technology
- v. Chemical Engineering Communication
- vi. International Journal of Applied Mechanics.
- vii. Journal of International Academy of Physical Sciences
- viii. Computers and Mathematics with Applications

- ix. Zeitschrift für Naturforschung A
- x. Journal of Porous Media
- xi. Applied Mathematics
- xii. Bulgarian Chemical Communications
- xiii. Latin American Applied Research
- xiv. Journal of Aerospace Engineering
- xv. American Journal of Fluid Dynamics
- xvi. Advances in Mathematical Physics
- xvii. Thermal Sciences
- xviii. Journal of Nature Science and Sustainable Technology
- xix. International Journal of Biomathematics
- xx. International Journal of Geophysics
- xxi. Egyptian Journal of Basic and Applied Sciences
- xxii. Journal of Fluids
- xxiii. World Journal of Engineering and Physical Sciences
- xxiv. International Journal of Computers and Technology
- xxv. Journal of the Taiwan Institute of Chemical Engineers
- xxvi. Physics Research International
- xxvii. Turkish Journal of Physics
- xxviii. Emirates Journal of Engineering Research
- xxix. Applications and Applied Mathematics: An International Journal (AAM) Energy
- xxx. Alexandria Engineering Journal
- xxxi. International Journal of Applied and Computational Mathematics
- xxxii. International Journal Exergy
- xxxiii. Proceedings of The national Academy of Sciences, India Section A: Physical Sciences
- xxxiv. Ain Shams Engineering Journal
- xxxv. Engineering Science and Technology, An International Journal.
- xxxvi. Propulsion and Power Research.
- xxxvii. Journal of Scientific Research.
- xxxviii. Journal of Nanofluid.
- xxxix. Progress in Heat and Mass transfer.

7. Examiner of Ph. D. Thesis of the following Universities: (i) Gauhati University, (ii) Sri Krishnadevaraya University, Anantapur, (iii) Dibrugarh University, (iv) Jadavpur University, (v) Sri Venkateswara University, Tirupati, (vi) NIT Warangal

8. Delivered Invited Talk and chaired a session of invited talk in International Conference on Recent Trends in Mathematics (ICRTM 2015) organized by the Department of Mathematics, University of Allahabad during July 10 to 12, 2015.

9. Chief Guest in the Inaugural Session of the Short Term Advanced Training Programme on “Integral Transformations, Distributions and Wavelet Analysis, during Dec 14-18, 2015.
 10. Delivered Invited Talk and chaired a session of invited talk in 7th WMVC 2015 National Conference on Wave Mechanics and Vibrations during December 21-23, 2015, organized by Department of Applied Mathematics, Indian School of Mines Dhanbad.
 11. Chaired a session in Science Academy’s Lecture Workshop on Fluid Flow through Porous Media and its Application (FTPMA-2015) during December 25-27, 2015, organized by Department of Applied Mathematics, Indian School of Mines Dhanbad.
1. Editorial board member of a peer reviewed international journal from France "Journal of Nonlinear Systems and Applications".
 2. Editorial board member of a peer reviewed international journal from Hong Kong “Computational Ecology and Software”.
 3. Delivered an Invited Talk in INI, Cambridge on 06.10.2015 in the program Coupling geometric PDEs with Physics for Cell morphology, motility and pattern formation.
 4. Invited talk in University of Leicester, UK on 27 Nov 2015.
 5. Reviewer of the following International Journals:
 - i. Journal of Biological Dynamics,
 - ii. Mathematics and computer in Simulations,
 - iii. Applied Mathematical Modeling,
 - iv. Mathematical Biosciences.
 - v. Nonlinear Dynamics.

Dr. Akhilesh Prasad:

- Worked as reviewer of the following Journals:
 1. Integral Transforms and Special Functions (Taylor & Francis)
 2. Transactions on Signal Processing
 3. Journal of Inequalities and Applications (Springer)
 4. Boletim da Sociedade Paranaense de Matemática
 5. Reviewer for Zentralblatt Maths
 6. Annual Membership of American Mathematical Society.

Dr. M. K. Singh

1. Member of professional bodies like International Association of Hydrological Sciences (IAHS), U.K.; American Society of Civil Engineers (ASCE)-EWRI, USA
2. Invited Lecture delivered on the topic “Scale dependent Solute Dispersion in Aquifer Systems”, 32nd and 33rd AHI Annual Convention and National Seminar on

Water Resources with a Colloquium on Interlinking Rivers, July10-11,2015,Andhra University, Vishakhapatnam.

3. Invited Lecture delivered on the topic “Groundwater Contamination and its Mathematical Approaches”, during 3 days Training Programme on Design and Implementation of Rainwater Harvesting System for Augmentation of Rural Water Supply, January21-23, 2016, ISM Dhanbad.
4. Reviewer of ActaGeophysica(Springer), Water Science and Technology (Wiley)and Journal of Hydrologic Engineering (ASCE).
5. Examined Ph.D. thesis of Lucknow University, Lucknow as an External Examiner.

Dr. P.K. Kewat:

1. Reviewer for Mathematical Reviews, American Mathematical Society.
2. Reviewer, Applicable Algebra in Engineering, Communication and Computing.
3. Reviewer, Journal of Applied Mathematics and Computing.

Prof. Bani Mukherjee:

1. Examiner of Ph. D. Thesis of the Department of Mathematics, KIIT Bhubaneswar Odisha on 1 -3 Nov 2015.
2. Delivered special lecture on 3 Nov 2015 at Department of Mathematics, KIIT Bhubaneswar Odisha on 1-3 Nov 2015.
3. Chief Guest in the Inaugural Session of the Conference on “Recent Trends in Computation and Mathematics Analysis in Engineering and Science”, on 20-21 Nov 2015 at Govt. polytechnic, Silli, Ranchi.
4. Delivered Invited Talk in the Conference on “Recent Trends in Computation and Mathematics Analysis in Engineering and Science”, on 20-21 Nov 2015 at Govt. polytechnic, Silli, Ranchi.
5. Delivered invited Talk and chaired the Applied Mathematics all the session research papers in the 2nd bi-annual conference of Jharkhand Society of Mathematical Science on 21-23 Nov 2015 at Post-Graduate Dept of Mathematics, Ranchi College, Ranchi.
6. Chaired a session of invited talk in the Short Term Advanced Training Programme on “Integral Transformations, Distributions and Wavelet Analysis” during Dec 14 - 18, 2015.
7. Chaired a session of invited talk in 7th WMVC 2015 National Conference on “Wave Mechanics and Vibrations” during December 21-23, 2015, organized by Department of Applied Mathematics, Indian School of Mines Dhanbad.
8. Chaired a session in Science Academy’s Lecture Workshop on “Fluid Flow through Porous Media and its Application” (FTPMA-2015) during December 25-27, 2015, organized by Department of Applied Mathematics, Indian School of Mines Dhanbad

3.4.8 SEMINAR, SYMPOSIA, WORKSHOPS, CONFERENCES ORGANIZED BY THE DEPARTMENT

Dr. Akhilesh Prasad:

I have organized a Short Term Advanced Training Programme on “Integral Transformations, Distributions and Wavelet Analysis” during December 14 - 18, 2015.

Dr. M K Singh:

1. Organized Science Academy Lecture Workshop on “Fluid Flow through Porous Media and its Applications” (FTPMA-2015) December 25-27, 2015, ISM Dhanbad as Coordinator.
2. Organized Workshop on “High Performance Computing” (WHPC-2015) July 29-31, 2015, ISM Dhanbad as Convener.

Dr. B S Kushvah(Coordinator):

1. Workshop on “High Performance Computing” (WHPC 2015), Jointly organized by ISM Dhanbad & C-DAC Pune, during July 29-31, 2015

Dr. P S Rao:

1. Workshop on “Computational Methods for Engineers & Scientists” during December 24 – 28, 2015, Organised by the Department of Applied Mathematics.

Funding agency: NBHM, Bombay (1.0 Lac), SERB, DST New Delhi (1.0 Lac): Total: 2.0 Lacs.

Coordinators: Dr P S Rao & Prof P.C. Pal (Retd).

Dr. P. K. Kewat

7th National conference of “Wave Mechanics and Vibrations” (7th WMVC), held at ISM Dhanbad during December 21-23, 2015.

Dr. G K Vishwakarma:

Co-Coordinator of workshop on “Application of Statistical Tools in Research and Data Analysis” (ASTRDA) during Feb 08-11, 2016, Indian School of Mines, Dhanbad, India.

Dr. SA Sahu:

WMVC-2015 (7th National Conference on Wave Mechanics & Vibrations) was organized during December 21-23, 2015.

3.4.9 PARTICIPATION OF FACULTY/OFFICER/STAFF IN SEMINARS/ CONFERENCES ETC

G. S. Seth	International Conference on “Recent Trends in Mathematics” (ICRTM 2015)	July 10-12, 2015	Department of Mathematics, University of Allahabad, Allahabad
G. S. Seth	7th WMVC 2015 National Conference on “Wave Mechanics and Vibrations”	December 14-18, 2015	Department of Applied Mathematics, ISM Dhanbad.
R. K. Upadhyay	7th WMVC 2015& National conference on “Wave mechamnics and vibration”.	December 21-23, 2015	Indian school of Mines, Dhanbad
S. Chatterjee	7th International Conference on “Computer Technology and Development-2015”	Nov, 21-23, 2015	Singapore
S. Chatterjee	Modelling and Analysis of Reliability Growth of Software Through S-shaped Coverage Factor and Change Point	Dec. 21-23, 2015	ISM, Dhanbad
M.K. Singh	32nd and 33rd AHI Annual Convention and National Seminar on “Water Resources with a Colloquium on Interlinking Rivers”	July10-11,2015	Andhra University, Vishakhapatnam
M.K. Singh	Workshop on “High Performance Computing” (WHPC-2015)	July29-31, 2015	ISM Dhanbad
M.K. Singh	81st Annual meeting of Indian Academy of Sciences, Bangalore	Nov.6-8, 2015	IISER, Pune
M.K. Singh	Science Academy Lecture Workshop on “Fluid Flow through Porous Media and its Applications” (FTPMA-2015)	December 25-27, 2015	ISM Dhanbad
M.K. Singh	Training Programme on “Design and Implementation of Rainwater Harvesting System for Augmentation of Rural Water Supply”	January 21-23, 2016	ISM Dhanbad
M.K. Singh	3rd IEEE International Conference on “Recent Advances in Information Technology”, RAIT-2016	March 3-5, 2016	ISM Dhanbad
B. Mukherjee	Recent Trends in Computation and Mathematics Analysis in Engineering and Science.	Nov 20-21, 2015	Govt. polytechnic silliRanchi

B. Mukherjee	2nd bi-annual conference of Jharkhand Society of Mathematical Science	Nov 21-23, 2015	Post-Graduate Dept of Mathemaitcs Ranchi college RANCHI
B. Mukherjee	7th National Conference on “wave mechanics and vibration”	Dec 21-23, 2015	Applied Mathematics ISM Dhanbad
B. Mukherjee	Science Academy Lecture Workshop on “Fluid Flow through Porous Media and its Applications” (FTPMA-2015)	December 25-27, 2015	Indian school of Mines, Dhanbad
B. Mukherjee	7th WMVC 2015& National conference on “Wave mechamnnics and vibration”.	December21-23, 2015	Indian school of Mines, Dhanbad
G K Vishwakarma	workshop on "How to Write and Publish Scholarly Articles in High Impact Factor Journals"	November 20, 2015	school of Mines, Dhanbad
G K Vishwakarma	First orientation program	February 09-29, 2016	Indian School of Mines, Dhanbad
P.K. Kewat	7th National conference of “Wave Mechanicsand Vibrations” (7th WMVC)	December 21-23, 2015	Indian School of Mines, Dhanbad

3.4.10 VISITS OF FACULTY MEMBERS ABROAD

Dr. G K Vishwakarma:

Participated in the workshop on Bayesian Statistics and Algorithms during 29 Feb – 04 March 2016 held at Centre International de Rencontres Mathematiques (CIRM), Luminy-Case 916, 13288 Marseille, France

Dr. S Kundu:

Attended and Presented a research paper in “SIAM GS 15” which was held in June 29-July 2, 2015 in Stanford University, USA

3.4.11 DISTINGUISHED VISITORS TO THE SCHOOL (INDICATING OCCASION/PURPOSE)

Dr. M K Singh

Dr. V. C. V. Rao, Associate Director & Head (HPC-FTE Group),C-DAC-Pune	Workshop on High Performance Computing (WHPC-2015), July29-31, 2015 as a Co-organizer and Resource Person
Prof. Tapan K. Sengupta, Aerospace Engineering, IIT Kanpur	Workshop on High Performance Computing (WHPC-2015), July29-31, 2015 as a Guest of Honour and Resource Person

Dr. Pradeep K Singh, Director, CIMFR, Dhanbad	Science Academy Lecture Workshop, December 25-27, 2015 as a Chief Guest
Prof.(Dr.) B. V. Rathish Kumar, FNASc , IIT Kanpur	Science Academy Lecture Workshop, December 25-27, 2015 as a Convener and Resource Person
Prof. (Dr.) Alok K Gupta, FNASc& Bhatnagar Awardee, Allahabad	Science Academy Lecture Workshop, December 25-27, 2015 as a Resource Person
Prof. (Dr.) P G Sidheswar, FNASc, Bangalore University	Science Academy Lecture Workshop, December 25-27, 2015 as a Resource Person
Dr. A K Singh, CIMFR, Dhanbad	Science Academy Lecture Workshop, December 25-27, 2015 as a Resource Person
Prof.(Dr.) Naveen Kumar Department of Mathematics BHU, Varanasi	Science Academy Lecture Workshop, December 25-27, 2015 as a Resource Person
Prof.(Dr.) S Bhattacharya IIT, Kharagpur	Science Academy Lecture Workshop, December 25-27, 2015 as a Resource Person

Dr P S Rao:

1	Prof B.V. Rathis Kumar, Department of Mathematics & Statistics, IIT Kanpur during Dec 25, 2015.
2	Prof P.G. Siddeswar, Department of Mathematics, Bangalore university during Dec 24, 2015
3	Prof C.S. Sastry, Department of Mathematics, IIT Hyderabad during Dec 26, 2015.

3.4.12 MISCELLANEOUS: ANY OTHER RELEVANT INFORMATION

Prof. G. S. Seth:

- 1 Acted as external examiner for assessing the project/dissertation and conducting the viva-voce examination of final year M.Sc (5 year Integrated) in Mathematics and Computing, IIT Kharagpur.

Prof. Dr. B. Mukherjee:

- 1 Prof. (Dr.) Bani Mukherjee was invited to conduct viva-voca examination at Department of Mathematics, KIIT Bhubaneswar Odisha on 1 -3 Nov 2015.
- 2 Prof. (Dr.) Bani Mukherjee was invited to deliver special lecture on 3 Nov 2015 at Department of Mathematics, KIIT Bhubaneswar Odisha on 1-3 Nov 2015.
- 3 Prof. (Dr.) Bani Mukherjee delivered a lecture Silli, Ranchi Jharkhand in the national conference on “Recent Trends in Computation and Mathematics Analysis in Engineering and Science” on 20-21 Nov 2015.
- 4 Prof. (Dr.) Bani Mukherjee was invited to deliver lecture at “Post-Graduate Dept of Mathematics Ranchi College” on “2nd bi-annual conference of JSMS - 21-23 Nov 2015.

- 5 Prof. (Dr.) Bani Mukherjee has Chaired the Program related to Applied Mathematics session in “2nd bi-annual conference on 21-23 Nov 2015 at Post-Graduate Dept of Mathematics, Ranchi College, Ranchi.

Prof. R. K. Upadhyay

1. Prof. R.K. Upadhyay has been working as Chairman, M.Sc/M.Sc Tech EE-2016.
2. Prof. R. K. Upadhyay has been working as member of ACP/MACP committee for Group C &D employees at ISM Dhanbad.
3. Prof. R.K. Upadhyay is the faculty In- charge for recruitment, Deptt. of Applied Mathematics, ISM Dhanbad.
4. Nominated as a society member of International Society of computational Ecology.
 - i. Life member of Indian Mathematical Society
 - ii. Member of American mathematical society

Prof. G N Singh

1. Ph.D. Guidance
 - i. Ph.D. degree awarded under his supervision to Ms. Fozia Homa (September 2015)
 - ii. Ph.D. thesis submitted Ms. Shweta Maurya (January 2016)
 - iii. Worked as an examiner of a Ph. D. thesis of NERIST, Itanagar.
2. Worked as reviewers of the following Journals:
 - i. Hacettepe Journal of Mathematics and Statistics
 - ii. Pakistan Journal of Statistics
 - iii. Model Assisted Statistics and Application
 - iv. Communications in Statistics-Theory & Methods
 - v. Journal of Statistical Theory and Practice
 - vi. Journal of Applied Statistics
3. Working as CHW since August 2013

Prof. S Chatterjee:

- Reviewer of Following Journals:
- IEEE Trans. On Reliability.
- IEEE Transactions on Evolutionary Computation
- International Journal of Systems Science, Taylor & Francis.
- Mathematical & Computer Modelling of Dynamical Systems, Taylor & Francis.
- Information and Software Technology, Elsevier.
- Software Testing, Verification and Reliability, Wiley.
- Quality and Reliability Engineering, International Journal, Wiley.
- Communications in Statistics - Theory and Methods, Taylor & Francis.
- Journal of Systems and Software, Elsevier.
- International Journal of Systems Assurance Engineering and Management, Springer.

Dr.Akhilesh Prasad:

1. Mr. Sumant Kumar has been awarded Ph.D. degree who has completed the research work under supervision of Dr. Akhilesh Prasad, Department of Applied Mathematics, ISM, Dhanbad
2. Mr. Praveen Kumar has been awarded Ph.D. degree who has completed the research work under supervision of Dr. Akhilesh Prasad, Department of Applied Mathematics, ISM, Dhanbad.

Dr. M K Singh:

1. Sri Pintu Das has completed Ph.D. (AM) dissertation on the topic “Solute Dispersion with Unsteady Groundwater Flow in Porous Formation” under the supervision of Dr. M K Singh in the year 2016.

Dr.B.S. Kushvah:

REVIEWER:

1. Astrophysics and Space Science, Springer
2. Advances in Space Research, Elsevier: Outstanding Reviewer Awarded for August 2014.

VISITING ASSOCIATE (2011--2016) of Inter-University Centre for Astronomy and Astrophysics (IUCAA), Post Bag 4, Ganeshkhind, Pune 411 007, Maharashtra, INDIA

Dr. P S Rao:

1. Mr. S. Agarwal has been awarded Ph.D degree for his work titled “Study of some problems in Hydrodynamic Lubrication of Bearings with Couple Stress Fluids”, Jan, 2016.

Dr. G K Vishwakarma:

1. Delivered a lecture on “Matrix Theory” during December 05, 2015 at Department of Mathematics, Government P.G. College, Niwari, Tikamgarh, India.
2. Delivered a lecture on “Application of Matrix” during December 05, 2015 at Department of Mathematics, Government P.G. College, Niwari, Tikamgarh, India
3. Reviewed eight research papers to reputed International Journals of statistics: Communications in Statistics – Theory and Methods, SpringerPlus, Proceedings of the National Academy of Sciences, (India Section A), Brazilian Journal of Probability and Statistics, Computational Statistics, Hacettepe Journal of Mathematics and Statistics Journal of Statistical Theory and Practice, etc

Dr. P.K. Kewat contributions as

1. Treasurer and Organizing committee member of 7th National conference of Wave Mechanics and Vibrations (7th WMVC) held at ISM Dhanbad during December 21-23, 2015.
2. Co-coordinator, Faculty Development Center, ISM Dhanbad.

3. Organizing committee member of 1st Orientation programme, Faculty Development Center held at ISM Dhanbad during February 09-29, 2016.
4. Organizing Secretary of National Conference on Recent Advances in Science and Engineering held at ISM Dhanbad during March 28-29,2016.
5. Faculty Advisor of IX & X Integrated M.Tech (M&C).

Dr. A K Singh

1. As an organizing secretary to National conference on “Wave Mechanics and Vibrations-2015” organized during Dec 21-23, 2015 in Department of Applied Mathematics, ISM Dhanbad

Dr. S A Sah:

1. Faculty Development Center (FDC) was established at Indian School of Mines (ISM), Dhanbad by the efforts of FDC team members of ISM Dhanbad (including Dr. S. A. Sahu and Dr. P. K. Kewat of Applied Mathematics as Deputy Coordinators). The centre is sanctioned by the Ministry of Human Resource Development (MHRD) Government of India, under the Scheme of Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching (PMMMNTT). First orientation program of FDC was organized during Feb. 09-29, 2016.

3.5 APPLIED PHYSICS

3.5.1 ABOUT THE DEPARTMENT:

The Department of Applied Physics came into existence as a separate Department in 1989 although it existed since the inception of the Institute. The objective of the Department is to produce highly skilled manpower in the field of teaching, research and development for the institute, research laboratory and industry. The Department offers B. Tech (Engineering Physics) to students admitted through IIT JEE (Advance). It also offers 2-years M.Sc., 5-years Integrated M.Sc., 1-year M.Phil and Ph. D. Programmes in Applied Physics.

3.5.1.1 Vision

To develop the department as a leading centre of quality physics education and cutting edge research for the benefit of the society.

3.5.1.2 Mission

- To provide globally competent man power through valued physics teaching
- To create state of art infrastructure in the department for quality research and innovation.

3.5.2 FIELD VISITS/EXCURSIONS/TRAINING PROGRAMMES UNDERTAKEN BY STUDENTS

Particulars	Batch of Students	Place of visits	Period of visits
Summer Training	II-Sem. M. Sc. (Applied Physics)	IIT Chennai BARC Mumbai JNCASR, Bangalore IUAC, New Delhi IIT(BHU), Varanasi VECC, Kolkata MNNIT Allahabad IISER Kolkata ISI Kolkata RRCAT, Indore SINP, Kolkata IPR Gandhinagar IOP Bhubhneswar IACS, Kolkata SNBNCBS, Kolakata UGC-DAE CSR Kolkata SAIL RANCHI Crystal Growth Centre, Anna University, Chennai BIT Mesra, Ranchi Hindu College, DU Etc	May 2015 to June 2015 (~ 8 weeks)

3.5.3 INTRODUCTION OF NEW COURSES AND PROGRAMMES, IF ANY (GIVE COURSE OUTLINE).

New courses on Quantum Computation and Information have been incorporated in M.Sc (Physics) course as elective. The purpose of introducing these courses is to make students acquaint with the current scenario about ultrafast computation based quantum algorithm.

3.5.4 BEST PRACTICES OF THE DEPARTMENT

- Weekly seminars by faculty, research scholars and students.
- Organization of seminar talks by experts of various research areas at regular intervals under the auspices of Society of Applied Physics.

3.5.5 BRIEF LIST OF ON-GOING R&D PROJECTS (PROJECT VALUE ₹ 5,00,000/- AND ABOVE)

1.	Project Title : Development of multi colour long lasting phosphors based on colour conversion process Sponsoring Agency : SERB, DST, New Delhi Coordinator (s) : Prof. J. Manam (Co-ordinator) & Dr. S. K. Sharma (Deputy Co-ordinator) Project Value : ₹ 46.2 Lakhs Date of Commencement : 20.06.2014 Date of Completion : 19.06.2017 Objective : The main aim of the present project work is to develop red and white long lasting phosphors with longer persistence time using the principle of color conversion. Status : Ongoing Findings : Synthesis and Characterization: SrAl ₂ O ₄ : Eu ²⁺ , Dy ³⁺ long lasting phosphor has been carried out by solid state reaction method and dye encapsulated mesoporous silica prepared to get color converted long lasting phosphor. Samples were further characterized by XRD, FESEM, FTIR, Photoluminescence, lifetime decay etc. The results are communicated for publication in international journals. The results are presented in NCLA-2016 Conference at RTM University, Nagpur.
2.	Project Title : Faculty Development Centre (FDC) under PMMMNMTT Sponsoring Agency : MHRD, New Delhi Coordinator (s) : Prof A.K. Nirala, Prof.P.C. Pal, Dr. M .Yadav and Dy. Coordinators- Dr. P K. Sharma, Dr. U. Tripathy, Dr. H P Nayak ,Dr. P. K. Kewat & Dr. S. A. Sahu Project Value : ₹ 7.50 Crore Date of Commencement : 30.10.2015 Date of Completion : 30.10.2018 Objective : Faculty Development Status : On-going Findings : Training of Faculty
3.	Project Title : UGC SAP, DRS-II Sponsoring Agency : UGC, New Delhi Coordinator (s) : Prof. A.K. Nirala, Deputy Coordinator: Dr. S K Sharma Project Value : ₹ 127.70 Lakhs

	Date of Commencement	07.07.2014
	Date of Completion	: 07.07.2019
	Objective	: -
	Status	: Ongoing
	Findings	: Ongoing
4.	Project Title	: FIST Programme-2013.
	Sponsoring Agency	: DST, New Delhi
	Coordinator (s)	: Prof. A.K. Nirala, Co- Coordinators: Dr K. Kumar & Dr P M Sarun
	Project Value	: ₹ 215.0 Lakhs
	Date of Commencement	: 01.04.2014
	Date of Completion	: 01.04.2019
	Objective	: -
	Status	: Ongoing
	Findings	: Ongoing
5.	Project Title	: Synthesis and characterization of nanocomposite thin films for Optoelectronic applications
	Sponsoring Agency	: UGC-DAE, Indore
	Coordinator (s)	: S. K. Sharma
	Project Value	: ₹ 7.38 Lakhs
	Date of Commencement	: January 2013
	Date of Completion	: March 2016
	Objective	: Synthesis of nanocomposite thin films by Pulsed Laser Deposition method for their suitable applications in Optoelectronic devices.
	Status	: Ongoing
	Findings	: Metal oxide composite thin films are deposited. GI-XRD, AFM, Raman and Transmission studies of the prepared films are in progress.
6.	Project Title	: Investigation of electron scattering phenomena in biological and environment sensitive molecules
	Sponsoring Agency	: SERB
	Coordinator (s)	: Bobby Antony
	Project Value	: ₹ 32.61 Lakhs
	Date of Commencement	: 30.07.2014
	Date of Completion	: 29.07.2017
	Objective	: Study of electron impact scattering phenomena in biological and environment sensitive molecules.
	Status	: Ongoing
	Findings	: Ongoing
7.	Project Title	: Density functional theory for freezing transitions and properties of inhomogeneous systems
	Sponsoring Agency	: DST, New Delhi
	Coordinator (s)	: Dr. Pankaj Mishra
	Project Value	: ₹ 15.47 Lakhs
	Date of Commencement	: Sept 2013
	Date of Completion	: -
	Objective	: To study the inhomogeneous systems
	Status	: Ongoing
	Findings	: We have studied the phase diagram of a long elongated model system of oligomers.
8.	Project Title	: Studies on rare earth ions doped upconversion nano-phosphors as optical sensors
	Sponsoring Agency	: DST-New Delhi (Young Scientist Scheme)

	Coordinator (s) : Project Value : Date of Commencement : Date of Completion : Objective : Status : Findings :	PI: Kaushal Kumar ₹ 23.28 Lakhs 01.11.2013 31.10.16 Synthesis and application of phosphors Ongoing DST, New Delhi
9.	Project Title : Sponsoring Agency : Coordinator (s) : Project Value : Date of Commencement : Date of Completion : Objective : Status : Findings :	Development of rare-earths doped upconversion phosphor particles for finger print detection and sensors CSIR, New Delhi PI: Kaushal Kumar ₹ 12.25 Lakhs 04.10.2013 03.10.16 Synthesis and application of phosphors Ongoing CSIR, New Delhi
10.	Project Title : Sponsoring Agency : Coordinator (s) : Project Value : Date of Commencement : Date of Completion : Objective : Status : Findings :	Development of MgB ₂ based conduction cooled superconducting current leads with high critical current for cryogenic devices. DST Dr. Sarun P. M. ₹ 26.64 Lakhs 26.01.2014 25.01.2017 Development of MgB ₂ based conduction cooled current leads Ongoing Successfully synthesizes MgB ₂ superconductor. Necessary equipments required are under procurement stage
11.	Project Title : Sponsoring Agency : Coordinator (s) : Project Value : Date of Commencement : Date of Completion : Objective : Status : Findings :	Development of Hybrid Polymer - Nanoparticle Based White Light Emitting Diodes (WLEDs) Department of Science and Technology PI: Dr. Prashant Kumar Sharma ₹ 23 Lakhs March 2014 2017 To Develop WLEDs Ongoing In Progress
12.	Project Title : Sponsoring Agency : Coordinator (s) : Project Value : Date of Commencement : Date of Completion : Objective : Status : Findings :	Synthesis and Assambly of Hybrid Nanostructured Materials for detection of explosives and narcotic drugs DAE-BRNS PI: Dr. Prashant Kumar Sharma & Co-PI: Dr. Rashmi Madhuri ₹ 30 Lakhs April 2014 March 2017 Explosives and Narcotics drug detection Ongoing In Progress
13.	Project Title : Sponsoring Agency :	Hybrid Nano-composites Optoelectronic and Photovoltaics Applications ISM Dhanbad

	Coordinator (s) :	PI: Dr. Prashant Kumar Sharma
	Project Value :	₹ 10 Lakhs
	Date of Commencement :	April 2013
	Date of Completion :	March 2016
	Objective :	To Develop Opto-Electronic Devices
	Status :	Ongoing
	Findings :	In Progress
14.	Project Title :	Design and Fabrication of Ultrasensitive Optical Biosensors based on Surface Plasmon Modes in Gold Nanostructures
	Sponsoring Agency :	Department of Science and Technology
	Coordinator (s) :	Dr. Moirangthem Rakesh Singh
	Project Value :	₹ 21.80 Lakhs
	Date of Commencement :	13.10.2015
	Date of Completion :	13.10. 2018
	Objective :	Development of Ultrasensitive Optical Biosensors using Plasmonic Nanostructures
	Status :	Ongoing
	Findings :	Ongoing

3.5.6 IMPORTANT COLLABORATIVE WORKS

Organization / Lab	Nature of interaction
Dr. S. K. Sharma University of The Free State, Bloemfontein, South Africa UGC-DAE Consortium for Scientific Research, Indore Inter University Accelerator Center, New Delhi Delhi University, Delhi	Measurements of life time, characterization of luminescent materials. Collaborative research work for synthesis of thin films by PLD/GI-XRD /XPS studies. Collaborative research work for Swift Heavy Ion Beam/ γ -Irradiations and Thermoluminescence studies of materials. Measurements of up-conversion & down-conversion spectra of ceramics.
Dr. Pankaj Mishra Department of Physics, BHU Varanasi	Collaborative research work on Liquid Crystals
Dr. R. B. Choudhary Faculty of Science, Malaya University, Malaysia Physics & Material Chemistry Division, NCL (CSIR) Pune Department of Physics, National Institute of Tech. Rourkela School of Physics, Shoolini Univeristy, Solan (HP)	Collaborative research work on supercapacitors (ECs) Collaborative research work on electrochemical properties Collaborative research work on Electrical & Ferroelectric Study Collaborative research work on Magnetic Properties of Ceramics

Dr. B. Panda Harish- Chandra Research Institute, Allahabad (with Prof. Ashoke Sen) and IIT Kanpur (with Dr. Sayantani Bhattacharyy),	Collaborative research on logarithmic corrections to supersymmetric blackhole entropy.
Dr. B. Bhaduri Bio-photonics Imaging Lab (BIL), University of Illinois at Urbana Champaign, Urbana, IL – 61801, USA (With Prof. S. A. Boppart)	Collaborative studies on human retinal thickness measurement for early disease detection of Multiple Sclerosis (MS) and Diabetic Retinopathy (DR) using optical coherence tomography (OCT)

3.5.7 IMPORTANT NEW EQUIPMENT ACQUISITIONED (ABOVE ₹ 5,00,000/-)

Name of Equipment	Purpose	Date of Purchase	Value (₹)
CCD Spectrometer	For research	10.09.2015	5,00,000
Nd: YAG Laser	For research and PG student training	10.09.2015	6,00,000
Computer Cluster (04 nodes)	Theoretical simulations	December 2015	12 acs

3.5.8 RESEARCH PUBLICATIONS

3.5.8.1 Papers published in International Journals

Sl. No.	Author (s)	Year	Title	Journal	Vol. No.	Page No.
1.	Puja Kumari, P. K. Baitha and J. Manam	2015	Structural and Photoluminescence Properties of Red Emitting YVO4: Eu ³⁺ Phosphor Synthesized by Combustion and Solid State Reaction Techniques: A Comparative Study	Indian Journal of Physics	89(12)	1297-1306
2.	P. K. Baitha and J. Manam	Aug. 2015	Structural and spectroscopic diagnosis of ZnO/SnO ₂ nanocomposite influenced by Eu ³⁺	Journal of Rare Earths	33(8)	805-813
3.	Puja Kumari and J. Manam	2016	Enhanced Red Emission on Co-doping of Divalent Ions (M ²⁺ =Ca ²⁺ , Sr ²⁺ , Ba ²⁺) in YVO4:Eu ³⁺ Phosphor and Spectroscopic Analysis for its Application in Display Devices	Spectrochimica Acta Part A:	152	109-118

4.	Jyoti Singh, P. K. Baitha and J. Manam	Oct. 2015	Influence of heat treatment on the structural and optical properties of SrGd ₂ O ₄ :Eu ³⁺ +phosphor	Journal of Rare Earths	33(10)	1040-1050
5.	P. K. Baitha and J. Manam	2015	Luminescence behavior of Eu ³⁺ activated ZnO/SnO ₂ nanocomposite phosphor	Optik	126	4916-4923
6.	Jyoti Singh and J. Manam	2015	Structural and spectroscopic behavior of Eu ³⁺ doped SrGd ₂ O ₄ modified by thermal treatments	Journal of Material Science	51	2886-2901
7.	Puja Kumari and J. Manam	2015	Structural, optical and spectral changes of Dy ³⁺ emissions in orthovanadates	RSC, Advances	5	107575-107584
8.	Abhijit Ghosh and A. K. Nirala	2015	Improvement of Fringe Quality at LDA Measuring Volume Using Compact Two Holographic Imaging System	Optics and Spectroscopy	118	482-489
9.	Abhijit Ghosh, A.K. Nirala , and H.L. Yadav	2015	Dependence of wavelength selectivity of holographic PV Concentrator on processing Parameters	Optik	126	622–625
10.	Preeti D Minz, Md Zaheer Ansari and A. K. Nirala	2015	Effect of antibrowning agents on fresh-cut potato tubers using frequency filtering of biospeckle images	Laser Phys.	25	055601 (8pp)
11.	Mohammad Z. Ansari and Anil K. Nirala	2015	Assessment of Fevicol (adhesive) Drying Process through Dynamic Speckle Techniques	AIMS Bioengineering	2	49-59
12.	Mohammad Zaheer Ansari and Anil K. Nirala	2015	Biospeckle assessment of torn plant leaf tissue and automated computation of leaf vein density (LVD)	Eur. Phys. J. Appl. Phys.	70	21201 (p1-p9)
13.	R. Ranjan, Abhijit Ghosh, A.K. Nirala , and H.L. Yadav	2015	Tuning of suitable solar spectrum onto photocatalytic materials of the matched band gap using optical engineering	Optica Applicata	XLV	237-247
14.	Abhijit Ghosh, A.K. Nirala and H.L. Yadav	2015	Wavelength selective holographic concentrator: Application to concentrated photovoltaics	Optik	126	4313–4318
15.	Abhijit Ghosh and A. K. Nirala	2015	LDA optical setup using holographic imaging configuration	Laser Phys.	25	116201 (8pp)
16.	M.Z. Ansari and A.K. Nirala	2015	Monitoring capillary blood flow Using laser speckle contrast analysis with spatial and temporal statistics	Optik	126	5224–5229

17.	Preeti D Minz and A. K. Nirala	2016	Laser speckle technique to study the effect of chemical pre-treatment on the quality of minimally processed apples	Laser Phys.	26	045602 (8pp)
18.	Abhijit Ghosh and A. K. Nirala	2016	Micro analysis of fringe field formed inside LDA measuring volume	Laser Phys.	26	056001 (5pp)
19.	Abhijit Ghosh and A. K. Nirala	2016	Formation of uniform fringe pattern free from diffraction noise at LDA measurement volume using holographic imaging configuration	Meas. Sci. Technol.	27	055202 (11pp)
20.	Abhijit Ghosh and A.K. Nirala	2015	One to one coherent imaging through double and single hololens configurations: A comparative study	Proc. of SPIE	9654	965409 (pp7)
21.	S. Som, A. Choubey and S.K.Sharma	2015	Spectral and trapping parameters of Eu^{3+} in $\text{Gd}_2\text{O}_3\text{S}$ nanophosphor.	Journal of Experimental Nanoscience	10(5)	350 -370
22.	S.K.Sharma , S.Som, R.Jain and A.K.Kunti	2015	Spectral and CIE parameters of red emitting $\text{Gd}_3\text{Ga}_5\text{O}_{12}:\text{Eu}^{3+}$ phosphor.	Journal of Luminescence	159	317 -324
23.	M. Chowdhury, S.K.Sharma , and R.J.Chaudhary	2015	Correlation between oxygen partial pressure and properties of pulsed laser deposited $\text{SnO}_2/\text{Fe}_2\text{O}_3$ composite films.	Advanced Materials Letters	6(10)	930 -934
24.	M. Chowdhury, S.K.Sharma and S.P. Lochab	2015	Gamma ray induced thermoluminescence properties of Eu^{3+} doped SnO_2 phosphor.	Materials Research Bulletin	70	584-589
25.	M. Chowdhury and S.K. Sharma	2015	Spectroscopic behaviour of Eu^{3+} in SnO_2 for tunable red emission in solid state lighting devices.	RSC Advances	5	51102
26.	Renuka Bokolia, O.P. Thakur, V.K. Rai, S.K. Sharma and K. Sreenivas	2015	Dielectric, ferroelectric and photoluminescence properties of Er^{3+} doped $\text{Bi}_4\text{Ti}_3\text{O}_{12}$ ferroelectric ceramics	Ceramics International	41	6055 - 6066
27.	S. Som, S. Dutta , Vijay Kumar, Anurag Pandey, Vinod Kumar, A. K. Kunti, J. Priya, S. K. Sharma , J. J. Terblans and H. C. Swart	2015	$\text{CaTiO}_3:\text{Eu}^{3+}$, a potential red long lasting phosphor: energy migration and characterization of trap level distribution	Journal of Alloys and Compounds	622	1068 - 1073

28.	S. Dutta, S.K.Sharma , S. P. Lochab	2016	CaMoO ₄ : Dy phosphor as effective detector for swift heavy ions - Depth profile and traps characterization.	Journal of Luminescence	170	42 – 49
29.	M. Chowdhury, S. P. Lochab and S.K. Sharma	2016	Thermoluminescence glow curve analysis of γ -irradiated Eu ³⁺ doped SnO ₂ composites	Ceramics International	42(4)	5472-5478
30.	Renuka Bokolia, O.P. Thakur, V.K. Rai , S.K. Sharma and K. Sreenivas	2016	Electrical properties and light up conversion effects in Bi _{3.79} Er _{0.03} Yb _{0.18} Ti _{3-x} W _x O ₁₂ ferroelectric ceramics	Ceramics International	42(5)	5718-5730
31.	Anurag Pandey, Vineet Kumar Rai , Vijay Kumar, Vinod Kumar, H. C. Swart	2015	Upconversion based temperature sensing ability of Er ³⁺ -Yb ³⁺ codoped SrWO ₄ : An optical heating phosphor	Sensors and Actuators B	209	352-358
32.	Riya Dey, Astha Kumari, Abhishek Kumar Soni, Vineet Kumar Rai	2015	CaMoO ₄ :Ho ³⁺ -Yb ³⁺ -Mg ²⁺ upconverting phosphor for application in lighting devices and optical temperature sensing	Sensors and Actuators B	210	581-588
33.	Abhishek Kumar Soni, Riya Dey, Vineet Kumar Rai	2015	Stark sublevels in Tm ³⁺ -Yb ³⁺ codoped Na ₂ Y ₂ B ₂ O ₇ nanophosphor for multifunctional applications	RSC Advances	5	34999-35009
34.	Abhishek Kumar Soni, Astha Kumari, Vineet Kumar Rai	2015	Optical investigation in shuttle like BaMoO ₄ :Er ³⁺ -Yb ³⁺ phosphor in display and temperature sensing	Sensors and Actuators B	216	64-71
35.	Astha Kumari, Vineet Kumar Rai	2015	White light emission and effect of annealing on the Ho ³⁺ -Yb ³⁺ codoped BaCa ₂ Al ₈ O ₁₅ phosphor	Materials Research Bulletin,	72	168-175
36.	Riya Dey, Vineet Kumar Rai	2015	pH controlled Ho ³⁺ -Yb ³⁺ codoped Y ₂ O ₃ nanowires for display devices	Spectrochim. Acta A	151	213-217
37.	Astha Kumari, Abhishek Kumar Soni, Riya Dey, Vineet Kumar Rai	2016	White light emission and optical heating in Er ³⁺ -Tm ³⁺ -Yb ³⁺ codoped La ₂ O ₃ phosphor	J. Display Technology	12(1)	2016
38.	Vijay Singh, Vineet Kumar Rai , H. Gao, N. Singh, J. Li, Anoop K. Srivastava, R. Senthil Kumaran, P. K. Singh	2016	Visible upconversion luminescence of Yb codoped Gd ₂ Zr ₂ O ₇ :Er prepared by a solution combustion reaction	J. Mater Sci: Mater Electron	27	310-315

39.	Vijay Singh, Vineet Kumar Rai , I. Ledoux-Rak, N. Singh, H. Gao, J. Li, Anoop K. Srivastava, R. Senthil Kumaran, P. K. Singh	2016	Visible up-conversion and infrared luminescence of Er ³⁺ /Yb ³⁺ /Zn ²⁺ co-doped -LiAlO ₂ phosphor	J. Mater Sci: Mater Electron	27	886-891
40.	Abhishek Kumar Soni, Vineet Kumar Rai , Santosh Kumar	2016	Cooling in Er ³⁺ :BaMoO ₄ phosphor on codoping with Yb ³⁺ for elevated temperature sensing	Sensors and Actuators B	229	2016
41.	S. Mahato, Nanda Shakti, and A.K. Kar	2015	Annealing temperature dependent structural and optical properties of electrodeposited CdSe thin films	Materials Science in Semiconductor Processing	39	742-747
42.	A Bobby, N Shiwakoti, P S Gupta and B K Antony	2016	Barrier modification of Au/n-GaAs Schottky structure by organic interlayer	Indian J. Phys.	90	307
43.	N Shiwakoti, A Bobby, K Asokan and Bobby Antony	2016	Temperature dependent dielectric studies of Ni/n-GaP Schottky Diodes by capacitance and conductance measurements	Mater. Sci. Semicond. Process	42	378
44.	Jaspreet Kaur, Nigel Mason and Bobby Antony	2015	Electron scattering studies of carbonyl fluoride	Phys. Rev. A	92	052702
45.	Jaspreet Kaur and Bobby Antony	2015	Cross section data for ionisation of important cyanides	J. Electron Spec. Rel. Phenom.	205	74
46.	A Bobby, N Shiwakoti, P M Sarun , S Verma, K Asokan and B K Antony	2015	Swift heavy ion induced capacitance and dielectric properties of Ni/n-GaAs schottky diode	Curr. Appl. Phys.	15	1500
47.	Dhanoj Gupta, Rahla Nagma and Bobby Antony	2015	Elastic and total cross sections for simple biomolecules in the intermediate energy range	AIP Advances	5	097159
48.	Jaspreet, Suvam Singh and Bobby Antony	2015	Electron scattering studies of DMS, DMDS and DMSO homologous series	Mol. Phys.	113	3883
49.	Jaspreet Kaur and Bobby Antony	2015	Electron induced ionization cross sections for astrophysical modeling	Int. J. Mass. Spectrom	386	24
50.	Jaspreet Kaur, Debdeep Goshal, Mudit Gaur, Rahla Nagma and Bobby Antony	2015	Electron impact ionization cross section of atoms	Can. J. Phys.	93	617

51.	Rahul Kumar Gangwar, Vanita Bhardwaj and Vinod Kumar Singh	2016	"Magnetic field sensor based on selectively magnetic fluid infiltrated dual-core photonic crystal fiber,"	Optical Engineering	55	026111-6
52.	Rahul K. Gangwar and Vinod Kumar Singh	2015	"Refractive index sensor based on selectively liquid infiltrated Dual core photonic crystal fibers"	Photonics and Nanostructures-Fundamentals and Applications	15	46-52
53.	P. Dhara and Vinod Kumar Singh	2015	"Effect of MMF stub on the sensitivity of a photonic crystal fiber interferometer sensor at 1550 nm	Optical Fiber Technology	21	154-159
54.	Shikha Dwivedi, Pankaj Mishra and J. Ram	2016	Density functional theory of freezing of a system of conjugated oligomers parameterised via Gay–Berne potential	Liquid Crystals	43	195-207
55.	Pankaj Mishra , Manjori Mukherjee and Sanat Kumar	2016	Phase diagram of two-dimensional binary Yukawa mixtures	Molecular Physics	114	741-756
56.	P. Maji, R.B. Choudhary , and M. Majhi	2016	Structural, optical and dielectric properties of ZrO ₂ reinforced polymeric nanocomposite films of PMMA	Optik	127	4848
57.	S. Swain, P. Kumar, and R. B. Choudhary	2015	Electrical and ferroelectric studies of the 2-layered SrBi ₂ Ta ₂ O ₉ based ceramics	Physica-B	477	56
58.	M Majhi, R.B. Choudhary , and P Maji	2015	CoCl ₂ reinforced polymeric nanocomposites of conjugated polymer (PANI) and its conductive properties	Bull. Mat Sci.	38	1195
59.	P Maji, PP Pande, and R.B. Choudhary	2015	Effect of Zn(NO ₃) ₂ filler on the dielectric permittivity and electrical modulus of PMMA	Bull. Mat Sci.	38	417
60.	S. P. Tiwari, K. Kumar , and V. K. Rai	2015	Plasmonic enhancement in upconversion emission of La ₂ O ₃ :Er ³⁺ /Yb ³⁺ phosphor via introducing silver metal nanoparticles	Applied Physics B Laser and Optics	121	221-228
61.	S. P. Tiwari, K. Kumar , and V. K. Rai	2015	Latent fingerprints detection for La ₂ O ₃ :Er ³⁺ /Yb ³⁺ phosphor material in upconversion emission mode: A comparative study	Journal of Applied Physics	118	183109

62.	J. S. Hansdah and P. M. Sarun	2015	Doping effect of nano-Ho ₂ O ₃ and naphthalene in MgB ₂ superconductor prepared by powder-in-sealed-tube method	J. Appl. Phys.,	117	113903
63.	J. S. Hansdah and P. M. Sarun	2015	Structural and AC loss study for pure and doped MgB ₂ superconductor	AIP Conf. Proc	1665	130052
64.	Tanusree Mondal, P. M. Sarun , Sayantani Das and T. P. Sinha	2015	Investigation of dielectric properties of La _{0.33} NbO ₃ ceramics	AIP Conf. Proc.	1665	110043
65.	Mohua Chakraborty, Anima Ghosh, R. Thangavel and K. Asokan,	2016	Conduction mechanism in mesoporous hematite thin films using low temperature electrical measurements and theoretical electronic band structure calculations	Journal of Alloys and Compounds	664	682-689
66.	Anima Ghosh, Soubantika Palchoudhury, Rajalingam Thangavel , Ziyou Zhou, Nariman Naghibolashrafi, Karthik Ramasamy and Arunava Gupta,	2016	A New Family of Wurtzite-Phase Cu ₂ ZnAS _{4-x} and CuZn ₂ AS ₄ (A= Al, Ga, In) Nanocrystals for Solar Energy Conversion Applications	Chemical Communication	52	264-267
67.	Anima Ghosh, Rajalingam Thangavel and Arunava Gupta	2016	Chemical Synthesis, Characterization and Theoretical Investigations of Stannite Phase CuZn ₂ AlS ₄ Nanocrystals	New Journal of Chemistry	40	1149-1152
68.	B Santoshkumar, S Kalyanaraman, R Vettumperumal, R Thangavel , Kityk, and S Velumani	2016	Structure-dependent anisotropy of the photoinduced optical nonlinearity in calcium doped ZnO nanorods grown by low cost hydrothermal method for photonic device applications	Journal of Alloys and Compounds	658	435-439
69.	R. Vettumperumal, S. Kalyanaraman, B. Santoshkumar, and R. Thangavel	2016	Estimation of electron-phonon coupling and Urbach energy in group-I elements doped ZnO nanoparticles and thin films by sol-gel method	Materials Research Bulletin	77	101-110
70.	V. Usha, S. Kalyanaraman, R. Thangavel , and R. Vettumperumal	2015	Effect of catalysts on the synthesis of CuO nanoparticles: Structural and optical properties by sol-gel method	<u>Superlattices and Microstructures</u>	86	203-210
71.	R. Vettumperumal, S. Kalyanaraman, and R. Thangavel	2015	Effect of Er concentration on surface and optical properties of K doped ZnO sol-gel thin films	<u>Superlattices and Microstructures</u>	83	237-250

72.	E Roy, S Patra, S Saha, R Madhuri, and Prashant K. Sharma	2015	Shape-specific silver nanoparticles prepared by microwave-assisted green synthesis using pomegranate juice for bacterial inactivation and removal	RSC Advances	5(116)	95433-95442
73.	Paramita Karfa, Ekta roy, Santanu Patra, Sunil Kumar, Abhrajyoti Tarfdar, Rashmi Madhuri and Prashant K. Sharma	2015,	Amino acid derived highly luminescent, heteroatom-doped carbon dots for label-free detection of Cd ²⁺ /Fe ³⁺ , cell imaging and enhanced antibacterial activity	RSC Advances,	5	58141 – 58153
74.	Shrabani Mondal, Rashmi Madhuri, and Prashant K. Sharma	2015,	PVA Assisted Low Temperature Anatase to Rutile Phase Transformation (ART) and Properties of Titania Nanoparticles	Journal of Alloys and Compounds	646	565-572
75.	Ekta Roy, Santanu Patra, Deepak Kumar, Rashmi Madhuri, and Prashant K. Sharma	2015,	Multifunctional magnetic reduced graphene oxide dendrites: Synthesis, characterization and their applications	Biosensors and Bioelectronics	68	726–735
76.	Saroj K. Parida, Sridhar Sahu , and Sagar Sharma	2015	A density functional study on interaction of first-row transition-metal dicarbides, C ₂ X (X = Sc-Zn) with O ₂	Chemical Physics Letters	626	1-5
77.	J. Nayak , A. K. Mohapatra, and Heeje Kim	2015	Effect of synthesis temperature on the morphology, structure and photocatalytic activity of TiO ₂ nanocrystals	AIP Conference Proceedings	1665	50087
78.	Andreea Paunoiu, Rakesh Singh Moirangthem , and Andreas Erbe	2016	Whispering gallery modes in intrinsic TiO ₂ microspheres coupling to the defect- related photoluminescence after visible excitation	Physica Status Solidi (RRL)- Rapid Research Letters	9	241-244
79.	C. Edwards, A. Arbabi, B. Bhaduri , X. Wang, R. Ganti, P. J. Yunker, A. G. Yodh, G. Popescu and L. L. Goddard	2015	Quantifying the non-uniform evaporation dynamics of sprayed sessile micro-droplets	Langmuir	31	11020–11032

3.5.8.2 Papers presented in International Seminars/Conferences

Sl. No.	Author (s)	Title	Seminar/Conference	Date	Place
1.	Dhananjay Kumar Singh and J. Manam	Structural and luminescence properties of CaTiO ₃ :Eu ³⁺ phosphor synthesized by chemical co-precipitation method for the application of solid state lighting devices	International conference on Matter and Applied Physics	30-31 Oct 2015	Govt. Eng. College Bikaner
2.	Puja Kumari and J. Manam	Spectroscopic Behaviour of Dy ³⁺ Ion in GdVO ₄ Matrix and its Application in Solid State Lighting	Charged particle collisions and electronic processes in atoms, molecules and materials	9-11 Jan 2016	Indian School of Mines Dhanbad
3.	Jyoti Singh and J. Manam	Structural and Optical Behaviour of Eu ³⁺ Doped SrGd ₂ O ₄ Phosphors	Charged particle collisions and electronic processes in atoms, molecules and materials	9-11 Jan 2016	Indian School of Mines Dhanbad
4.	Kanchan Mondal and J. Manam	Solid State Reaction Synthesis and Optical Properties of Dy ³⁺ Doped Ca ₂ MgSi ₂ O ₇ Phosphors	Charged particle collisions and electronic processes in atoms, molecules and materials	9-11 Jan 2016	Indian School of Mines Dhanbad
5	Abhijit Ghosh, A. K. Nirala and H. L. Yadav	Real Time Monitoring of Fringe Formation inside LDA Measuring Volume	2 nd International conference on Microwave and Photonics, (ICMAP-2015)	11-13 December 2015.	ISM Dhanbad
6	Abhijit Ghosh, A. K. Nirala	LDA measurement volume using Gaussian Beam and Plane Wave Approaches: A Comparative Study	Int. Tropical Conf. on Charged Particle Collision and Electronic processes in Atoms, Molecules and Materials (q-PACE 2016)	9-11 Jan. 2016, Session 7.2 (Parallel) pp.103-104.	ISM Dhanbad
7	Preeti D. Minz and A. K. Nirala	Biochemical analysis of minimally processed apples using Biospeckle Technique	Int. conference on recent trends in Engg. and material science (ICEMS)	17-19th March 2016	Jaipur National Univ., Rajasthan
8.	J. Priya, N. K. Gondia and S. K. Sharma	Spectroscopic investigation of synthesized new rare earth tetrakis complexes	Int. Conference on Advanced Nanomaterial and Nanotechnology (ICANN- 2015)	8 – 11 December , 2015	IIT, Guwahati
9.	N. K. Gondia, J. Priya and S. K. Sharma	An investigation of schiff base phosphorescent material for OLED applications.	Int. Conference on Advanced Nanomaterial and Nanotechnology (ICANN- 2015)	8–11 December , 2015	IIT, Guwahati
10.	N. K. Gondia, J. Priya and S. K. Sharma	Low Cost Highly Efficient Phosphorescent Material for OLEDs	Int. Conference on Recent Trends in Applied Physical Chemical Sciences Mathematical Statistical and Environmental Dynamics (PCME 2015)	2 - 3 May 2015	JNU, New Delhi

11.	Vineet Kumar Rai	Upconversion based temperature sensing using rare earth doped luminescent materials	International Conference on Frontiers of Spectroscopy-2015	10-12 January, 2015	Banaras Hindu University, Varanasi.
12.	Astha Kumari and Vineet Kumar Rai	Green upconversion emission in Tb ³⁺ -Yb ³⁺ codoped lanthanum oxide phosphor	International Conference on Frontiers of Spectroscopy-20	10-12 January, 2015	Banaras Hindu University, Varanasi.
13.	Riya Dey and Vineet Kumar Rai	Unusual and attractive upconversion emission from Tm ³⁺ /Yb ³⁺ codoped CaMoO ₄ phosphor	International Conference on Frontiers of Spectroscopy-2015	10-12 January, 2015	Banaras Hindu University, Varanasi.
14.	Abhishek Kumar Soni and Vineet Kumar Rai	808nm diode laser excited upconversion luminescence in BaMoO ₄ :Pr ³⁺ phosphor	International Conference on Frontiers of Spectroscopy-2015	10-12 January, 2015	Banaras Hindu University, Varanasi.
15.	Astha Kumari and Vineet Kumar Rai	Bright Blue Upconversion Emission in Tm ³⁺ -Yb ³⁺ Codoped (La _x Y _{1-x}) ₂ O ₃ Phosphor, ISBN: 978-93-82570-48-6	5th Int. Conference on Luminescence and its Applications-2015	9-12 February, 2015	PES University, Bangalore,
16.	Monika Kataria, Astha Kumari and Vineet Kumar Rai	NIR to intense green upconversion emission in Er ³⁺ doped NaGdWO ₄ phosphor	India International Science Festival (IISF-2015)- Young Scientists' Meet, Organised by Ministry of Science and Technology and Ministry of Earth Sciences and in collaboration with Vijnana Bharati	4-8 th december, 2015	IIT Delhi, Delhi.
17.	Manisha Mondal, Astha Kumari, Lakshmi Mukhopadhyay and Vineet Kumar Rai	Intense green light emitting GdMoO ₄ :Er ³⁺ phosphor for display devices	Topical Conf. on Charged Particle Collisions and Electronic processes in Atoms, Molecules and Materials (qPaCE-2015)	9-11th January, 2016	Indian School of Mines, Dhanbad, India.
18.	Astha Kumari, Manisha Mondal, Lakshmi Mukhopadhyay and Vineet Kumar Rai	Er ³⁺ -Yb ³⁺ codoped YAG nanophosphors for multifunctional applications"	Int. Conference on Advances in Light Technologies and Spectroscopy of materials (ICALTSM-2016)	16-18 January, 2016	University of Lucknow, Lucknow, Uttar Pradesh.
19.	Manisha Mondal, Astha Kumari, Lakshmi Mukhopadhyay and Vineet K. Rai	Er ³⁺ doped YMoO ₄ phosphor as display devices	Int. Conference on Advances in Light Technologies and Spectroscopy of materials (ICALTSM-2016)	16-18 January, 2016	University of Lucknow, Lucknow, Uttar Pradesh.
20.	Lakshmi Mukhopadhyay, Astha Kumari, Manisha Mondal and Vineet K. Rai	NIR to Green light upconversion in Er ³⁺ doped NaZnPO ₄ Phosphor	Int.Conf. on Advances in Light Technologies and Spectroscopy of materials (ICALTSM-2016)	16-18 January, 2016	University of Lucknow, Lucknow, Uttar Pradesh.

21.	Deb Kumar Rana, Jaspreet Kaur and Bobby Antony	Photoionization Cross Section of Carbon Monoxide	International Topical conference on “Charged Particle Collisions and Electronic Processes in Atoms, Molecules and Materials”, q-PaCE 2016.	09-11 January, 2016	Indian School of Mines, Dhanbad, India
22.	Dibyendu Mahato, Rahla Naghma and Bobby Antony	Electron Impact Ionization Cross Sections for Organoplatin Compounds: Cisplatin, Carboplatin and Oxaliplatin	International Topical conference on “Charged Particle Collisions and Electronic Processes in Atoms, Molecules and Materials”, q-PaCE 2016.	09-11 January, 2016	Indian School of Mines, Dhanbad, India
23.	Nafees Uddin, Rahla Naghma and Bobby Antony	Computation of Electron Impact Total Ionization Cross Section for Alcohols	International Topical conference on “Charged Particle Collisions and Electronic Processes in Atoms, Molecules and Materials”, q-PaCE 2016.	09-11 January, 2016	Indian School of Mines, Dhanbad, India
24.	Pareesh Modak, Jaspreet Kaur and Bobby Antony	Electron Scattering Cross Sections for Heavy Water	International Topical conference on “Charged Particle Collisions and Electronic Processes in Atoms, Molecules and Materials”, q-PaCE 2016.	09-11 January, 2016	Indian School of Mines, Dhanbad, India
25.	Suvam Singh, Sangita Dutta, Rahla Naghma and Bobby Antony	Positron Impact Total Cross Sections for Noble Gases from Ionization Threshold to 5000 eV	International Topical conference on “Charged Particle Collisions and Electronic Processes in Atoms, Molecules and Materials”, q-PaCE 2016.	09-11 January, 2016	Indian School of Mines, Dhanbad, India
26.	Pankaj Verma, Rahla Naghma and Bobby Antony	Electron Induced Scattering Cross Sections for CF ₃ X and CF ₂ X ₂ (where X=H, Cl, Br and I) molecules	International Topical conference on “Charged Particle Collisions and Electronic Processes in Atoms, Molecules and Materials”, q-PaCE 2016.	09-11 January, 2016	Indian School of Mines, Dhanbad, India
27.	N Shiwakoti, A Bobby, K Asokan, and B. K. Antony	Effect of Swift Heavy Ion Irradiation on the Capacitance and Conductance Properties of Ni/N-Gap Schottky Diode	International Topical conference on “Charged Particle Collisions and Electronic Processes in Atoms, Molecules and Materials”, q-PaCE 2016.	09-11 January, 2016	Indian School of Mines, Dhanbad, India
28.	A Bobby, N Shiwakoti, P. M. Sarun, S Verma, K	In-Situ Capacitance and Dielectric Studies of SHI	International Topical conference on	09-11 January,	Indian School of

	Asokan and B. K. Antony	Irradiated Ni/N-GaAs Schottky Diode	“Charged Particle Collisions and Electronic Processes in Atoms, Molecules and Materials”, q-PaCE 2016.	2016	Mines, Dhanbad, India
29.	A. K. Pathak, V. Bhardwaj, R. K. Gangwar and V. K. Singh	SPR based fiber sensor to measure refractive index of glycerol and ethanol	International conference on Microwave and Photonics (ICMAP-2015)	11-13, Dec, 2015	Indian School of Mines, Dhanbad
30.	Vanita Bhardwaj, Akhilesh K. Pathak, Rahul K. Gangwar and Vinod K. Singh	Uncladded sensing fiber for refractive index measurement	International conference on condensed matter and applied physics (ICC-2015)	30-31, Oct, 2015	Engineering college, Bikaner
31.	Akhilesh K. Pathak, Vanita Bhardwaj, Rahul K. Gangwar and Vinod K. Singh	SPR based cone tapered fiber optic chemical sensor for the detection of low water in ethanol	International conference on condensed matter and applied physics (ICC-2015)	30-31, Oct, 2015	Engineering college, Bikaner
32.	Rahul Kumar Gangwar, Vanita Bhardwaj and Vinod Kumar Singh	Effect of ethanol on Dispersion Properties of Photonic Crystal Fiber	International Conference on Metamaterials, Photonic Crystals and Plasmonics (META-2015)	4-7, August 2015.	City College of New York
33.	Pankaj Mishra	Freezing transitions in binary mixtures of two-dimensional colloidal suspensions	15 th Conference of the International Association of Colloid and Interface Scientists	24-29, May 2015	Max Planck Institute for Polymer research, Mainz, Germany
34.	Pankaj Mishra	Freezing transitions in binary mixtures of multipolar colloidal suspensions	XXVII IUPAP Conference on Computational Physics	2-5, December 2015	IIT Guwahati
35.	S. Sinha, S.P. Tiwari, K. Kumar and V. K. Rai	Synthesis and Upconversion Emission Study of Tm ³⁺ /Yb ³⁺ Co-Doped CaMoO ₄ Nano-Phosphor	ICFS-2015	8-9 and 10-12, January, 2015	Banaras Hindu University, Varanasi
36.	S. Sinha, M. K. Mahata and K. Kumar	Green Light Emitting Gd ₂ Mo ₃ O ₉ : Er ³⁺ /Yb ³⁺ Upconversion Phosphor	ICALTSM-2016	16-18, January, 2016	Lucknow University
37.	Abhishek Kumar, Surya Prakash Tiwari and Kaushal Kumar*	Synthesis and upconversion of Er ³⁺ /Yb ³⁺ doped NaGdF ₄ phosphor for security applications	ICFS -2015	10-12, January, 2015	Banaras Hindu University, Varanasi
38.	T. Mondal, B. P. Majee, T. R. Middya and P. M. Sarun	Dielectric, impedance and conductivity study of barium zirconate titanate ceramics.	QPACE 2016	9-11 Jan 2016	Dhanbad
39.	J. S. Hansdah, H. B. Nayak and P. M. Sarun	Structural and superconducting characterization of Bulk MgB ₂ superconductor	QPACE 2016	9-11 Jan 2016	Dhanbad.

40.	Anima Ghosh, R. Thangavel and Arunava Gupta	Synthesis and first principle study of New Wurtzite-Phase $\text{CuZn}_2\text{InS}_4$ Nanocrystals for Solar Energy Conversion Applications	Charged particle collisions and electronic processes in atoms, molecules and materials-2016”	9-11, Jan 2016	Determent of Applied Physics, Indian School of Mines, Dhanbad
41.	Binata Panda , Anita Kumari and Gourav Banerjee	Supergsivity Solution for Fundamental string on type IIA pp Wave Background	Conference on Charged Particle Collisions and Electronic processes in Atoms, Molecules and Material (q-PaCE 2016)	09 th – 11 th , January 2016	Indian School of Mines Dhanbad

3.5.8.3 Papers presented in National Seminars/Conferences

Sl. No.	Author (s)	Title	Seminar/ Conference	Date	Place
1.	Puja Kumari and J. Manam	Effect of Gd^{3+} co-doping on luminescence of Dy^{3+} doped YVO_4	National Conference on Luminescence and its Applications	18-20 Feb 2016	RTM University Nagpur
2.	Kanchan Mondal and J. Manam	Investigation of colour tunable photoluminescence properties in $\text{CaMgSi}_2\text{O}_7$: Eu^{3+} phosphors for solid state lighting application	National Conference on Luminescence and its Applications	18-20 Feb 2016	RTM University Nagpur
3.	Dhananjay Kumar Singh and J. Manam	Influence of doping concentration on the structural and optical properties of Eu^{3+} doped CaTiO_3 nanophosphor	National Conference on Luminescence and its Applications	18-20 Feb 2016	RTM University Nagpur
4.	Sourav Das and J. Manam	Colour conversion process in long lasting phosphor	National Conference on Luminescence and its Applications	18-20 Feb 2016	RTM University Nagpur
5.	Sourav Das and J. Manam	Inorganic and organic composite phosphor for solid state lighting applications	National Conference on Recent Advances in Science and Engineering (RASE) 2016.	28-29 March 2016	ISM Dhanbad
6.	Amba Mondal and J. Manam	Structural and luminescence properties of Cr^{3+} doped MgGa_2O_4 : A red persistent nanophosphor	National Conference on Recent Advances in Science and Engineering (RASE) 2016.	28-29 March 2016	ISM Dhanbad

7.	Nusrat Jabeen and A.K. Nirala	Determination of aberration of artificial eye using Hartmann Shack Sensor	National Conference on Recent Advances in Science and Engineering (RASE) 2016.	28-29 March 2016	ISM Dhanbad
8.	S.N.S. Yadav, Nusrat Jabeen, Abhijit Ghosh, S.A. Linda, M.K. Mohanta and A.K. Nirala	Monitoring of diffusion process in transparent liquid mixtures using digital holographic interferometry	National Conference on Recent Advances in Science and Engineering (RASE) 2016.	28-29 March 2016	ISM Dhanbad
9.	Shubhashri Kumari and Anil Kumar Nirala	Comparative analysis of bruise and fresh regions of fruits using non-destructive technique	National Conference on Recent Advances in Science and Engineering (RASE) 2016.	28-29 March 2016	ISM Dhanbad
10.	Shubhashri Kumari and Anil Kumar Nirala	Application of Bio - speckle activity to differentiate the bruise and fresh region of the apple	National Conference on Recent Advances in Science and Engineering (RASE) 2016.	28-29 March 2016	ISM Dhanbad
11.	Abhijit Ghosh and A.K. Nirala	LDA optical setup using suitably designed hololens imaging configuration (2016).	National Conference on Recent Advances in Science and Engineering (RASE) 2016.	28-29 March 2016	ISM Dhanbad
12.	A. K. Soni, Vineet Kumar Rai	Upconversion luminescence in BaMoO ₄ -Pr ³⁺ phosphor for display devices, AIP Conf. Proc. 1675, 030073	Advanced Materials And Radiation Physics (AMRP-2015): 4th National Conference on Advanced Materials and Radiation Physics	13-14 March, 2015	Longowal, India
	Manisha Mondal and Vineet Kumar Rai	NIR to green and red upconversion in Ho ³⁺ doped YMoO ₄ phosphor	Condensed Matter Days - 2015 (CMDAYS-2015)	27-29 August, 2015	Visva Bharati, Santiniketan.
13.	Pankaj Mishra	Phase transitions in colloidal suspensions	Condensed Matter Days	27-29, August 2015	Vishvabharti University
14.	Shikha Dwivedi and Pankaj Mishra	Structures in a binary mixture of Gay-Berne mesogens	Condensed Matter Days	27-29, August 2015	Vishvabharti University
15.	Anupam Kumar and Pankaj Mishra	Phase transitions in two-dimensional quadrupolar nematic	Condensed Matter Days	27-29, August 2015	Vishvabharti University
16.	Pankaj Mishra	Freezing of binary system of two-dimensional quadrupolar nematic colloids	National Conf. on Recent Advances in Science and Engineering (RASE) 2016.	28-29 March 2016	ISM Dhanbad

17.	S. Sinha and K. Kumar	Intense Green Up conversion Emission in Er ³⁺ /Yb ³⁺ Doped CaLa ₂ (MoO ₄) ₄ phosphor	NCLA-2016	19 th Feb, 2016	R. T. M. Nagpur University
18.	A. Kumar, S. P. Tiwari, K. M. Krishna and K. Kumar	Structural and optical characterization of NaGdF ₄ : Ho ³⁺ /Yb ³⁺ UC nano-particles for latent finger mark detections	DAE-SSPS-2016	21-25, December 2015	Amity University, Noida, U.P.

* Accepted for Publication/Communicated papers are NOT to be included.

3.5.9 MAJOR ACADEMIC CONTRIBUTIONS

- Dr. Prashant K. Sharma's research group has developed an ultra-sensitive Gas Sensing Chamber/device.
- Dr. Prashant K. Sharma developed an ultra-sensitive saccharides detection assay using carboxyl functionalize chitosan containing Gd₂O₃:Eu³⁺ nanoparticles probe.

3.5.10 SEMINARS, SYMPOSIA, WORKSHOPS, CONFERENCES ORGANIZED BY THE DEPT/CENTRE

International Topical conference on "Charged Particle Collisions and Electronic Processes in Atoms, Molecules and Materials", q-PaCE 2016.	09-11 January, 2016
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3.5.11 PARTICIPATION OF FACULTY/ OFFICERS/ STAFF IN SEMINARS/ CONFERENCES ETC

Prof. J. Manam	International conference on "Charged particle collisions and electronic processes in atoms, molecules and materials"	9-11 January, 2016	Department of Applied Physics Indian School of Mines, Dhanbad
	International conference on microwave and photonics	11-12 Dec 2015	Dept. of Electronics and engineering, ISM, Dhanbad
Prof A.K. Nirala	2 nd International conference on Microwave and Photonics, (ICMAP-2015).	11-13 December 2015.	Department of Electronics Engineering, ISM Dhanbad.
	International Tropical Conference on Charged Particle Collision and Electronic processes in Atoms, Molecules and Materials (q-PACE 2016).	9-11 January 2016.	Department of Applied Physics, Indian School of Mines, Dhanbad, India
Dr. S. K. Sharma	International Topical Conference on Charged Particle Collisions and Electronic Processes in Atoms, Molecules and Materials, (q-PaCE 2016)	09-11, January 2016	Department of Applied Physics, Indian School of Mines, Dhanbad.

	2 nd International Conference on Microwave & Photonics (ICMAP 2015)	11-13, December 2015	Department of Electronics Engineering, Indian School of Mines, Dhanbad.
	2 nd National Conference on Mining Equipment: New Technologies, Challenges & Applications (MENTCA 2015)	09-10, October 2015	Department of Mining Machinery Engineering, Indian School of Mines, Dhanbad.
Dr. A. K. Kar	International Topical Conference on Charged Particle Collisions and Electronic Processes in Atoms, Molecules and Materials (q-PaCE 2016)	09-11 January, 2016	Indian School of Mines, Dhanbad
Dr. Bobby Antony	International Topical conference on “Charged Particle Collisions and Electronic Processes in Atoms, Molecules and Materials”, q-PaCE 2016.	09-11 January, 2016	Department of Applied Physics, Indian School of Mines, Dhanbad, India
Dr. Vinod Kumar Singh	International Conference on Metamaterials, Photonic Crystals and Plasmonics (META-2015)	4-7, August 2015	City College of New York, USA
Dr. Pankaj Mishra	15 th Conference of the International Association of Colloid and Interface Scientists	24-29, May 2015	Max Planck Institute for Polymer research, Mainz, Germany
	XXVII IUPAP Conference on Computational Physics	2-5, December 2015	IIT Guwahati
	Condensed Matter Days	27-29, August 2015	Vishvabharti, University
	International Topical conference on “Charged Particle Collisions and Electronic Processes in Atoms, Molecules and Materials”, q-PaCE 2016.	09-11 January, 2016	Department of Applied Physics, Indian School of Mines, Dhanbad, India
Dr. R. B. Choudhary	TEQIP Sponsored STTP Adv. Optimization & Application	3-7 July 2015	NIT Raipur
Dr. K. Kumar	Symposium on Super Resolution Techniques	26-27 November 2015	Bangalore
Dr. Binata Panda	Conference on Charged Particle Collisions and Electronic processes in Atoms, Molecules and Material (q-PaCE 2016)	09 th -11 th , January 2016	Indian School of Mines Dhanbad
Dr. U. Tripathy	Super Resolution Symposium	26-27, Nov 2015	National Center for Biological Sciences (NCBS), Bangalore, India.

	Light within Life Sciences (OWLS) 2016	16-19 March, 2016	TIFR, Mumbai
Dr. B. Bhaduri	Charged Particle Collisions and Electronic processes in Atoms, Molecules and Materials (q-PaCE 2016)	9-11 January, 2016	Department of Applied Physics, Indian School of Mines, Dhanbad, India
	Light within Life Sciences (OWLS) 2016	16-19 March, 2016	TIFR, Mumbai

3.5.12 VISITS OF FACULTY MEMBERS ABROAD

- Dr. S. K. Sharma visited University of The Free State, Bloemfontein, South Africa, from February 06-14, 2016 for visit of research laboratories, interaction with the faculty members, organization of joint conferences/workshops & to explore the possibility for writing collaborative research projects.
- Dr. V. K. Singh visited City College New York to attend International Conference on Metamaterials, Photonic Crystals and Plasmonics (META-2015).
- Dr. Pankaj Mishra visited the Max Plank Institute for Polymer Research, Mainz, Germany to attend the 15th conference of the International Association of Colloid and Interface Scientists.
- Dr. Kaushal Kumar visited University of Free State, South Africa during 06 Feb. 2016 to 16th Feb. 2016 for research interaction.

3.5.13 TESTING SERVICES (LAB FACILITIES AVAILABLE FOR TESTING IN THE DEPARTMENT/CENTRE)

- Fluorescence Spectrophotometer for PL measurements

3.5.14 DISTINGUISHED VISITORS TO THE SCHOOL (INDICATING OCCASION/PURPOSE)

Prof. Nigel Mason, OBE Senior Professor, The Open University Milton Keynes	Visited the Department of Applied Physics and delivered a guest lecture
Prof. O. N. Srivastava Department of Physics, BHU Varanasi	Visited the school and delivered a guest lecture in the Department of Applied Physics.

3.5.15 SPECIAL LECTURES BY DISTINGUISHED GUESTS

Prof. Nigel Mason, OBE Senior Professor, The Open University Milton Keynes "Shining Light on Electrons"	12.01.2016
Prof. O. N. Srivastava Department of Physics, BHU Varanasi	18.03. 2016

3.5.16 MISCELLANEOUS

- Prof. J. Manam is presently holding the additional assignment of Associate Dean (Students Affairs).
- Prof. J. Manam chaired one technical session of International Conference of Charged Particle Collisions and Electronic Processes in Atoms, Molecules and Materials held during 9-11, January, 2016 in the Department of Applied Physics, Indian School of Mines, Dhanbad.
- Prof. J. Manam chaired one technical session of National Conference on Recent Advances in Science and Engineering held at Faculty Development Centre under Pandit Madan Mohan Malviya National Mission on Teachers and Teaching (PMMMNTT), Indian School of Mines, Dhanbad-826004.during-28-29 March, 2016.
- Prof. A K Nirala attended selection committee meeting for recruitment of Assistant Professor & Scientific Assistant (on contract) which was held at Dept. of Phys at NIT Imphal (Manipur).
- Prof. A K Nirala, on 11th January 2016, Chaired Session - 6.2 (Parallel) (SAP 11:30-12:00) in Topical Conference on Charged Particle Collisions and Electronic Processes in Atoms, Molecules and Materials, organized by Dept. of Applied Physics, during 9th - 11th January 2016 at ISM Dhanbad, India.
- Prof. A. K. Nirala organized one day workshop on “Principles and Applications of CFR Instruments” on 13/07/2015 at GJLT, ISM Dhanbad as coordinator-cum-in-charge CRF.
- Prof. A. K. Nirala organized vigilance awareness week-2015 as C.V.O.-cum-coordinator. It included Oath taking by faculty members of all the departments/centres of ISM Dhanbad.
- Prof. A. K. Nirala organized a debate on “Need of vigilance awareness week at ISM Dhanbad and a talk on “value, ethics and corruption at educational Institution in contemporary environment” on 30/10/2015 at Management Hall, ISM Dhanbad. The talk was delivered by Prof Jose Nandhikkara, Adjunct Prof, HSS Dept. of ISM Dhanbad, Director ISM Dhanbad, Prof D.C. Panigrahi including myself on 30th Sept 2015.
- Dr. S. K. Sharma Chaired one technical session and delivered one invited talk in International Topical Conference on Charged Particle Collisions and Electronic Processes in Atoms, Molecules and Materials (q-PaCE 2016) organized by Dept. of Applied Physics Indian School of Mines, Dhanbad during 9-11 January, 2016.
- Dr. S. K. Sharma attended Selection committee meeting as a subject expert for appointment of Assistant Professor & Scientific Assistant (Contract) Dept. of Physics at NIT Imphal (Manipur) on 17.09.2015.
- Dr. Vineet Kumar Rai chaired one technical session of National Conference on Recent Advances in Science and Engineering held at Faculty Development Centre, Indian School of Mines, Dhanbad-826004.during-28-29 March, 2016.
- Dr. Pankaj Mishra chaired one technical session of National Conference on Recent Advances in Science and Engineering held at Faculty Development Centre, Indian School of Mines, Dhanbad-826004.during-28-29 March, 2016.

- Dr. Pankaj Mishra delivered an invited lecture in the orientation program organized by Faculty Development Centre, ISM Dhanbad
- Dr. R. B. Chaudhary, Dr. Pankaj Mishra and Dr. V. K. Rai organized short-term course on “Renewable Energy Materials and Technology in Academia and Industry” (REMTAI-2016) sponsored by ONGC (Tel Bhawan Dehradun) was organized during March 2-4, 2016 in the Department of Applied Physics, Indian School of Mines Dhanbad.
- Dr. R. B. Chaudhary gave Invited Talk/ Lecture in a Short-Term Course on Composite Materials in the Department of Mechanical Engineering, Indian School of Mines Dhanbad on September 21, 2015.
- Dr. R. B. Chaudhary gave invited talk/ Lecture in Faculty Development Scheme (MMMES) Training Program at Indian School of Mines Dhanbad on February 25, 2016.

3.6 CHEMICAL ENGINEERING

3.6.1 ABOUT THE DEPARTMENT:

A four year B.Tech programme in Chemical Engineering was introduced during the academic year 2011-12 with currently 12 faculty members in the department.

3.6.1.1 Vision

The department strives to be nationally and internationally acclaimed premier department that nurtures innovation, intellectual skill, and leadership in chemical engineering education and research. While serving as a catalyst in a developing society, its goal as one of the premier departments in the country would be to instill in all undergraduate and graduate students the life-long skill of critical thinking and creative problem solving that enables their success in the practice of chemical engineering in addressing the societal needs including environmental stewardship and sustainability.

3.6.1.2 Mission

- To educate and train students in the areas of chemical engineering by providing high-quality undergraduate and graduate education for the sustainable development of the nation and by improving the quality of life of the people through intellectual skills, life-long learning and professional commitment;
- To generate knowledge and develop new technologies through excellence in research in the field of chemical, biochemical, materials, energy, environmental and green engineering and to transfer them to industry for effective utilization;
- To participate directly in the planning and solving of chemical engineering problems of relevance to Indian industries and to society at large;
- To develop strong collaborative and cooperative links with private and public sector industries, R&D houses and government user departments;
- To develop comprehensive and; intimate interaction with premier academic and research institutions within the country and abroad for mutual benefit
- To develop and conduct continuing education programmes for practicing engineers and students and facilitate public understanding of technical issues;
- To uphold and advance the profession's standards, ethics, and diversity.

3.6.2 BRIEF LIST OF ON-GOING R&D PROJECTS (PROJECT VALUE `5,00,000/- AND ABOVE)

1.	Project Title	:	Development of an efficient Pd-Cu bimetallic catalyst for the catalytic CO ₂ hydrogenation for Methanol production
	Sponsoring Agency	:	Science & Engineering Research Board (SERB), DST, GOI
	Coordinator (s)	:	Dr. Siddhartha Sengupta
	Project Value	:	₹ 22.15 Lakhs
	Date of Commencement	:	1.1.2016
	Date of Completion	:	31.12.2018
	Objective	:	Ongoing
	Status	:	Work in Progress
	Findings	:	Ongoing

3.6.3 IMPORTANT COLLABORATIVE WORKS

Organization / Lab	Nature of interaction
CIMFR Digwadih	Collaborative research on Chemical Looping Combustion
IIT Delhi	Collaborative research on RTD in helical coils

3.6.4 IMPORTANT NEW EQUIPMENT ACQUIRED (ABOVE RS.5,00,000/-)

Name of Equipment	Purpose	Date of Purchase/ Date of Installation	Value (Rs.) approx
FTIR	Testing of a solid, liquid or gas to obtain an infrared spectrum of absorption or emission	25.08.2015	16.00 Lakhs
High Precision Programmable DC Source meter (Keithley 2410)	Research	17.12.15	5,39,964.00
Gas Chromatograph	Gas Analysis	Installed on 31.03.2016 (Stock entry to be done)	9,29,365.75
Quaternary UHPLC System	Research	17.07.2015	15,74,594.31
Analyser TGA Thermostep	Research	13.08.2015	21,391.96 (in Euro)
Particle Size Analyser	Research	16.10.2015	40950.00 (in USD \$)
Multi Component and Multi Horiba Gas Analyser	Research	16.10.2015	1600000 (in JPY)
Sensitive and Accurate Robust Bench Top	Research	14.03.2016	37068 (in USD Dollar)
Density Meter	Research	14.03.2016	24000 (in Euro)
Planetary Ball Mill	Research	16.03.2016	9,54,869.00

3.6.5 RESEARCH PUBLICATIONS

3.6.5.1 Books published

SL No.	Name of Chapter	Name of Book	Authors of Chapter
=	Coal to Metallurgical Coke	Coal to metallurgical Coke in Coal Production and Processing Technology, CRC Press	Dr. V.K Saxena and Dr. H.P Tiwari

3.6.5.2 Papers published in International Journals

SL No.	Author (s)	Year	Title	Journal	Vol. No.	Page No.
1	I.M. Mishra, P Kundu, V Paul, V Kumar	2015	Formulation development, modeling and optimization of emulsification process using evolving RSM coupled hybrid ANN-GA framework	Chemical Engineering Research and Design	104	773-790
2	I.M Mishra, J Sharma, D D Dianysiou, V Kumar	2015	Oxidative removal of bisphenol a by uv-c/peroxymonosulfate (pms): Kinetics, influence of co-existing chemicals and degradation pathway	Chemical Engineering Journal	276	193-204
3	I.M Mishra, P Kundu	2015	Treatment of surfactant-stabilized oily wastewater using coalescing bed of bagasse fly ash (BFA) as a low-cost filter medium: modelling and optimization of process parameters	Desalination and Water Treatment	57	19713-19726
4	I.M Mishra, P Kundu, P With, V C Srivastava, R Glaser	2015	Conversion of carbon dioxide along with methanol to dimethyl carbonate over ceria catalyst	Journal of Environmental Chemical Engineering	03(4)	2943-2947
5	I.M Mishra, P Kundu, P With, V C Srivastava, R Glaser	2015	Glycerol Carbonate Synthesis by Hierarchically Structured Catalysts: Catalytic Activity and Characterization	Industrial and Engineering Chemistry Research	54	12543-12552
6	V.K Saxena, K Babu, N Pal, A Mandal	2015	Synthesis and characterization of a new polymeric surfactant for chemical enhanced oil recovery	Korean Journal of Chemical Engineering	33(2)	711-719
7	V.K Saxena, D ang, R Singh, S Shome, P K Banerjee	2015	Use of organic binder in coke making	Ironmaking and Steelmaking	42	112-116
8	V.K Saxena, K Babu, N Pal, A Bera, A Mandal	2015	Studies on interfacial tension and contact angle of synthesized surfactant and polymeric from castor oil for enhanced oil recovery	Applied Surface Science	353	1126-1136

9	V.K Saxena, K Babu, A Bera, A Mandal	2015	Characterization and application of methylcellulose and potato starch blended films in controlled release area	Journal of Polymer Engineering	35	79-88
10	V.K Saxena, Preveen K Jha, Vikas Mahto	2015	Effects of Carboxymethyl Cellulose and Tragacanth Gum on the Properties of Emulsion-Based Drilling Fluids	Canadian Journal of Chemical Engineering	93	1577-1587
11	V.K Saxena, K Babu, A Mandal	2015	Synthesis and characterization of sodium methyl ester sulfonate for chemically enhanced oil recovery	Brazilian Journal of Chemical Engineering	32	795-803
12	V.K Saxena, V Singh, R Venugopal, A K Mukherjee	2016	Study of the effect of ultrasonic treatment on mineral materials of different morphologies	Minerals and Metallurgical Processing	33	88-96
13	V.K Saxena, K Babu, N Pal, A Mandal	2016	Synthesis and characterization of a new polymeric surfactant for chemical enhanced oil recovery	Korean Journal of Chemical Engineering	33	711-719
14	V.K Saxena, N Sultana, B Hajra, C Guria	2016	Optimal Synthesis of Sal (Shorea robusta) Oil Biodiesel Using Recycled Bentonite Nanoclay at High Temperature	Energy and Fuels	30	386-397
15	V.K Saxena, Dehajani Nag, Bidyut Das	2016	Enhancement of Coking Properties of Coal by Differential Screening	International Journal of Coal Preparation and Utilization	36	01-09
16	V.K Saxena, Preveen K Jha, Vikas Mahto	2016	Study the Effects of Xanthan Gum and Aluminium Stearate on the Properties of Oil-in-Water Emulsion Drilling Fluids	Arabian Journal for Science and Engineering	41	143-153
17	Vinod Kumar Yadav, and Vineet Kumar	2016	Staggered Grid Finite Volume Approach for Modeling Single Particle Char Gasification	International Journal of Chemical Reactor Engineering	14	749-756
18	Jyoti Sharma, I. M. Mishra, and Vineet Kumar	2016	Mechanistic study of photo-oxidation of Bisphenol-A (BPA) with hydrogen peroxide (H ₂ O ₂) and sodium persulfate (SPS)	Journal of environmental management	166	12-22
19	Jyoti Sharma, I. M. Mishra, Dionysios D Dionysiou, Vineet Kumar	2015	Oxidative removal of Bisphenol A by UV-C/peroxymonosulfate (PMS): Kinetics, influence of co-existing chemicals and degradation pathway	Chemical Engineering Journal	276	193-204
20	Damandeep Singh, R. K. Gupta, Vineet Kumar	2015	Simulation of a Plant Scale Reactive Distillation Column for Esterification of Acetic Acid	Computers & Chemical Engineering	73	70-81

21	Jyoti Sharma, I. M. Mishra, and Vineet Kumar	2015	Degradation and mineralization of Bisphenol A (BPA) in aqueous solution using advanced oxidation processes: UV/H ₂ O ₂ and UV/S ₂ O ₈ ⁽²⁻⁾ oxidation systems	Journal of environmental management	156	266-275
22	Kumar Anupam, Suman Dutta, Chiranjib Bhattacharjee, Siddhartha Datta	2016	Artificial neural network modelling for removal of chromium (VI) from wastewater using physisorption onto powdered activated carbon	Desalination and Water Treatment	57(8)	3632-3641
23	S. K. Bhaumik, A. Kannan, S. DasGupta	2015	Taylor-Aris Dispersion Induced by Axial Variation in Velocity Profile in Patterned Microchannels	Chemical Engg Science	134	251-259
24	S. K. Bhaumik, R. Behera	2015	CFD Optimization of Free convective cooling of Finned heat sinks: Effect of Fin Spacing	Procedia Engineering	127	155-161

3.6.5.3 Papers presented in International Seminars/ Conferences

SL No.	Author(s)	Title	Seminar/Conference	Date	Place
1	A Samanta, P Sarkar R Gupta	A Multi-Cyclic Study on Post-Combustion of CO ₂ Capture using Polyethyleneimine-Impregnated Mesoporous SBA-15 Silica Sorbents	65 th Canadian Chemical Engineering Conference 2015	4-7 October 2015	Calgary, Canada
2	Shireen Quereshi, Suman Dutta and Tarun Kumar Naiya	One Pot Synthesis of Biobased Fuel Additive Ethyl Levulinate By Direct Transformation of Bagasse in Ethanol Media	2015 AIChE Annual Meeting	November, 2015	Salt Lake City UT, USA
3	S. K. Bhaumik, R. Behera	CFD Optimization of Free convective cooling of Finned heat sinks: Effect of Fin Spacing	International Conference of Computational Heat and Mass transfer NIT Warangal, India	November 30-December 2, 2015.	NIT Warangal, India
4	A. Das and S. K. Bhaumik	Soft Lithography Based Replication of Lotus leaf Micro-structures on Substrates for Drag Reduction'	International Conference on Advances in Chemical Engineering	December 20-22, 2015.	NIT Suratkal, India

3.6.5.4 Papers presented in National Seminars/ Conferences

SL No.	Author(s)	Title	Seminar/Conference	Date	Place
1	Vineet Kumar, Rahul Ranjan and Gunjan Saraswat	Pseudo-Elementary Rate Equation: From Lab-Scale Mat Reactor to Industrial FCCU	CHEMCON-2015	December 27-30, 2015	Indian Institute of Technology Guwahati
2	Nalam Chandra Sekhar, Vineet Kumar	Enhanced Acetic Acid Esterification in Divided Wall Reactive Distillation Column	CHEMCON-2015	December 27-30, 2015	Indian Institute of Technology Guwahati
3	Pragya Swami, Vinod Kumar Yadav, Vineet Kumar	Unsteady-State Simulation of Single Particle Coal Gasification Showing Ash as Moderator	CHEMCON-2015	December 27-30, 2015	Indian Institute of Technology Guwahati
4	Vinay Shah and Vineet Kumar	A New Lumping Scheme for Modeling and Simulation of Fluid Catalytic Cracking Riser Reactor	CHEMCON-2015	December 27-30, 2015	Indian Institute of Technology Guwahati
5	R.Dey, A. Samanta	Mesoporous SBA-15 Support for CO ₂ Capture: Microwave-Assisted Synthesis and Morphology Study	CHEMCON 2015	27-30 Dec 2015	IIT Guwahati
6	Anuja Tripathi, Chiranjit Bhattacharjee, Suman Dutta	Evaluation of Different Parameters and Cleaning Efficiency of UF Membranes	CHEMCON 2015	27-30 December 2015	IIT Guwahati, Assam
7	Bhattacharjee C., Saxena V. K., Dutta S.	Analysis of Physico-Chemical Properties in Ultrafiltration of Watermelon Juice	CHEMCON 2015	27-30 December 2015	IIT Guwahati, Assam
8	Pooja Kumari, Prakash D Chaven, Suman Dutta	Preparation and Characterization of TiO ₂ Semiconductor Catalyst	CHEMCON 2015	27-30 December 2015	IIT Guwahati, Assam
9	Shireen Quereshi, Suman Dutta, Tarun Kumar Naiya	Acid Catalyzed Synthesis of Ethyl Levulinate by Direct Hydrlysis of Bagasse in Ethanol Media	Chemference 2015	5-6 December 2015	IIT Hyderabad
10	R. Behera, S. K. Bhaumik	Convective cooling of finned heat exchanger	CHEMCON 2015	December 27-30, 2015	IIT Guwahati
11	T. Saha, D. Shashi, A. Das, S. K. Bhaumik	An inexpensive Electrodeposition Method for manufacturing Superhydrophobic surface	CHEMCON 2015	December 27-30, 2015	IIT Guwahati
12	D. Shashi, T. Saha, A. Das, S. K. Bhaumik	Lotus-leaf Effect and its applications in Drag reduction	CHEMCON 2015	December 27-30, 2015	IIT Guwahati
13	Prashant Kumar Purbey, Siddhartha Sengupta	Preparation and Characterization of Al ₂ O ₃ supported Ni-Co catalysts	CHEMCON 2015	27-30 December, 2015	Chemical Engg. Dept., IIT Guwahati

14	S. Banerjee, C. Modak, S. K. Bhaumik	Estimation of cement rotary kiln coating thickness by integrated modelling	CHEMCON 2015	December 27-30, 2015	IIT Guwahati, Department of Chemical Engineering
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3.6.6 PARTICIPATION OF FACULTY/OFFICERS/STAFF IN SEMINARS/ CONFERENCES ETC.

Dr. A.K Samanta	CSCHE 2015	04-07 Oct 2015	Canada
Dr. A.K Samanta	CHEMCON 2015	27-30 Dec 2015	IIT Guwahati
Dr Suman Dutta	CHEMCON 2015	27-30 Dec 2015	IIT Guwahati, Assam
Dr. Suman Dutta	10 th Summer School Programme on "Petroleum Refining & Petrochemicals"	1-5 June 2015	IIPM Gurgaon
Dr S. K. Bhaumik	International Conference of Computational Heat and Mass transfer	Nov 30-Dec 2, 2015.	NIT Warangal, India
Shri Suresh Kumar Yatirajula	TEQIP Short Term Course on 'Surfactant mediated pollutant removal techniques'	19-23 January 2016	IIT Guwahati

3.6.7 VISITS OF FACULTY MEMBERS ABROAD

Dr. A Samanta visited University of Alberta, Calgary, Canada from 03.10.2015 to 08.10.2015

3.6.8 TESTING SERVICES AND RESEARCH FACILITIES (LAB FACILITIES AVAILABLE FOR TESTING IN THE DEPARTMENT/ CENTRE)

SL No.	Name of Equipments	Make
1	Modular Compact Rheometer (MCR 102)	Anton Paar, Austria
2	High Performance Liquid Chromatograph (HPLC)	Agilent, USA
3	Ultrasound Probe with generator	Sonics, USA
4	Ultrasound bath (dual frequency)	Elma, Germany
5	Multicomponent Modular Gas Analyser	Horiba, Japan
6	Macro Particle Size Analyzer	Microtrac, USA
7	Nano particle size, Zetasizer	Malvern, UK
8	Density Meter for Liquid & Gases	Anton Paar GmbH, Austria
9	UV Visible Spectrophotometer	Thermo Electron Scientific Inst, USA
10	Sensitive Accurate & Robust Bench Simultaneous TGA	Waters, Austria
11	FTIR	Agilent, USA
12	Rotational Viscometer	Anton Paar, Austria

13	Gas Chromatograph (GC)	ThermoFisher
14	Tensiometer: DSA 25S	Kruss, Germany
15	CHNS Analyzer	Elementar, Germany
16	TOC Analyzer	Elementar, Germany
17	DSC- TGA: SDT Q600	TA Instrument, USA
18	TGA, Thermostep	Eltra, Germany
19	Karl Zeiss Axioscope	Carl Zeiss
20	ANSYS Fluent	USA
21	MATLAB with SIMULINK	Math Works Inc., USA
22.	ASPEN TECH Software	ASPEN, USA

VARIOUS LABS IN THE DEPARTMENT

- Fluid Mechanics Lab
- Mechanical Operation Lab
- Heat Transfer Lab
- Mass Transfer Lab
- Chemical Reaction Engineering Lab
- Fuel analysis Lab
- Process Control and Instrumentation Lab
- Process Simulation Lab
- Advanced Chemical Engineering Lab
- Instrumental Methods of Analysis (Lab) for both UG and PG
- Computer-aided Design of Chemical Process Plants Lab

3.6.9 DISTINGUISHED VISITORS TO THE SCHOOL (INDICATING OCCASION/ PURPOSE)

Prof. Nitin Kayastha, Dept. of Chemical Engineering, IIT Kanpur delivered a Lecture on “Plant Wide Control”	Feb. 3-4, 2016
Prof. M. Chidambaram, Dept. of Chemical Engineering, IIT Madras interacted with the faculty members.	January , 2016
Prof. S. Ramanathan, Dept. of Chemical Engineering, IIT Madras interacted with the faculty members.	January, 2016

3.6.10 SPECIAL LECTURES BY DISTINGUISHED GUESTS

Prof. Nitin Kayastha, Dept. of Chemical Engineering, IIT Kanpur delivered a Lecture on “Plant Wide Control”	Feb. 3-4, 2016
Prof. M. Chidambaram, Dept. of Chemical Engineering, IIT Madras interacted with the faculty members.	January , 2016
Prof. S. Ramanathan, Dept. of Chemical Engineering, IIT Madras interacted with the faculty members.	January, 2016

3.7 CIVIL ENGINEERING

3.7.1 ABOUT THE DEPARTMENT

The inception of the department took place in the year 2013 with ten reputed faculty members.

3.7.1.1 Vision

- It envisions to be a nationally and internationally reputed department, with social commitment having ethos for progress of knowledge and development of research.
- The Department would be dedicated for development of trained human resource, innovators and leaders, with intellectual honesty, in the realm of Civil Engineering for serving the Nation.

3.7.1.2 Mission

- To educate and train manpower in Civil Engineering at the graduate, postgraduate and research levels.
- To participate directly in the planning and solving of engineering problems of relevance to Indian infrastructural industry and to society, at large.
- To develop and conduct continuing education programmes for practicing engineers.
- To develop strong collaborative and cooperative links with private and public sector industries and government departments.
- To develop comprehensive and intimate interaction with premier academic and research institutions within the country and abroad for mutual benefit.
- To develop programmes for Faculty growth and development.
- To anticipate the technological needs of the nation and to be instrumental in addressing them.

3.7.2 FIELD VISITS/EXCURSIONS/TRAINING PROGRAMMES UNDERTAKEN BY STUDENTS

Particulars	Batch of Students	Place of Visit	Period of visit
Ali Imam	2013	Gaya Manpur bridge Gaya , Bihar	2 weeks
Alok Shakti	2013	S.R Rungta Mines ltd. Barbil, Odisha	50 days
D Amarnath Reddy	2013	Kandaleru reservoir Nellore	30 days
Ran Vijay Chauhan	2013	M/s Larsen & Toubro ltd.	30 days
Dilip Singh Shekhawat	2013	S.R Rungta Mines ltd. Barbil, Odisha	30 days
1.Bhatt Mohit Prakash 2. Prem Kumar	2013	Shivalik projects Ahmedabad	3 weeks
Labhala Bindu Madhav	2013	Programme-2015 under Indian Academy of Sciences at IIT Bombay	2 months

1. Abhishek Bhatt 2.Aman Kumar Trigun 3.Koustubh Bhardwaj	2013	AIIESEC, Russia	6 weeks
1.Abhishek Kumar 2.Shivansh Shrivastava 3. Ashish Shyoran 4. Abhishek Kumar	2013	Delhi Development Authority	4 weeks
1.Sk. Mahaboob Shahrukh 2.Sheshin Reddy Sivampeta	2013	Kandaleru Reservoir, Nellore	30 days
Himanshu Joshi	2013	CSIR-Central Building Research Institute, Roorkee	8 weeks
Hitesh Charan Khare	2013	North Central Railway (Construction Department), Kanpur	8 weeks
Pritam Kumar	2013	Steel Authority of India Ltd.	4 weeks
Pankaj Kumar Bhagat	2013	BSCPL Infrastructure limited,Chattisgarh/Odisha border (Aurang section)	4 weeks
Nidhi Sinha	2013	ONGC, Ahmedabad	4 weeks
Harmesh Bhardwaj	2013	Chhattisgarh Housing Board, Raipur	4 weeks
Gundagoni Akhil	2013	Mahatma Gandhi Lift Irrigation Project Mahabubnagar	3 weeks
Asif Reza Khan	2013	Hyundai Engineering & Construction Doha, Qatar	15 days
Anil kumar Dotania	2013	Gammon India Ltd, Mumbai Central	4 weeks
Mohd Azam	2013	Moradabad Housing Board, Moradabad	10 days

3.7.3 INTRODUCTION OF NEW COURSES AND PROGRAMMES, IF ANY (GIVE COURSE OUTLINE).

M.Tech in Structural Engineering. The purpose of introducing this course is to support the growth of infrastructures in the country.

3.7.4 BEST PRACTICES OF THE DEPARTMENT

All the faculty members are involved in research projects.

3.7.5 BRIEF LIST OF ON-GOING R&D PROJECTS (PROJECT VALUE ₹ 5,00,000/- AND ABOVE)

1.	Project Title : Sponsoring Agency : Coordinator (s) : Project Value : Date of Commencement : Date of Completion : Objective : Status : Findings :	Constructing Structures on Backfilled Open Cast Coal Mines: An Attempt to Suggest Viable Methodologies. Coal India PI: Prof. Sekhar Chandra Dutta Co-PI (s): Dr. S. K. Panda, Dr. L. Nainegali, Dr. Sanket Nayak, Dr. Tanish Dey, Dr. S. Chakraborty and Mr. S. S. Mohapatra ₹ 3.38 Crore December, 2015 December, 2018 To study the feasibility of constructing habitations and other infrastructural facilities on back filled open cast mines. Ongoing. Ongoing
2.	Project Title : Sponsoring Agency : Coordinator (s) : Project Value : Date of Commencement : Date of Completion : Objective : Status : Findings :	Investigation on Mechanical and Durability Properties of Self Compacted Concrete Prepared with Recycle Coarse Aggregate from C&D Waste HUDCO Dr S K Panda & Dr.Sanket Nayak ₹ 16.42 Lakhs 03.09.2015 02.12.2017 Study of Mechanical and Durability Properties of Self Compacted Concrete Prepared with Recycle Coarse Aggregate from C&D Waste Ongoing Ongoing
3.	Project Title : Sponsoring Agency : Coordinator (s) : Project Value : Date of Commencement : Date of Completion : Objective : Status : Findings :	Assessment of groundwater quality and zonation of Kadiri watershed in the drought prone areas of Anantapur region SERB, DST Dr. Srinivas Pasupuleti (PI) ₹ 25.40 Lakhs 09-11-2015 08-11-2018 Delineation of groundwater potential zones, determination of stage of groundwater development in the basin and suggesting suitable sites for groundwater augmenting structures. Ongoing Ongoing
4.	Project Title : Sponsoring Agency : Coordinator (s) : Project Value : Date of Commencement : Date of Completion : Objective : Status : Findings :	Low-cost sustainable approach of improving lateral load resisting capacity of unreinforced masonry structures. SERB, DST Dr. Sanket Nayak (PI) ₹ 23.76 Lakhs March, 2016 March, 2019 Improvement of lateral load resisting capacity of URM structures using low cost strengthening materials. Ongoing Ongoing

5.	Project Title	:	Coupled Three-Dimensional Non-linear Finite Element Analysis of Geocell Reinforced Railway Tracks with Mine Waste
	Sponsoring Agency	:	SERB, DST
	Coordinator (s)	:	Dr. Sowmiya Chawla (PI)
	Project Value	:	₹ 25. 68 Lakhs
	Date of Commencement	:	March, 2016
	Date of Completion	:	March, 2019
	Objective	:	Investigate the response of railway track constructed on geocell-reinforced and unreinforced soft soil bed using three dimensional finite element analysis (coupled time-dependent consolidation analysis)
	Status	:	Ongoing
	Findings	:	Ongoing
6.	Project Title	:	Experimental investigations on characteristics behavior of two nearby embedded shallow foundations
	Sponsoring Agency	:	SERB, DST
	Coordinator (s)	:	Dr. Lohitkumar Nainegali (PI)
	Project Value	:	₹ 18.00 Lakhs
	Date of Commencement	:	March, 2016
	Date of Completion	:	March, 2019
	Objective	:	Investigate the effect of interference phenomena on the characteristics behavior of embedded shallow footings
	Status	:	Ongoing
	Findings	:	Ongoing

3.7.6 IMPORTANT COLLABORATIVE WORKS

Organisation / Laboratory	Nature of Interaction
Dept. of Civil & Environmental Engg., University of Windsor, Canada.	Collaborative research work.
Water Resources Center, Texas Tech University, Lubbock, Texas, USA	Collaborative research work.

3.7.7 IMPORTANT NEW EQUIPMENT ACQUISITIONED (ABOVE ₹ 5,00,000/-)

Name of Equipment	Purpose	Date of Purchase	Value (Rs.)
ANSYS Software	Computer Lab	09.09.2015	5,06,951
Water Absorption and Permeability of Concrete	Concrete Lab	01.10.2015	5,40,000

3.7.8 RESEARCH PUBLICATIONS

3.7.8.1 Papers published in International Journals

Sl. No.	Authors (s)	Year	Title	Journal	Vol. No.	Page No.
1	Nayak, S. and Dutta, S. C.	2016	Failure of masonry structures in earthquake: a few simple cost effective techniques as possible solutions.	Engineering Structures, Elsevier.	106	53-67.

2	Dutta, S. C., Mukhopadhyay, P., Saha, R. and Nayak, S.	2015	2011 Sikkim Earthquake at Eastern Himalayas: Lessons learnt from performance of structures.	Soil Dynamics and Earthquake Engineering, Elsevier.	75	121-129.
3	Saha, R., Dutta, S.C., and Halder, S.,	2015	“Effect of Raft and Pile Stiffness on Seismic Response of Soil-piled raft structure system”	Structural Engineering and Mechanics, Techno Press	55(1),	161-189.
4	Rajesh Kumar, Abhinav Kumar and Panda S.K.	2015	Parametric Resonance of Composite Skew Plate under Non- uniform In-plane Periodic Loading	Structural Engineering and Mechanics, (Techno Press)	55(2)	435-459
5	Abhinav Kumar, Panda S.K. and Rajesh Kumar.	2015	Buckling of Composite Skew Plates Under Linearly Varying Load Using Boundary Characteristic Orthogonal Polynomials	International Journal of Mechanical Science, (Elsevier),	100.	136-144
6	Panda S.K, Ramachandra L S and Rajesh Kumar	2015	Post-buckled Vibration Characteristic of Composite Cylindrical Shell Panels Under Parabolic In-plane Edge Compression	International Journal of Applied Mechanics(World Scientific)	7(3)	1550035-1- 21
7	Sowmiya Chawla J.T. Shahu	2016	Reinforcement and mud-pumping benefits of Geosynthetics in railway tracks: Model tests	Geotextiles and Geomembranes	44	366-380
8	Sowmiya Chawla J.T. Shahu	2016	Reinforcement and mud-pumping benefits of Geosynthetics in railway tracks: Numerical analysis	Geotextiles and Geomembranes	44	344-357
9	Sowmiya L.S Shahu J.T. and Gupta K.K	2015	Performance of geosynthetic reinforcement on the ballasted railway track	Lowland Technology International	17	83-92
10	Tanish Dey and L. S. Ramachandra	2015	Dynamic stability of simply supported composite cylindrical shells under partial axial loading	Journal of Sound And Vibration (Elsevier)	353	272-291

3.7.8.2 Papers presented in International Seminars/Conferences

Sl.No.	Authors (s)	Title	Seminar /Conference	Date	Place
1	Ashes Banerjee, Srinivas Pasupuleti, Pradeep Kumar G.N.	A critical study on the applicability of Forchheimer & Wilkins equation for non- linear flow through coarse granular media.	International Conference on Water, Environment, Energy and Society (ICWEES-2016)	March 15- 18, 2016	Organised by AISECT University and Texas A&M University at Bhopal

2	Sowmiya L.S. and Shahu J.T.	Study on the benefits of the advanced techniques used for instrumentation and monitoring of typical Indian railway track formations	Conference on Advances in Instrumentation, Geo-monitoring and Validation	23-24 July 2015	Organised by Central Board of Irrigation & Power, Malcha Marg, Chanakyapuri, New Delhi.
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3.7.9 SEMINARS, SYMPOSIA, WORKSHOPS, CONFERENCES ORGANIZED BY THE DEPT./CENTRE

Details	Date
Short Term Course: Sustainable Infrastructure	8-10 January, 2016.

3.7.10 PARTICIPATION OF FACULTY/OFFICERS/STAFF IN SEMINARS/ CONFERENCES ETC.

Name	Title	Dates	Venue
Dr. Srinivas Pasupuleti	TEQIP Course on “Remote Sensing and GIS Applications in Hydrology”	January 27 - 31 2016	Dept. of Civil Engineering, IIT Roorkee

3.7.11 VISITS OF FACULTY MEMBERS ABROAD

Prof. S.C. Dutta and Dr. Sanket Nayak visited University of Windsor, Canada from June 17 to July 1, 2015 for MOU for collaborative research work.

3.7.12 DISTINGUISHED VISITORS TO THE SCHOOL (INDICATING OCCASION/ PURPOSE)

Details	Occasion/ Purpose
Prof. Venki Uddameri, Director, Water Resources Centre, Texas Tech University, Lubbock, USA	MOU between ISM and TTU on 28 th December, 2015
Prof. Subhamoy Bhattacharya, University of Surrey, UK	3-4 January, 2016, Initiation of collaborative research work.
Prof. Sreekanta Das, University of Windsor, Canada	8-10 January, 2016; To deliver expert lecture in a short term course.

3.7.13 MISCELLANEOUS: ANY OTHER RELEVANT INFORMATION

- Training Programme on “Recent Advances in Water Resources and Environmental Engineering Computation” was organized at IIF Kolkata, during 22-26 December, 2015 jointly with ESE Department in association with Water Resources Center, Texas Tech University, Lubbock, Texas, USA.

3.8 COMPUTER SCIENCE & ENGINEERING

3.8.1 About the Department:

The Department of Computer Science & Engineering was set up in the year 1997. The Department conducts academic programmes leading to the award of degrees in B.Tech. (Computer Science & Engineering), Dual Degree (Computer Science & Engineering), M.Tech. (Computer Science & Engineering) and Ph.D. programmes.

3.8.1.1 Vision

The vision of the Department of Computer Science and Engineering is to be recognized nationally and internationally in providing quality education leading to B.Tech., M.Tech., and Ph.D Degree in the area of Computer Science and Engineering. The Department is committed to maintain its excellence in teaching, research and innovation with a never ending endeavor to produce high quality engineers, scientists and academicians for serving the nation and the world. The Department focuses on imparting technical and quality education which may provide innovative skills in their respective area of specialization with a prime objective to generate and disseminate knowledge and technologies essential to the local and global needs of the society.

3.8.1.2 Mission

The department has the following mission:

- Acquiring knowledge of a broad range of Computer Science skills, tools, and mathematical techniques, and the capability of applying them to analyze and design complex systems.
- Deep understanding of theoretical and practical Computer Science, and the ability to adapt with ever changing technological landscape.
- Capability of solving a wide variety of problems by applying principles of computational thinking.
- Growing and maintaining habit of working effectively and professionally on various project teams.
- Ability to communicate technical information clearly and effectively, both orally and in writing.
- Understanding how to associate social effects of computing ethically and responsibly, and being committed in doing so.
- Promoting interest in lifelong learning, to adapt and shape an evolving world.
- Willingness to participate actively in interdisciplinary collaborations and to apply computational methods in new and unexplored domains.

3.8.2 INTRODUCTION OF NEW COURSES AND PROGRAMMES, IF ANY (GIVE COURSE OUTLINE).

A new 3 year M.Tech course in Computer Science & Engineering for Working Executives/Academicians to facilitate completion of their M. Tech. as full time regular student has been introduced. It is a slow pace programme without compromising the course structure or contents. This aims to help the Working Executives / Academicians to improve their technical aptitude and opt for Higher Degree as a regular student within the existing pace of the program.

3.8.3 BEST PRACTICES OF THE DEPARTMENT

The best practice of the Department comprises the following:

- (a) Deliver Quality Teaching & Research Outputs.
- (b) Hands-on practical & project works.
- (c) Organize Short-Term Courses, Guest Lectures, and Workshop & Conferences on regular interval.
- (d) Organize various technical events to promote the competitive & healthy environment among the students of the Department.

3.8.4 BRIEF LIST OF ON-GOING R&D PROJECTS (PROJECT VALUE ` 5,00,000/- AND ABOVE)

1.	Project Title : ISEA (Information Security Education and Awareness) Sponsoring Agency : MIT, Govt of India Coordinator (s) : Dr. Sachin Tripathi (PI) & Dr. Arup Kumar Pal (Co-PI) Project Value : ₹ 36.06 Lakhs Date of Commencement : 03.08.2015 Date of Completion : 02.08.2020 Objective : 1) Retrofitting of Information Security (IS) Courses in B.Tech and M.Tech (CSE, Electronics, Electrical Engg) Programs 2) B.Tech and M.Tech Project works 3) Conducting certificate course and Workshops on IS 4) Awarding PhD on IS (Optional) Status : Ongoing Findings : Ongoing
2.	Project Title : Design of Machine Learning Techniques for Specialized Biological Online Database-mining Sponsoring Agency : CSIR Coordinator (s) : Dr. Haider Banka (PI) & Mr. ACS Rao (Co-PI) Project Value : ₹ 16.05 Lakhs Date of Commencement : 01.04.2011 Date of Completion : 30.09.2015 Objective : Devise various machine learning techniques for feature selection, classification, clustering for biological data analysis. Status : Completed Findings : Developed multiple algorithms to fulfill objectives. Published papers in 2 reputed journals and conferences.

3.	Project Title	:	Energy-Efficient Intruder Detection Schemes for WSN using Learning-based Techniques
	Sponsoring Agency	:	DRDO
	Coordinator (s)	:	Dr. Chiranjeev Kumar (PI) & Dr. Haider Banka (Co-PI)
	Project Value	:	₹ 28.52 Lakhs
	Date of Commencement	:	04/11/2015
	Date of Completion	:	03/11/2018
	Objective	:	To protect the border area of our country from intruders using energy-efficient intruder detection schemes for WSN.
	Status	:	Ongoing
	Findings	:	Survey work is going on.
4.	Project Title	:	Design and Implementation of Group Key Generation protocols and Its Application for secure Multicast
	Sponsoring Agency	:	UGC
	Coordinator (s)	:	Dr. Sachin Tripathi
	Project Value	:	₹ 10.73 Lakhs
	Date of Commencement	:	01.07.2012
	Date of Completion	:	31.01.2016
	Objective	:	Design of group key generation protocols with some applications
	Status	:	Completed
	Findings	:	(Final Installment is awaited) Some new group key protocols has been designed and performance has security analysis has been done and compared with existing protocols.
5.	Project Title	:	Design of Reliable and Energy Efficient Transport Layer Protocols for Ad-hoc and Sensor Network
	Sponsoring Agency	:	DST (SERB)
	Coordinator (s)	:	Dr. Sachin Tripathi
	Project Value	:	₹ 23.13 Lakhs
	Date of Commencement	:	04.08.2015
	Date of Completion	:	03.08.2018
	Objective	:	To design some new reliable and energy efficient protocols for Ad-hoc and Sensor networks.
	Status	:	Ongoing
	Findings	:	Extensive literature survey work

3.8.5 IMPORTANT COLLABORATIVE WORKS

Organisation / Laboratory	Nature of Interaction
Arkansas State University, USA	Signed MOU for International Collaboration.

3.8.6 RESEARCH PUBLICATIONS

3.8.6.1 Books published

1. Chiranjeev Kumar, Haider Banka & Dharavath Ramesh “Recent Advances in Information Technology”, (Proceedings of the 3rd IEEE International Conference RAIT-2016, March 03-05, 2016, Vol. I & II, ISM, Dhanbad, India), 2016, ISBN: 978-1-4799-8578-4.

3.8.6.2 Book reviews / contribution of chapters in a book

1. Prof. P. K. Jana reviewed a book on “Java for Beginners”, Cambridge University Press, January 2016.
2. Dr. Hari Om reviewed a book chapter for “Computational Intelligence in Wireless Sensor Networks: Recent Advances and Future Challenges”, Springer, February 2016.
3. Sethi, K. K., & Ramesh, D. (2016). Delay Scheduling with Reduced Workload on JobTracker in Hadoop. In Innovations in Bio-Inspired Computing and Applications, Volume 424 of Advances in Intelligent Systems and computing (pp.371-381). Springer International Publishing. DOI:10.1007/978-3-319-28031-8_32
4. Dharavath, R., & Singh, A. K. (2016). Entity Resolution-Based Jaccard Similarity Coefficient for Heterogeneous Distributed Databases. In Advances in Intelligent Systems and Computing, Volume, 379, ISSN: 2194-5357, (pp. 497-507). Springer India. DOI: 10.1007/978-81-322-2517-1_48.
5. Ramesh, D., Gupta, H., Singh, K., & Kumar, C. (2015). Hash Based Incremental Optimistic Concurrency Control Algorithm in Distributed Databases. In Intelligent Distributed Computing Volume 321 of the series Advances in Intelligent Systems and Computing pp 139-150. Springer International Publishing, Switzerland. DOI: 10.1007/978-3-319-11227-5 13.

3.8.6.3 Papers published in International Journals

Sl. No.	Author (s)	Year	Title	Journal	Vol. No.	Page No.
1.	R. Amin and G. P. Biswas	2015	A secure three-factor authentication and key agreement for tmis with user anonymity	Journal of Medical Systems	39(8)	1-19
2.	R. Amin and G. P. Biswas	2015	An improved RSA based user authentication and session key agreement protocol usable in tmis	Journal of Medical Systems	39 (79)	1-14
3.	R. Amin and G. P. Biswas	2015	Design and analysis of bilinear pairing based mutual authentication and key agreement protocol usable in multi-server environment	Wireless Personal Communications	84(1)	439-462
4.	R. Amin and G. P. Biswas	2016	A secure light weight scheme for user authentication and key agreement in multi-gateway based wireless sensor networks	Ad Hoc Networks	36(1)	58-80
5.	R. Amin and G. P. Biswas	2015	Cryptanalysis and design of a three-party authentication key exchange protocol using smartcard	Arabian Journal for Science and Engineering	40 (11)	3135-3149
6.	SK Hafizul Islam and G. P. Biswas	2015	Cryptanalysis and improvement of a password based user authentication scheme for the integrated EPR information system	Journal of King Saud University-Computer and Information sciences	27(2)	211-221

7.	R. Amin, SK Hafizul Islam, G. P. Biswas, M. K. Khan and Xion Li	2015	Cryptanalysis and enhancement of anonymity preserving remote user mutual authentication and session key agreement scheme for e-healthcare systems	Journal of Medical Systems	39(140)	1-21
8.	R. Amin, SK Hafizul Islam, G. P. Biswas, M. K. Khan and M. S. Obaidat	2015	Design and analysis of an enhanced Patient-server mutual authentication protocol for telecare medical information system	Journal of Medical Systems	39(137)	1-20
9.	SK Hafizul Islam and G. P. Biswas	2015	Probably secure and pairing based strong designated verifier scheme with message recovery	Arabian Journal for Science and Engineering	40(4)	1069-1080
10.	S. K. Gupta and Prasanta K. Jana	2015	Energy Efficient Clustering and Routing Algorithms for Wireless Sensor Networks: GA Based Approach	Wireless Personal Communications (Springer)	83	2403-2423
11.	Md. Azharuddin, Pratyay Kuila and P. K. Jana	2015	Energy efficient fault tolerant clustering and routing algorithms for wireless sensor networks	Computer & Electrical Engineering (Elsevier)	41	177-190
12.	Sanjaya K. Panda and P. K. Jana	2015	Efficient Task Scheduling Algorithms for Heterogeneous Multi-cloud Environment	Journal of Supercomputing (Springer)	71	1505-1533
13.	Md. Azharuddin and P. K. Jana	2015	A Distributed Algorithm for Energy Efficient and Fault Tolerant Routing in Wireless Sensor Networks	Wireless Networks (Springer)	21	251-267
14.	Pratyay Kuila, and P. K. Jana	2015	Heap and parameter-based load balanced clustering algorithms for wireless sensor networks	International Journal of Communication Networks and Distributed Systems (Inderscience)	14	413-432
15.	Mohd Naseem & Chiranjeev Kumar	2015	Congestion-aware Fibonacci sequence based multipath load balancing routing protocol for MANETs	International Journal of Wireless Personal Communications	84(4)	2955-2974
16.	Prem Nath & Chiranjeev Kumar	2015	Location Management in IPv4 Networks for Fixed Mobility Pattern Users	Location Management in IPv4 Networks for Fixed Mobility Pattern Users	85 (3)	987-1008
17.	Sanjay Kumar Biswash & Chiranjeev Kumar	2015	The Metric and Cache-Based (MC-B) System for Location Management in Wireless Cellular Networks	International Journal of Wireless Personal Communications	82 (1)	569-593

18.	Debashis Das and Susanta Mukhopadhyay	Nov, 2015	Fingerprint Image Segmentation Using for Science and Block-Based Statistics Engineering and Morphological Filtering	Arabian Journal	40	3161-3171
19.	Sawrav Roy and Susanta Mukhopadhyay	July 2015	Enhancement of morphological snake based segmentation by imparting image attachment through scale-space continuity	Pattern Recognition	48	2254-2268
20.	Rahul Paul and Susanta Mukhopadhyay	Dec 2015	Foreground object extraction based on independent component analysis	Advances in Vision Computing: An International Journal (AVC)	2	1-11
21.	Jay Raj Singh, and Haider Banka	2016	A study of soft computing models for prediction of longitudinal wave velocity	Arabian Journal of Geosciences	9 (3)	1-11
22.	Haider Banka	2016	Standardization of a method for studying susceptibility of Indian coals to self-heating	Arabian Journal of Geosciences	9 (2)	1-14
23.	Md. Nadeem, and Haider Banka	2016	SVM-Based Predictive Modelling of Wet Palletization Using Experimental and GA-Based Synthetic Data	Arabian Journal for Science and Engineering	41 (3)	1053-1065
24.	Kaushik, Bajinath, and Haider Banka	2015	Performance evaluation of approximated artificial neural network (AANN) algorithm for reliability improvement	Applied Soft Computing	26	303-314
25.	S Dara & Haider Banka	2015	A Hamming distance based binary particle swarm optimization (HDBPSO) algorithm for high dimensional feature selection, classification and validation.	Pattern Recognition Letters	52	94-100
26.	Abhimanyu Kumar, Sachin Tripathi	2015	A Pairing Free Anonymous Certificateless Group Key Agreement Protocol for Dynamic Group	Wireless Personal Communications	82(2)	1027-1045
27.	Abhimanyu Kumar, Sachin Tripathi	2016	Anonymous ID-based Group Key Agreement Protocol without Pairing	Int. Journal of Network Security (IJNS)	18 (2)	263-273
28.	Ajay Kumar Yadav, Sachin Tripathi	2015	DLBMRP: Design of Load Balanced Multicast Routing Protocol for Wireless Mobile Ad-hoc Network	Wireless Personal Communications	85(4)	1815-1829
29.	ShipraKumari and Hari Om	2015	Remote Login Authentication Scheme based on Bilinear Pairing and Fingerprint	KSII Trans. on Internet and Information Systems	9 (12)	4987-5014

30.	Neha Sharma and Hari Om	2015	GMDH polynomial and RBF neural network for oral cancer classification	Network Modeling Analysis in Health Informatics and Bioinformatics	4 (1)	1-10
31.	Neha Sharma and Hari Om	2015	Usage of Probabilistic and General Regression Neural Network for Early Detection and Prevention of Oral Cancer	The Scientific World Journal, Hindawi	2015	1-11
32.	Hari Om, Vishavdeep Goyal and Kunal Gupta	2015	A 3-D Geometry based Remote Login 2-Way Authentication Scheme using Smart Card	Int. Journal of Computer Network and Information Security	7 (8)	72-79
33.	Ravi Sankar Sangam and Hari Om	2015	Hybrid Data Labeling Algorithm for Clustering Large Mixed Type Data	Journal of Intelligent Information Systems	45 (2)	273-293
34.	Hari Om and Mantosh Biswas	2016	A New Adaptive Image Denoising Method	Journal of The Institution of Engineers, Series B	97 (1)	1-10
35.	Hari Om and Mantosh Biswas	2016	A New Adaptive Image Denoising Method Based on Neighboring Coefficients	Journal of The Institution of Engineers, Series B	97 (1)	11-19
36.	Soumen Bag and Partha Bhowmick	2015	Adaptive-Interpolative binarization with stroke preservation for restoration of faint characters in degraded documents	Journal of Visual Communication and Image Representation	31	266-281
37.	T. Amgoth and P. K. Jana	2016	Efficient overlay construction for wireless sensor networks	Wireless Personal Communications (Springer)	86	959-973
38.	T. Amgoth and P. K. Jana	2015	Energy-aware routing algorithm for wireless sensor networks	Computers & Electrical Engg. (Elsevier)	41	357-367
39.	T. Amgoth and P. K. Jana	2015	Energy and Coverage-Aware Routing Algorithm for Wireless Sensor Networks	Wireless Personal Communications (Springer)	81	531-545
40.	Dharavath Ramesh & Chiranjeev Kumar	2015	Entity resolution based EM for integrating heterogeneous distributed probabilistic data	Journal of Systems and Software	107	93-109
41.	Dharavath Ramesh & Chiranjeev Kumar	2015	Schema integration based merging and matching algorithm for agricultural HDDBs	Arabian Journal for Science and Engineering (AJSE)	40 (9)	2555-2569
42.	Ramesh, D., Kumar, C., and Bitthal K	2015	An incremental hash based optimistic concurrency control scenario for failure management in HDDBs – An application approach	Journal of Intelligent Information and Database Systems (JIIDS), Inderscience publishers	9	79-102

3.8.6.4 Papers presented in International Seminars/Conferences

Sl. No.	Author (s)	Title	Seminar/Conference	Date	Place
1.	R. Amin, SK Hafizul Islam, G. P. Biswas and MK Khan	An efficient remote mutual authentication scheme using smart mobile phone over insecure networks	Cyber Situational Awareness, Data Analytics and Assessment (CyberSA)- 2015	08-09.06.2015	London, UK
2.	Rajeev Kumar, R. Amin, A Karati and G. P. Biswas	Secure remote login scheme with password and smartcard update facilities	Frontiers in Intelligent Computing: Theory and Applications (FICTA)	16-18.11.2015	NIT, Durgapur
3.	D. S. Gupta and G. P. Biswas	Identity-based/attribute-based cryptosystem using threshold value without shamir's secret sharing	Signal Processing, Computing and Control	24-26.09.2015	Jaypee University, Solan
4.	Madhavi Mishra, Kumar Nitesh and Prasanta K. Jana	A Delay-bound Efficient Path Design Algorithm for Mobile Sink in Wireless Sensor Network	Proc. of Intl. Conf. Recent Advances in Information Technology	3-5 March 2016	ISM, Dhanbad
5.	Jannu, Srikanth, and Prasanta K. Jana	Energy Efficient Algorithms for Hot Spot Problem in Wireless Sensor Networks	Proc. of the Second Intl Conference on Computer and Communication Technologies	24-26 July 2016	Hyderabad
6.	Preeti Komal, Kumar Nitesh and Prasanta K. Jana	Indegree-based Path Design for Mobile Sink in Wireless Sensor Networks	Proc. of Intl. Conf. Recent Advances in Information Technology	3-5 March 2016	ISM, Dhanbad
7.	Srikanth Jannu and Prasanta K. Jana	Maximizing Network Lifetime of Wireless Sensor Networks: An Energy Harvesting Approach	International Conference on Signal, Networks, Computing and Systems	25-27 February 2016	JNU, New Delhi
8.	Jyoti, Md. Azharuddin, Prasanta K. Jana	An effective task scheduling approach for cloud computing environment	International Conference on Signal, Networks, Computing and Systems	25-27 February 2016	JNU, New Delhi
9.	Suneet K Gupta, Pratyay Kuila and Prasanta K. Jana	Transfer time aware workflow scheduling in multi-cloud environment	The First International Conference on Intelligent Computing and Communication	18-19 February 2016	University of Kalyani, Kalyani
10.	Ankita Sinha and Prasanta K. Jana	A Novel MapReduce based k-Means Clustering	The First International Conference on Intelligent Computing and Communication	18-19 February 2016	University of Kalyani, Kalyani

11.	Kishor, Md. Azharuddin, Prasanta K. Jana	An efficient scheme for determining path for mobile sink in wireless sensor networks	International Conference on Electrical Engineering and Computer Sciences	16-18 December 2015	Hong Kong
12.	Sanjaya K. Panda and Prasanta K. Jana	An Efficient Task Consolidation Algorithm for Cloud Computing Systems	12 th International Conference on Distributed Computing and Internet Technology	15-18 January 2016	Bhubaneswar
13.	Sanjaya K. Panda and Prasanta K. Jana	Novel Leases for IaaS Cloud	4 th International Conference on Advances in Computing, Communications & Informatics	10-13 August 2015	Kochi
14.	Kumar Nitesh, Md. Azharuddin and Prasanta K. Jana	Energy Efficient Fault-Tolerant Clustering Algorithm for Wireless Sensor Networks	International Conference on Green Computing and Internet of Things	8-10 October 2015	GCET, Noida
15.	Kumar Nitesh and Prasanta K. Jana	Energy Density Based Dynamic Path Selection for Mobile Sink in Wireless Sensor Networks	4 th International Conference on Computing, Communication and Sensor Network	24-25 December 2015	Kolkata
16.	Suneet K. Gupta, Pratyay Kuila and Prasanta K. Jana	Genetic Algorithm for k-connected Relay Node Placement in Wireless Sensor Networks	International Conference on Computer and Communication Technologies	24-26 July 2015	Hyderabad
17.	Soumen Nayak, Chiranjeev Kumar, & Sachin Tripathi	Effectiveness of Prioritization of Test Cases based on Faults	3 rd IEEE International Conference on Recent Advances in Information Technology (RAIT – 2016)	03-05 March 2016	ISM, Dhanbad
18.	Amrit Suman, & Chiranjeev Kumar	A Behavioral Study of Sybil Attack on Vehicular Network	3 rd IEEE Int. Conf. on Recent Advances in Information Technology (RAIT – 2016)	03-05 March 2016	ISM, Dhanbad
19.	Sandip Singh Sengar and Susanta Mukhopadhyay	Moving object tracking using Laplacian-DCT based perceptual hash	IEEE Int. Conference on Wireless Communications Signal Processing and Networking 2016 (WiSPNET-2016)	23-25.03.2016	Chennai
20.	Priyambada Subudi and Susanta Mukhopadhyay	A Pyramidal approach to parametric active contour implementation for 2-D gray-scale image segmentation	IEEE Int. Conference on Wireless Communications Signal Processing and Networking 2016 (WiSPNET-2016)	23-25.03.2016	Chennai

21.	Mudassir Rafi and Susanta Mukhopadhyay	Texture segmentation using Gabor filter magnitude in multi-channel environment	6th IEEE Int. Conf. on Communication Systems and environment Network Technologies 2016 (CSNT 2016)	5-7.03.2016	Chandigarh
22.	Sandip Singh Sengar and Susanta Mukhopadhyay	A novel method for moving object A novel method for moving object frame differencing	3rd IEEE Int. Conference on Recent Advances in Information Technology RAIT 2016	03-05 March 2016	ISM Dhanbad
23.	Debasish Mukherjee, Susanta Mukhopadhyay and G. P. Biswas	FPGA-based parallel implementation of morphological filters	IEEE conf. on micro -electronics computing and communication (MicroCom-2016)	22-25.01.2016	NIT Durgapur
24.	Mudassir Rafi and Susanta Mukhopadhyay	Texture segmentation using moment invariants	4th International conference on Communication, Signal Processing, Computing and Information Technology 2015 (ICCSPCIT - 2015)	18-19.12.2015	Hyderabad, INDIA
25.	P. C. S. Rao, H. Banka and P. K. Jana	PSO based multiple-sink placement algorithm for protracting the lifetime of wireless sensor networks	Proceedings of 2 nd Intl. Conf. IC3T	24-26 July 2015	CMR Technical Campus, Secunderabad
26.	P. C. S. Rao, H. Banka and P. K. Jana	Energy efficient clustering for wireless sensor networks: A gravitational search algorithm	Proc. of the Intl. Conf. SEMCCO	24-26 July 2015	Hyderabad
27.	P.C.S. Rao, H. Banka and P. K. Jana	A Gravitational search algorithm for multiple-sink placement in wireless sensor networks	Proc. of the Intl. Conf. SEMCCO	24-26 July 2015	Hyderabad
28.	Tapas Kumar Mishra, Sachin Tripathi	Node application and time based fairness in ad-hoc networks: An integrated approach	4th International Conference on Advanced Computing, Networking, and Informatics	23-25 June, 2015	BBSR, India
29.	Tapas Kumar Mishra, Sachin Tripathi	Integrated FRTCP: Fair and reliable transmission control protocol for ad hoc networks	5th International Conference on Communication Systems and Network Technologies	4-6 Apr 2015	Gwalior, India
30.	Tapas Kumar Mishra, Sachin	Explicit Throughput and Buffer Notification based Congestion	8th International Conference on Contemporary	20-22 Aug 2015	Noida, India

	Tripathi	Control: A Cross Layer Approach	Computing		
31.	Ajay Kumar Yadav., and Sachin Tripathi	A Tree Based Multicast Routing Protocol Using Reliable Neighbor Node for Wireless Mobile Ad-Hoc Networks	I4th International Conference on Frontiers in Intelligent Computing: Theory and Applications (FICTA)	16-18 Nov 2015	NIT Durgapur
32.	Ajay Kumar Yadav., and Sachin Tripathi	Design of Efficient Multicast Routing Protocol using Limited Flooding Mechanism. (Presented).	International conference on MicroCom 2016 Sponsored by TEQIP-II	23-25 Jan 2016	NIT Durgapur
33.	Santosh Kumar Das and Sachin Tripathi	Energy Efficient Routing Protocol for MANET based on Vague Set Measurement Technique	In Second International Symposium of Computer Vision and the Internet (VISIONNET-15), 2015	10-13 Aug 2015	SCMS Group of Institutions, Aluva, Kochi (Ernakulam) , Kerala
34.	Santosh Kumar Das and Sachin Tripathi	Energy Efficient Routing Protocol for MANET using Vague Set	In 5th International Conference on Soft Computing for Problem Solving (SocPros-2015)	18-20 Dec 2015	Saharanpur Campus of IIT Roorkee, Uttar Pradesh
35.	Abhimanyu Kumar, Sachin Tripathi and Priyanka Jaiswal	Design of Efficient ID-Based Group Key Agreement Protocol suited for Pay-TV Application	4 th Int. Conference on Advances in Computing, Communications and Informatics (ICACCI)	10-13 Aug 2015	SCMS Group of Institutions, Aluva, Kochi (Ernakulam) Kerala
36.	Rajesh Purkait and Sachin Tripathi	Fuzzy Based Unequal Energy aware clustering with Multi- hop routing in wireless Sensor Network	Computational Intelligence: Theories, Applications and Future	14-17 Dec 2015	IIT Kanpur
37.	PrajnamayaDas, Pranay Kumar Saha and Hari Om	Improved Traceable-Resistance Efficient Authentication Schemes for Wireless Networks	Int. Conf. on Computational Technologies (ICCT)	26-27 March, 2016	Jaipur, India
38.	PreetiChandra karand Hari Om	A Secure Two-Factor Remote User Authentication and Session Key Agreement Scheme	Int. Conf. on Computational Technologies (ICCT)	26-27 March, 2016	Jaipur, India
39.	Amit Kumar and Hari Om	Lightweight ECC based RFID Authentication Scheme for WLAN	Int. Conf. on Computational Technologies (ICCT)	26-27 March, 2016	Jaipur, India
40.	Sunil K. Gautam and Hari Om	Computational Neural Network Regression Model for Host based Intrusion Detection System	Int. Conf. on Recent trends in Engineering and Material Sciences (ICEMS)	17-19 March, 2016	Jaipur, India
41.	N. Mazumdar and Hari Om	Distributed Energy-efficient Clustering Algorithm for mobile-	10 th Int. Conf. on Intelligence System and Control (ISCO-	Jan. 7-8, 2016	Coimbatore, India

		sink based Wireless Sensor networks	2016)		
42.	N. Mazumdar and Hari Om	An Energy efficient GA-based algorithm for clustering in wireless sensor networks	1 st Int. Conf. on Emerging Trends in Engineering, Technology and Science (ICETETS-2016)	Feb. 24-26, 2016	Thanjavur, India
43.	Amit Kumar and Hari Om	A Secure, Efficient and Lightweight User Authentication Scheme for Wireless LAN	1 st Int. Conf. on Emerging Trends in Engineering, Technology and Science (ICETETS-2016)	Feb. 24-26, 2016	Thanjavur, India
44.	Rishav Singh and Hari Om	Pose Invariant Face Recognition for New Born: Machine Learning Approach	Int. Conf. on Computational Intelligence in Data Mining (ICCIDM-2015)	05-06 Dec, 2015	Bhubaneswar
45.	PreetiChandra kar and Hari Om	A Secure Two-Factor Mutual Authentication and Session Key Agreement Protocol using Elliptic Curve Cryptography	Computer Graphics Vision and Information Security (CGVIS2015)	2-3 Nov 2015	Bhubaneswar
46.	Amit Kumar and Hari Om	A Secure, Efficient and Lightweight User Authentication Scheme for Wireless LANs	14 th Int. Conf. on Information Technology (ICIT)	21-23 Dec. 2015	Bhubaneswar
47.	PrajnamayaDass and Hari Om	A secure authentication scheme for RFID systems	1 st Int. Conf. on Information Security and Privacy (ICISP)	11-12 Dec. 2015	Nagpur
48.	PreetiChandra kar and Hari Om	RSA Based Two-Factor Remote User Authentication Scheme with User Anonymity	4 th Int. Conf. on Eco-friendly Computing and Communication Systems (ICECCS)	7-8 Dec. 2015	Kurukshetra
49.	Sunil K. Gautam and Hari Om	Host Based Intrusion Detection using Statistical Approaches	4 th Int. Conf. on Frontiers in Intelligent Computing: Theory and Applications (FICTA)	16-18 Nov. 2015	Durgapur
50.	Sunil K. Gautam and Hari Om	Anomaly Detection System using Entropy based Technique	1 st Int. Conf. on Next Generation Computing Technologies (NGCT)	4-5 Sep. 2015	Dehradun
51.	Pratik Ranjan and Hari Om	Cryptanalysis of Braid Groups based Authentication Schemes	1 st Int. Conf. on Next Generation Computing Technologies (NGCT)	4-5 Sep. 2015	Dehradun
52.	Pratik Ranjan and Hari Om	Braid Groups based Group Signature Scheme	4 th Int. Conf. on Reliability, Infocom Technologies and Optimization (ICRITO)	2-4 Sep. 2015	Noida

53.	Pratik Ranjan and Hari Om	An Efficient Undeniable Signature Scheme using Braid Groups	8 th Int. Conf. on Contemporary Computing (IC3)	20-22 Aug. 2015	Noida
54.	N. Mazumdar and Hari Om	A Distributed Fault-tolerant Multi-objective Clustering Algorithm for Wireless Sensor Networks	1 st Int. Conf. on Nano-electronics, Circuits & Communication Systems (NCCS)	May 9-10, 2015	Ranchi
55.	Aayush Agarwal , Jitesh Karmchandani, Sushila Maheshkar,	Class Tiling Design for Ordered Dithering	3 rd IEEE International Conference on Recent Advances in Information Technology (RAIT-2016)	March 03-05, 2016	ISM, Dhanbad, India.
56.	Subhash Chandra, Sushila Maheshkar	Offline signature verification based on geometric feature extraction using artificial neural network	3 rd IEEE International Conference on Recent Advances in Information Technology (RAIT-2016),	March 03-05, 2016	ISM, Dhanbad, India.
57.	Choudhary Shyam Prakash, Sushila Maheshkar	Detection algorithm for copy-move forgery based on Circle Block	International Conference on Computer Vision and Image Processing (CVIP-2016)	February 26 – 28, 2016	IIT Roorkee, India
58.	Choudhary Shyam Prakash, Kumar Vijay Anand, S. Maheshkar	Detection of Copy-Move Image Forgery using DCT	International Conference on Computational Intelligence	December 10-11 , 2015	BIT Mesra, Ranchi
59.	Priyanka and Sushila Maheshkar	An optimized Color Image Watermarking Technique using Differential Evolution and SVD-DWT domain	5th International Conference on Soft Computing for Problem Solving (SocProS 2015)	December 18-20	IIT Roorkee, India
60.	Ajay K Mallick, Priyanka and Sushila Maheshkar	Digital Image Watermarking Scheme based on Visual Cryptography and SVD	4 th International Conference on Frontiers in Intelligent Computing : Theory and Applications	November 16-18, 2015	NIT, Durgapur, India
61.	K Srivastava, Subhash Chandra and Sushila Maheshkar	Offline Signature Verification using Artificial Neural Network	4 th International Conference on Frontiers in Intelligent Computing : Theory and Applications	November 16-18, 2015	NIT, Durgapur, India
62.	Priyanka, Sushila Maheshkar	An Efficient DCT based Image Watermarking Using RGB Color Space	The 2 nd IEEE International Conference on Recent Trends in Information Systems (ReTIS-15)	July 9-11, 2015	Jadavpur University Kolkata, India

63.	Soumen Bag and Ankit Krishna	Character segmentation of Hindi unconstrained handwritten words	International Workshop on Combinatorial Image Analysis	Nov24–27, 2015	Kolkata
64.	Soumen Bag and Glory Chawpatnaik	A modified parallel thinning method for handwritten Oriya character images	International Conference Frontiers in Intelligent Computing: Theory and Applications	Nov16–18, 2015	Durgapur
65.	A Chandra Sekhara Rao, KataraChahan Rashikbhai, Haider Banka	Integration and Migration of Heterogeneous Biological Data Resources to Clouds	1st International Conference on Nano-electronics, Circuits & Communication Systems (NCCS-2015)	9-10th May 2015	IETE Ranchi
66.	Annavarapu Chandra Sekhara Rao, Suresh Dara and Haider Banka	An Improved Quantum Inspired Immune Clone Optimization Algorithm	Semcco 2015 The 6th International Conference on Swarm, Evolutionary and Memetic Computing	18-20 December 2015	CMR Technical Campus, Hyderabad
67.	Dharavath Ramesh, Rahul Mishra, and Shankar Nayak	Cha-Cha 20: Stream Cipher Based Encryption for Cloud Data Centre	Second International Conference on Information and Communication Technology for Competitive Strategies (ICTCS-2016).	March 4-5, 2016	Udaipur, Rajasthan, India
68.	Dharavath Ramesh, Rahul Mishra, and Amithesh Kumar	An Efficient stream cipher based secure and dynamicUpdation method for Cloud data Center	International Conference on Soft Computing Systems (ICSCS 2016)	19-20, February 2016	Noorul Islam Centre for Higher Education, Kumaracoil
69.	Dharavath Ramesh, Rahul Mishra, and Amithesh Kumar	An Efficient Probabilistic tracing scheme for Multi Authority CP-ABE for Cloud Storage	International Conference on Soft Computing Systems (ICSCS 2016)	19-20, February 2016	Noorul Islam Centre for Higher Education, Kumaracoil
70.	Dharavath Ramesh and Rashmi Priya	Multi-Authority Scheme based CP-ABE with Attribute Revocation for Cloud Data Storage	Int.conference on Microelectronics, Computing and Communication (MicroCom-2016)	23-25, January 2016	National Institute of Technology, Durgapur, India.
71.	Dharavath Ramesh, PranshuSuraj, and Lokendra Saini	Big data Analytics in Healthcare: A Survey Approach	Int.conference on Microelectronics, Computing and Communication (MicroCom-2016)	23-25, January 2016	National Institute of Technology, Durgapur, India.
72.	Shweta R. Malwe and G. P. Biswas	Link Expiration-Based Routing in Wireless Ad Hoc Networks.	Second International Conference on Computer and Communication Technologies 2015	24-26 July 2015	Hyderabad

73.	Shweta R. Malwe, B. Thrilok Chand, and G. P. Biswas	Location aware Sector-based Routing in Wireless Ad hoc Networks.	International Conference on Green Computing and Internet of Things (ICGCIoT), 2015.	8 - 10 October 2015	Greater Noida
74.	Shweta R. Malwe, Soniya Rohilla, and G. P. Biswas	Location and Selective-bordercast based enhancement of Zone Routing Protocol	3rd IEEE International Conference on Recent Advances in Information Technology, RAIT-2016	3 – 5 March 2016	ISM, Dhanbad
75.	Tanusree Kaibartta, Debesh K Das	Testing of 3D IC with minimum power using Genetic Algorithm	10th IEEE International Design & Test Symposium IDT'15	December 14 th -16 th June, 2015	Dead Sea, Jordan
76.	Tanusree Kaibartta, Debesh K Das	Power Aware 3-D IC Testing using Genetic Algorithm	16 th IEEE Workshop on RTL and High Level Testing 2015	25 th -26 th November, 2015	VMCC, IIT Bombay, Mumbai
77.	Tanusree Kaibartta, Chandan Giri, Hafizur Rahaman, Debesh K. Das	Optimizing Test Time for Core-Based 3-D Integrated Circuits by Genetic Algorithm	6 th Asia Symposium on Quality Electronic Design (ASQED 2015) held with technical sponsorship of IEEE Circuits and Systems Society (CASS), IEEE Electron Devices Society (EDS), and IEEE Reliability Society	4 th -5 th August, 2015	Kuala Lumpur, Malaysia

3.8.7.5 Papers presented in National Seminars/Conferences

Sl. No.	Author (s)	Title	Seminar/Conference	Date	Place
(1)	Domodar Reddy Edla, Dharavath Ramesh, Sridhar K	Application of Neural Networks for Routing in Mobile Wireless Sensor Network: A Case Study	National conference on Enhancing Information Technology Education (EITE)	07-08, January 2016	National Institute of Technology, Goa

* Accepted for Publication/Communicated papers are NOT to be included.

3.8.8 MAJOR ACADEMIC CONTRIBUTIONS

Prof. P. K. Jana received Canara Bank Research Publication Award for outstanding research contribution

3.8.9 SEMINARS, SYMPOSIA, WORKSHOPS, CONFERENCES ORGANIZED BY THE DEPT/CENTRE

Short term course on Wireless Network Algorithms and their MATLAB Simulation	08-12 June 2015
Short term course on Network Protocols & their Simulation using NS-2/NS-3	19-23 Aug 2015
Short Term Course on Fundamentals of Soft Computing & its Applications	09-13 Sept 2015
Short Term Course on Advanced Data Structures and its Applications	01-05 Oct 2015
Workshop on Information & Cyber Security under ISEA Project Phase-II	28-30 Jan 2016
Short Term Course on Nature Inspired Algorithms & its Applications	08-12 Feb 2016
Short Term Course on Network Protocols & their Simulation using NS-2	03-05 Mar 2016
3 rd IEEE International Conference on Recent Advances in Information Technology (RAIT-2016)	03-05 ar 2016

3.8.10 PARTICIPATION OF FACULTY/OFFICERS/STAFF IN SEMINARS/ CONFERENCES ETC.

Prof. P. K. Jana	International Conference on Electrical Engg. & Computer Sc.	16-18 December 2015	Hong Kong
Prof. P. K. Jana	International Conference on Signal, Networks, Computing and Systems	25-27 February 2016	New Delhi
Dr. Sachin Tripathi	5th International Conference on Soft Computing for Problem Solving (SocPros-2015)	18-20 December 2015	IIT Roorkee, Saharanpur Campus
Dr. Sushila Maheshkar	International Conference on Computer Vision and Image Processing (CVIP-2016)	February 26 – 28, 2016	IIT Roorkee, India
Dr. Sushila Maheshkar	5th International Conference on Soft Computing for Problem Solving (SocProS 2015)	December 18-20, 2015	IIT Roorkee, India
Dr. Sushila Maheshkar	Summer Faculty Research Fellow Programme - 2015	May 15- June 28, 2015	IIT Delhi

Dr. Dharavath Ramesh	2nd International conference on Computer and Communication Technologies (IC3T - 2015)	24-26 July Hyderabad, India	Hyderabad
Dr. Dharavath Ramesh	Recent Trends in Artificial Intelligence for Big Data	7-9, August, Goa	NIT- Goa

3.8.11 VISITS OF FACULTY MEMBERS ABROAD

1. Prof. P. K. Jana visited Hong Kong for paper presentation in the Intl Conference on Electrical Engg. & Computer Sc. during 16-18 December 2015.
2. Dr. Sukomal Pal, Assistant Professor of CSE Dept visited the University of Padova, Italy during September 24 – October 24, 2015 as a Visiting Scientist.

3.8.12 DISTINGUISHED VISITORS TO THE SCHOOL (INDICATING OCCASION/PURPOSE)

Mr. R. Thirukumaran, SAT Infosys	<ul style="list-style-type: none"> • Short Term Course on Network Protocols & their Simulation using NS-2/NS-3 during 19-23 Aug 2015. • Short Term Course on Network Protocols & their Simulation using NS-2 during 03-05 Mar 2016.
Dr.Mohit P. Tahiliani, NIT Surathkal	Short Term Course on Network Protocols & their Simulation using NS-2/NS-3 during 19-23 Aug 2015.
Padma Shri Prof. Sankar K. Pal, Former Director ISI Kolkata	<ul style="list-style-type: none"> • Short Term Course on Fundamentals of Soft Computing & its Applications during 09-13 Sept 2015. • 3rd IEEE International Conference on Recent Advances in Information Technology (RAIT-2016) during 03-05 March 2016.
Dr.Arindam Biswas, IEST Shibpur	Short Term Course on Advanced Data Structures and its Applications during 01-05 Oct 2015.
Prof. Sukumar Nandi, IIT Guwahati Prof. Rana Barua, ISI Kolkata Dr. Sourav Mukhopadhyay, IIT Kharagpur Mr. Jayanta Parial, Principal Engineer – ICT & Services C-DAC Kolkata Mr. Sourav Mitra, C-DAC Kolkata	Workshop on Information & Cyber Security during 28-30 Jan 2016.

Prof. C. A. Murthy, ISI Kolkata Prof. Sushmita Mitra, ISI Kolkata	Short Term Course on Nature Inspired Algorithms & its Applications during 08-12 Feb 2016.
Prof. Jaya Sil, IEST Shibpur	<ul style="list-style-type: none"> • Short Term Course on Nature Inspired Algorithms & its Applications during 08-12 Feb 2016. • 3rd IEEE International Conference on Recent Advances in Information Technology (RAIT-2016) during 03-05 Mar 2016.
<p>Padma Shri Prof. Shankar K. Pal, Former Director ISI Kolkata</p> <p>Shri Sushil Chandra, Head of Bio-Medical Engineering, INMAS, DRDO, New Delhi</p> <p>Prof. Narendra S Chaudhari, IIT Indore & Director VNIT Nagpur</p> <p>Prof. A. K. Tripathi, IIT (BHU) Varanasi</p> <p>Prof. ItiSahaMisra, Jadavpur University, Kolkata</p> <p>Mr. Siddharth Srivastava, Oracle Corporation, Bangalore</p> <p>Prof. B. P. Sinha, ISI Kolkata</p> <p>Dr. PabitraMitra, IIT Kharagpur</p> <p>Dr. Donghoon Chang, IIIT New Delhi</p> <p>Prof. NabenduChaki, University of Calcutta</p> <p>Dr. Nabarun Bhattacharya, C-DAC Kolkata</p> <p>Mr. Naveen Mehra – Fortinet</p>	3 rd IEEE International Conference on Recent Advances in Information Technology (RAIT-2016) during 03-05 Mar 2016.

3.8.13 SPECIAL LECTURES BY DISTINGUISHED GUESTS

Mr. R. Thirukumaran, SAT Infosys Delivered Lectures on “Network Simulator 2”.	19-20 Aug 2015 03-05 Mar 2016
Dr. Mohit P. Tahiliani, NIT Surathkal Delivered Lectures on “Network Simulator 3”.	21-23 Aug 2015
Padma Shri Prof. Sankar K. Pal, Former Director ISI Kolkata Delivered a Lecture on “Machine Intelligence and Soft Granular	11 Sept 2015

<p>Mining: Concepts, Applications and Big Data Issues”. Delivered a Keynote Address on “50 Years of Fuzzy Sets: Data to Knowledge”.</p>	03 Mar 2016
<p>Dr.Arindam Biswas, IEST Shibpur Delivered Lectures on (i) Dynamic Data Structures with Applications, and (ii) Voronoi Diagrams with Applications.</p>	02-03 Oct 2015
<p>Prof. Sukumar Nandi, IIT Guwahati Delivered a Lecture on “Physical & MAC Layer Attacks in Wi-Fi Networks along with their Countermeasures”.</p>	28 Jan 2016
<p>Prof. Rana Barua, ISI Kolkata Delivered a Lecture on “Public Key and Attribute based Cryptography”.</p>	29 Jan 2016
<p>Dr. Sourav Mukhopadhyay, IIT Kharagpur Delivered a Lecture on “Digital Rights Managements”.</p>	30 Jan 2016
<p>Mr. Jayanta Parial, Principal Engineer – ICT & Services C-DAC Kolkata Delivered s Lecture on “Cloud Security & Cloud Forensics”</p>	30 Jan 2016
<p>Mr. Sourav Mitra, C-DAC Kolkata Delivered s Lecture on “Crimes in Cyberspace – Techno-Legal Challenges”</p>	30 Jan 2016
<p>Prof. Jaya Sil, IEST Shibpur Delivered Lectures on “Rough Set Theory and its Applications”. Delivered an Invited Talk on “Content Based Image Retrieval emphasis on the Bag-of-Visual-Words”.</p>	11 Feb 2016 04 Mar 2016
<p>Prof. C. A. Murthy, ISI Kolkata Delivered Lectures on “Principle of Genetic Algorithms: Theory & its Applications”.</p>	09 Feb 2016
<p>Prof. Sushmita Mitra, ISI Kolkata Delivered Lectures on “Hybrid Applications”.</p>	10 Feb 2016
<p>Shri Sushil Chandra, Head of Bio-Medical Engineering, INMAS, DRDO Delivered a Keynote Address on “Cognitive implications of Virtual Reality”.</p>	03 Mar 2016
<p>Prof. Iti Saha Misra, Jadavpur University, Kolkata Delivered a Tutorial on “Cognitive Radio Networks and QoS Aware VoIP Communication”.</p>	03 Mar 2016
<p>Mr. Siddharth Srivastava, Oracle Corporation, Bangalore Delivered a Tutorial on “Patterns of Big Data and Analytics Adoption: Information Architecture Importance and Big Data Predictions for Technology”.</p>	03 Mar 2016
<p>Prof. A. K. Tripathi – IIT (BHU) Varanasi Delivered a Invited Talk on “Issues, Challenges and Problems in Information & Communic”.</p>	03 Mar 2016
<p>Dr. Donghoon Chang – IIIT New Delhi Delivered a Invited Talk on “Cryptographic Techniques for Authentication”.</p>	04 Mar 2016

Dr. Pabitra Mitra - IIT Kharagpur Delivered a Invited Talk on “Deep Learning”.	04 Mar 2016
Prof. B. P. Sinha – ISI Kolkata Delivered a Invited Talk on “Channel allocation in Cognitive Radio Networks”.	05 Mar 2016
Prof. Narendra S Chaudhari, IIT Indore & Director VNIT Nagpur Delivered a Invited Talk on “Computationally Difficult Problems: An Approach towards Polynomial Solvability of NP-Complete Problems”.	05 Mar 2016
Prof. Nabendu Chaki - University of Calcutta Delivered a Invited Talk on “Remote Healthcare: Using Technology to Facilitate Quality Healthcare for Citizens”.	05 Mar 2016
Dr. Nabarun Bhattacharya - C-DAC Kolkata Delivered a Invited Talk on “Electronic Nose and Its Applications”.	04 ar 2016

3.8.14 MISCELLANEOUS : ANY OTHER RELEVANT INFORMATION

Prof. P. K. Jana acted as

1. Guest of honor in the International Conference ICCS 2016 during 21-22 January at Burdwan University.
2. External expert in the screening comm. Meeting at NIT Durgapur on 6 October 2015.
3. Advisory Committee Member in the International Conference ICIAC 2016 (18-19 March 2016 at GITAM Univ. Hyderabad), ICCI 2015 (10-11 December at BIT Mesra).

Dr. Chiranjeev Kumar

1. Organized (as General Chair & Program Chair) a three-day 3rd IEEE International Conference on “Recent Advances in Information Technology (RAIT-2016)” at Indian School of Mines, India during 03-05 March 2016.
2. Delivered Special Lectures in Short Term Course on “Advanced Data Structures with their Applications” held at ISM, Dhanbad during 01-05 October 2015.

Dr. Hari Om acted as

1. Reviewer for International Conferences (a) ICACM 2016 (India), (b) MUE 2016 (China)
2. Technical Program Committee member in Computational Intelligence in Wireless Sensor Networks: Recent Advances and Future Challenges (Springer Book Chapter).
3. Organizing Committee & Technical Programme Committee member at (a) RAIT-2016 (03-05 March 2016, ISM Dhanbad), (b) Global IT-2016 (12-14 Jan 2016, Hawaii, USA).

3.9 ELECTRICAL ENGINEERING

3.9.1 ABOUT THE DEPARTMENT

The Department of Electrical Engineering was established in 2005 and the B. Tech. programme in Electrical Engineering started in the academic session 2006-07 with the first batch graduated in 2011-12.

3.9.1.1 Vision

To create comprehensively trained, socially responsible, innovative electrical engineers and researchers of highest excellence.

3.9.1.2 Mission

- To develop a state-of –the art curriculum to provide world class teaching and strong foundations of Electrical Engineering, preparing students for careers in industry and research and adapt to rapidly changing technology.
- To participate directly in the planning and solving of engineering problems part of industry and society in the global context.
- To develop and conduct outreach programmes for practicing engineers.
- To promote establishment of Centers of Excellence in emerging technology areas.
To develop programmes for Faculty Growth and development

3.9.2 FIELD VISITS / EXCURSIONS / TRAINING PROGRAMMES UNDERTAKEN BY STUDENTS

Sl. No.	Particulars	Batch of students	Place of Visit	Period of visit
1)	One day industrial visit	45	Chittaranjan Locomotive Works, Chittaranjan, West Bengal	08.09.2015
2)	One day industrial visit	44	Chittaranjan Locomotive Works, Chittaranjan, West Bengal	09.09.2015

3.9.3 INTRODUCTION OF NEW COURSES AND PROGRAMMES

Department of Electrical Engineering, Indian School of Mines, Dhanbad is offering three years M Tech programme in Power System Engineering (PSE) and Power Electronics & Electrical Drives (PEED) for Working Executives / Academicians. This programme runs at ISM Institute Industry Interaction Facility (IIIF), NBCC Shopping Complex, New Town, Rajarhat, Kolkata.

It is a slow pace programme without compromising with the course structure or contents. This aims to help the Working Executives / Academicians to improve their technical

aptitude and opts for Higher Degree as a regular student within the existing pace of the program with extended time exposure to promote completion of program.

This is essentially a self financing programme for working class executives of the industry and academicians with adequate professional focus. Course Structure is distributed in six semesters and is designed to prepare Working Executives / Academicians for professional careers in the area. Candidates may be permitted to do their dissertation (in final year) in industries and other approved organizations.

3.9.4 BRIEF LIST OF ON-GOING R & D PROJECTS

1.	Project Title	:	Development of A Load-Frequency Control System With A PID Controller Designed Through A Frequency-Domain Matching Method
	Sponsoring Agency	:	UGC
	Coordinator (s)	:	S. Pan
	Project Value	:	₹ 9.33 Lakhs
	Date of Commencement	:	1.4.13
	Date of Completion	:	1.4.16
	Objective	:	Development of A Load-Frequency Control System With A PID Controller Designed Through A Frequency-Domain Matching Method
	Status	:	On-going
	Findings	:	The method has been formulated and study of the real time response is ongoing
2.	Project Title	:	Development of hybrid off-grid power supply system for remote areas UGC, New-Delhi
	Sponsoring Agency	:	Dr. Nitai Pal (PI)
	Coordinator (s)	:	₹ 6.61 Lakhs
	Project Value	:	01/04/2013
	Date of Commencement	:	31/03/2016
	Date of Completion	:	To develop the state-of-the-art set-up of hybrid off-grid power supply system for demonstrating and functioning the energy management and load balancing in remote areas.
	Objective	:	
	Status	:	Ongoing
	Findings	:	Installation completed satisfactorily and some experimental works are ongoing

3.9.5 IMPORTANT NEW EQUIPMENT ACQUISITIONED (ABOVE ₹ 50,000/-)

Sl. No.	Name of Equipment	Purpose	Date of Purchase	Value (₹)
1	Single port tunable laser source	Research work	30.07.2015	₹ 8,52,768/-
2.	Transmission line Simulator (12 PI sections) Hardware with Automation	Laboratory	19.5.15	₹ 14,49,000/-

3.9.6 RESEARCH PUBLICATIONS :

3.9.6.1 Book Published

Pradip Kumar Sadhu, and Soumya Das, “Elements of Power Systems” CRC Press, Taylor & Francis Group, ISBN-13 : 978-1-4987-3446-2, October 2015, , pp. 1-531

3.9.6.2 Papers published in International Journals

Sl. No	Author(s)	Year	title	Journal	Vol. No	Page no.
1.	S. Bhakta, V. Mukherjee and Binod Shaw	2015	Techno-economic analysis and performance assessment of standalone photovoltaic/ Wind/hybrid power system in Lakshadweep Islands of India	Journal of Renewable and Sustainable Energy	7	063117-1-063117-34
2.	Tarkeshwar Mahto and V. Mukherjee	2015	Evolutionary optimization technique for comparative analysis of different classical controllers for an isolated wind-diesel hybrid power system	Swarm and Evolutionary Computation, Elsevier	26	120-136
3.	Aparajita Mukherjee and V. Mukherjee	2015	Solution of optimal reactive power dispatch by chaotic krill herd algorithm	IET Generation Transmission and Distribution	9	2351-2361
4.	Chandan Kumar Shiva and V. Mukherjee	2015	Automatic generation control of multi-unit multi-area deregulated power system using a novel quasi-oppositional harmony search algorithm	IET Generation Transmission and Distribution	9	2398-2408
5.	Tarkeshwar Mahto and V. Mukherjee	2015	Energy storage systems for mitigating the variability of isolated hybrid power system	Renewable and Sustainable Energy Reviews	51	1564-1577
6.	TarkeshwarMahto and V. Mukherjee	2015	Frequency stabilisation of a hybrid two-area power system by a novel quasi-oppositional harmony search algorithm	IET Generation Transmission and Distribution	9	2167-2179
7.	Aparajita Mukherjee and V. Mukherjee	2015	Solution of optimal power flow using chaotic krill herd algorithm	Chaos, Solitons& Fractals	78	10-21
8.	Chandan Kumar Shiva and V. Mukherjee	2015	Automatic generation control of interconnected power system for robust decentralized random load disturbances using a novel quasi-oppositional harmony search algorithm	International Journal of Electrical Power and Energy Systems	73	991-1001
9.	Chandan Kumar Shiva and V. Mukherjee	2015	Automatic generation control of power system using a novel quasi-oppositional harmony search algorithm	International Journal of Electrical Power and Energy Systems	73	787-804

10.	Chandan Kumar Shiva and V. Mukherjee	2015	A novel quasi-oppositional harmony search algorithm for automatic generation control of power system	Applied Soft Computing, Elsevier	35	749-765
11.	S. Bhakta, V. Mukherjee and Binod Shaw	2015	Techno-economic analysis of standalone PV/wind hybrid system for application in isolated hamlets of north-east India	Journal of Renewable and Sustainable Energy	7	023126-1-023126-15
12.	R. P. Singh, V. Mukherjee and S. P. Ghoshal	2015	Optimal reactive power dispatch by particle swarm optimization with an aging leader and challengers	Applied Soft Computing, Elsevier	29	298-309
13.	Chandan Kumar Shiva and V. Mukherjee	2015	Comparative performance assessment of a novel quasi-oppositional harmony search algorithm and internal model control method for automatic generation control of power systems	IET Generation Transmission and Distribution	9	1137-1150
14.	G. Shankar and V. Mukherjee	2015	MPP detection of a partially shaded PV array by continuous GA and hybrid PSO	Ain Shams Engineering Journal	6	471-479
15.	Bindeshwar Singh, V. Mukherjee and P. Tiwari	2015	A survey on impact assessment of DG and FACTS controllers in power systems	Renewable and Sustainable Energy Reviews	42	846-882
16.	Tarkeshwar Mahto and V. Mukherjee	2015	A novel quasi-oppositional harmony search algorithm and fuzzy logic controller for frequency stabilization of an isolated hybrid power system	International Journal of Electrical Power and Energy Systems	66	247-261
17.	R. P. Singh, V. Mukherjee and S. P. Ghoshal	2015	Particle swarm optimization with an aging leader and challengers algorithm for optimal power flow problem with FACTS devices	International Journal of Electrical Power and Energy Systems	64	1185-1196
18.	TarkeshwarMahto and V. Mukherjee	2015	Quasi-oppositional harmony search algorithm and fuzzy logic controller for load frequency stabilization of an isolated hybrid power system	IET Generation Transmission and Distribution	9	427-444
19.	Himanshu Sharma, Nitai Pal, Yaduvir Singh and Pradip Kumar Sadhu	2015	Development and Simulation of Stand Alone Photovoltaic Model Using Matlab/Simulink	International Journal of Power Electronics and Drive System (IJPEDS), ISSN: 2088-8694	Vol. 6, (4)	703-711
20.	Alok Kumar Shrivastav, Pradip Kumar Sadhu, AnkurGanguly and Nitai Pal	2015	A Novel Transient Current Limiter Based on Three-Phase Thyristor Bridge for Y-yg Transformers	Int. Journal of Power Electronics and Drive System (IJPEDS), ISSN: 2088-8694	Vol. 6, (4)	747-758

21.	Soumya Das, Suprava Chakraborty, Pradip K. Sadhu and Oruganti Sankara Sastry	2015	Design and experimental execution of a microcontroller (μ C)-based smart dual-axis automatic solar tracking system	Energy Science & Engineering 2015, ISSN: 2050-0505,	Vol. 3, Issue 6 doi: 10.1002/ese3.102	558-564
22.	Soumya Das, Pradip Kumar Sadhu, SupravaChakraborty, AkankshaRanjan and Monika Yadav	Jul, 2015	New Generation PV Powered Country Boat Using Buck-Boost Chopper and PWM for Green Sailing	International Journal of Mechatronics, Electrical and Computer Technology (IJMEC) PISSN: 2411-6173, EISSN: 2305-0543	Vol. 5 (16),	2217-2228
23.	Palash Pal, Pradip Kumar Sadhu and Nitai Pal	Jul, 2015	Design and simulation of Fuzzy Logic Controller Based Modified Half Bridge Resonant Inverter Fed Induction Heating System	International Journal of Mechatronics, Electrical and Computer Technology (IJMEC) PISSN: 2411-6173, EISSN: 2305-0543	Vol. 5 (16)	2239-2245
24.	Pradip Kumar Sadhu, SoumenDhara, Alok Kumar Shrivastav and Debabrata Roy	Jul, 2015	Superconducting Fault Current Limiters for Micro Grid Application	Int. Journal of Mechatronics, Electrical and Computer Technology (IJMEC) PISSN: 2411-6173, EISSN: 2305-0543	Vol. 5 (16),	2246-2257
25.	Prabhat Chandra Ghosh, Pradip K Sadhu, Debabrata Roy and Soumya Das	2015	Selection of semiconductor switches in high frequency inverter fitted contactless power transfer system for reducing input current distortion	World Journal of Engineering, ISSN: 1708-5284	12 (5)	471-478
26.	Nibedita Das, Nitai Pal, Pradip Kumar Sadhu	2015	Design of Interior Daylighting Shading Control using LV and PVsyst Software	TELKOMNIKA Indonesian Journal of Electrical Engineering, ISSN: 2302-4046	Vol. 14 (3)	388-401
27.	SupravaChakraborty, Pradip Kumar Sadhu and Nitai Pal	2015	Technical Mapping of Solar PV for ISM-an Approach Toward Green Campus	Energy Science and Engg., published by the Society of Chemical Industry and John Wiley & Sons Ltd., doi: 10.1002/ese3.65	Vol. 3 (3)	196-206
28.	Debabrata Roy, Pradip Kumar Sadhu and Nitai Pal	2015	Reduction of Harmonics Contained in the Input Power Supply - Dynamic Tool for Current Source Full-Bridge Inverter Based Induction Heater	PRZEGLĄD ELEKTROTECHNICZNY, Polish scientific journals, ISSN 0033-2097	R. 91	123-126
29.	P. K. Sadhu, Palash Pal, A. Halder, Ankur Ganguly, Nitai Pal, & Prabir Bhowmik	2015	A New Approach of Localized Human Blood Reheating using High Frequency Converter	TELKOMNIKA Indonesian Journal of Electrical Engg., ISSN: 2302-4046	Vol. 14 (1)	97-102

30.	Palash Pal, Pradip Kumar Sadhu, Nitai Pal, and SourishSanyal	2015	An Exclusive Design of EMI-RFI Suppressor for Modified Half Bridge Inverter Fitted Induction Heating Equipment	International Journal of Mechatronics, Electrical and Computer Technology (IJMEC) PISSN: 2411-6173, EISSN: 2305-0543	Vol. 5 (15)	2084-2100
31.	Moumita Sadhu, SupravaChakraborty, Niladri Das, Pradip Kumar Sadhu	2015	Role of Solar Power in Sustainable Development of India	TELKOMNIKA Indonesian Journal of Electrical Engineering, ISSN: 2302-4046	Vol. 14 (1)	34-41
32.	Nibedita Das, Nitai Pal, Sadhu K. Pradip	2015	Economic cost analysis of LED over HPS flood lights for an efficient exterior lighting design using solar PV	Building and Environment , ISSN: 0360-1323, http://dx.doi.org/10.1016/j.buildenv.2015.03.005	Vol. 89	380-392
33.	Soumya Das, Pradip K Sadhu, SupravaChakraborty, MalayenduSaha and Moumita Sadhu	2015	Life cycle economic analysis of stand-alone solar pv system in India – a relative study	World Journal of Engineering, ISSN: 1708-5284	12 (1)	37-44
34.	MdNishat Anwar and S. Pan	2015	A frequency domain PID controller design method using direct synthesis approach	Arabian Journal of Science and Engineering	40	995-1004
35.	MdNishat Anwar and S. Pan	2015	A New PID Load Frequency Controller Design Method in Frequency Domain through Direct Synthesis Approach	International Journal of Electrical Power and Energy Systems	67	560-569
36.	B.Bhattacharyya, Sanjay Kumar	2015	Reactive Power Planning with FACTS devices Using Gravitational Search Algorithm	Ain Shams Engineering Journal	6	865-871
37.	B.Bhattacharyya, Saurav Raj	2015	PSO based bio inspired algorithm for reactive power planning	International Journal of Electrical Power & Energy Systems	74	396-402
38.	B.Bhattacharyya, Saurav Raj	2016	Swarm intelligence based algorithms for reactive power planning with Flexible AC transmission system devices	International Journal of Electrical Power & Energy Systems	78	158-164
39.	B.Bhattacharyya, Sanjay Kumar	2016	Loadability enhancement with FACTS devices using gravitational search algorithm	International Journal of Electrical Power & Energy Systems	78	470-479
40.	N Verma, S Mandal	2016	Performance of Optical Micro Ring Resonator As Multiplexer and All Optical Logic Shifter in Z-Domain	Optical Engineering, SPIE	55 (1)	016105-1 To 016105-11
41.	Kumar, R., Das, S., Syam, P., and Chattopadhyay, A.K.,	2015	Review on Model Reference Adaptive System for Sensorless Vector Control of Induction Motor Drives	IET Electric Power Applications	9 (7)	496–511

42.	Kartick Chandra Jana, Sujit K. Biswas	2015	Generalized switching scheme for a space vector pulse-width modulation-based N-level inverter with reduced switching frequency and harmonics	IET Power Electronics	8	2377–2385
43.	Akanksha Sinha, K. C. Jana, Ajit Kumar	2015	Implementation of Optical Fiber Technology in Power Transmission-A Step Above Wireless Technology	International Journal of Applied Engineering Research (IJAER)	10	19-23
44.	Dipesh Kumar, Kalyan Chatterjee	2016	A Review of Conventional and Advanced MPPT Algorithms for Wind Energy Systems	International Journal of Renewable & Sustainable Energy Reviews(Elsevier)	55,	957-970
45.	Jay Singh, C.B. Vishwakarama, K.Chatterjee	2016	Biased reduction method by combining improved modified pole clustering and improved Pade approximations	Applied Mathematical Modelling (Elsevier)	40	1418–1426
46.	Jay Singh, Kalyan Chatterjee, C.B. Vishwakarma	2015	Model order reduction using eigen algorithm	International Journal of Engineering, Science & Technology	7	17-23

3.9.6.3 Papers presented in International Seminars / Conferences

Sl. No	Author(s)	title	Seminar/Conference	Date	Place
1.	Nitai Pal, Kota Sunil Patro and Budankailu Varsha Subudhi	Study on Non-isolated Power Electronics Converters using State Space Analysis	2 nd International Conference & Exhibition on “Industrial Engineering-2015”	Nov.16-18, 2015	Dubai, UAE
2.	Mr. Palash Pal, Prof. Pradip Kumar Sadhu, Dr. Nitai Pal	Filter Design for Harmonics Minimization of CSI Based Contact Less Induction Heater	IEEE Conference, International Conference on Energy, Power and Environment (ICEPE-2015)	June 12–13, 2015	Dept. of Electrical & Electronics Engg, National Institute of Technology Meghalaya
3.	PalashPal,Pradip Kumar Sadhu, Nitai Pal, and PrabirBhowmik	A New Heat Treatment Topology for Reheating of Blood Tissues after Open Heart Surgery.	Advancements of Medical Electronics, Springer India, 2015		Springer India
4.	Das, S., Pal, A., Kumar, R., and Chattopadhyay, A.K.,	An Improved Rotor Flux Based Model Reference Adaptive Controller for Four-Quadrant Vector Controlled Induction Motor Drives	Proceedings ofIEEE TENCON, Macau,	Nov. 01-04, 2015	Macau, SAR, China
5.	MdNishat Anwar, Somnath Pan, Sreya Ghosh	PI controller design for pitch control of large wind turbine generators	Int.Conference on Energy, Power and Environment (ICEPE 2015)	June 12-13, 2015	Shillong, India

6.	Amit Bhardwaj, B. Bhattacharyya	Active Power loss minimization by Harmony Search Algorithm	Michael Faraday IET International Summit-2015	Sept. 12-13, 2015	University of Calcutta, Kolkata
7.	RohitBabu, B. Bhattacharyya	Phasor measurement unit allocation with different soft computing technique in connected power network	Michael Faraday IET International Summit-2015	Sept. 12-13, 2015	University of Calcutta, Kolkata
8.	RohitBabu, B. Bhattacharyya	Optimal Placement of Phasor Measurement Unit using Binary Particle Swarm Optimiza-tion in connected power network	IEEE UPCON- 2015	Dec. 4-6, 2015	IIT, Allahabad
9.	RohitBabu, B. Bhattacharyya	Allocation of Phasor Measurement Unit using A-Star method in Connected Power Network	IEEE Workshop on Computational Intelligence- 2015	Dec. 14-17, 2015	IIT, Kanpur
10.	S Mandal, S Lakra	Z-domain modeling and analysis of vertically coupled triple asymmetrical optical micro ring resonator (VCTAOMRR)	SPIE Optics and Photonics	Aug. 7 – 15, 2015	San Diego, USA
11.	S Ranjan, S Mandal	Enhance Free Spectral Range Triple Ring Resonator	RAIT-2016	March 03-05, 2016	ISM, Dhanbad
12.	S Lakra, S Mandal	Design and study of three vertically coupled optical asymmetrical microring resonator	RAIT-2016	March 03-05, 2016	ISM, Dhanbad
13.	N Verma, S Mandal	Realisation of 4-bit optical logic shifter circuit using 4x1 multiplexer	ICMAP-2015	Dec.12 - 13, 2016	ISM, Dhanbad
14.	N Nagarjuna, G. Shankar	Load frequency control of two area power system with AC-DC tie line using PSO optimized controller	IEEE-International conference on Power and Advanced Control Engineering (ICPACE-2015)	Aug. 12-14, 2015	B.N.M Institute of Technology, Bengaluru
15.	Gauri Shankar, Subh Lakshmi, NandlaNagarjuna	Optimal load frequency control of hybrid renewable energy system with PSO and LQR	IEEE-International conference on Power and Advanced Control Engineering (ICPACE-2015)	Aug. 12-14, 2015	B.N.M Institute of Technology, Bengaluru
16.	Asha Rani, Gauri Shankar	Standalone operation of wind trubine operated self-excited induction generator	3 rd IEEE International Conference on Recent Advances in Information Technology (RAIT-2016)	March 3-5, 2016	Indian School of Mines (ISM), Dhanbad

17.	KumariPrerna, Gauri Shankar	Modeling and simulation of photovoltaic for isolated and grid connected mode	3 rd IEEE International Conference on Recent Advances in Information Technology (RAIT-2016)	March 3-5, 2016	Indian School of Mines (ISM), Dhanbad
18.	Kartikey Singh, Gauri Shankar	PID parameters tuning using modified particle swarm optimization and its application in load frequency control.	6 th IEEE International Conference on Power Systems, 2016 (ICPS 2016)	March 4-6, 2016	Indian Institute of Technology (IIT) Delhi
19.	Amit Agrawal, K. C. Jana, Ashish Shrivastava	A Review of Different DC/DC Converters for Power Quality Improvement in LED Lighting Load	International Conference on Energy Economics and Environment (ICEEE-15)	March 27 – 28, 2015	Greater Noida, India
20.	SaikatMajumdar, Ravi Raushan, BidyutMahato, K. C. Jana . ParashuramThakura, Shio Kumar Singh	Comparative Study of Space Vector Pulse Width Modulation based T-Type Three-level Inverter”, 2016 , Jan.2016., vol. 4, Iss 2, p.p- 7-11.	Conference proceedings of Int. Journal of Engg & Tech.	Jan. 29 - 30, 2016	RVS college of Engg., Jamshedpur, India
21.	BidyutMahato, RashmiKumari, Ravi Raushan, , Kartick Chandra Jana · Parashuram Thakura, Shio Kumar Singh,	Comparative Analysis of Different PWM Techniques in Multilevel Inverters”, Int. Journal of Engg. & Tech 2016, Jan.2016, Conf. proc., vol. 4, Iss 2, p.p- 12-17.	Conference proceedings of Int. Journal of Engg & Tech	Jan. 29 - 30, 2016	RVS college of Engg., Jamshedpur, India
22.	M. Mukherjee A.K. Pradhan A. Baral S. Chakravorti	Condition Assessment of Oil-paper Insulation used in Power Transformer based on Polarization Energy	IEEE 2 nd International Conference on Condition Assessment Techniques in Electrical Systems (CATCON-2015)	Dec 10 – 12, 2015	CPRI, Bengaluru, India
23.	C.M. Bannerjee A. Baral	Identification of Lyapunov Function for Testing Stability of Nonlinear Systems using BFO	3 rd Int.Conference on Foundations & Frontiers in Computer, Communication and Electrical Engineering – 2016 (C2E2 – 2016)	Jan 15 – 16, 2016	Mankundu, Hoogly, India
24.	N. Verma A. Baral	Effect of Slow Decaying Trapped Charge on PDC Data and Associated Diagnosis of Power Transformer Insulation	3 rd Int. Conference on Foundations & Frontiers in Computer, Communication and Electrical Engineering – 2016 (C2E2 – 2016)	Jan 15 – 16, 2016	Mankundu, Hoogly, India

25.	A.K. Pal A. Baral A. Lahiri	Electric Stress Control on Post-Type Porcelain Insulators Using a Coating of RTV Silicone Rubber with BaTiO ₃ Nanofillers	3 rd Int. Conference on Foundations & Frontiers in Computer, Communication and Electrical Engineering – 2016 (C2E2 – 2016)	Jan 15 – 16, 2016	Mankundu, Hoogly, India
26.	S. Dasgupta A. Baral A. Lahiri	Optimization of Electrode-Spacer Geometry of a Gas Insulated System	3 rd International Conf. on Foundations & Frontiers in Computer, Communication and Electrical Engineering – 2016 (C2E2 – 2016)	Jan 15 – 16, 2016	Mankundu, Hoogly, India
27.	M. Basu V. Gupta A. Baral A. Lahiri	Study of Electric and Thermal Stress Distribution using Boron Nitride with Silicone Rubber in HV Cable Termination	3 rd International Conf. on Foundations & Frontiers in Computer, Communication and Electrical Engineering – 2016 (C2E2 – 2016)	Jan 15 – 16, 2016	Mankundu, Hoogly, India
28.	B Krishna Naick, Manisha Das, T.K.Chatterjee, Kalyan Chatterjee	Study and Implementation of Synchronization Algorithm in Three Phase Grid Connected PV System	3 rd IEEE International conference on Recent Advances in Information Technology (RAIT – 2016).	March 03 – 05, 2016.	ISM Dhanbad.
29.	P. K. Nayak and A. K. Pradhan	Secured Zone 3 Protection During Stressed Condition	IEEE Power and Energy Society General Meeting	July 26-30, 2015,	Denver, CO, USA.
30.	K. Sarwagya and P. K. Nayak	An extensive review on the state-of-art on microgrid protection	IEEE Power, Communication and Info. Technology Conference (PCITC-2015)	Oct.15 - 17, 2015	S.O.A University, Bhubaneswar, Odisha.
31.	S. Mohanty and P. K. Nayak	A Comparative Study of DFT and Moving Window Averaging technique of Current Differential Protection Scheme on Transmission Line	Third International Conference on Advance Computing and Communication Systems, (ICACCS-2016)	Jan. 22 – 23, 2016	Sri Eshwar College of Engineering, Coimbatore, India.
32.	Ravi Bhushan, Kalyan Chatterjee, Ravi Shankar	Comparison between GA-based LQR and Conventional LQR Control Method of DFIG Wind Energy System	3 rd IEEE International conference on Recent Advances in Information Technology (RAIT – 2016).	March 3 – 5, 2016.	ISM Dhanbad.
33.	Ravi Shankar, SoumyaRanjan Pradhan, SatyabrataSahoo, Kalyan Chatterjee	GA Based Improved Frequency Regulation Characteristics For Thermal-Hydro-Gas & DFIG Model Incoordination With FACTS And Energy Storage System	3 rd IEEE International conference on Recent Advances in Information Technology (RAIT – 2016).	March 3 – 5, 2016.	ISM Dhanbad.

34.	Kalyan Chatterjee, Ravi Bhushan&Minimala	Designing an Optimized Pitch Controller of DFIG System Using Frequency Response Curve	6 th IEEE International Conference on Power Systems, 2016 (ICPS 2016)	March 4-6, 2016	Indian Institute of Technology (IIT) Delhi
35.	Dipesh Kumar , Kalyan Chatterjee	Artificial Bee Colony based MPPT Algorithm for Wind Energy Conversion System	6 th IEEE International Conference on Power Systems, 2016 (ICPS 2016)	March 4-6, 2016	Indian Institute of Technology (IIT) Delhi

3.9.6.4 Papers presented in National Seminars / Conferences

Sl. No	Author(s)	title	Seminar/ Conference	Date	Place
1.	Palash Pal, Debabrata Roy, Pradip Kumar Sadhu, Alokshrivastav, UtpalGoswami, Mainak Choudhury	Design and Analysis of Circulating Current Control Method for High Frequency Inverter Fitted Induction Heater	2 nd National Conf. on Mining Equipment :New Technologies, Challenges & Applications MENTCA- 2015	9 th Oct. – 10 th October, 2015	Department of Mining Machinery Engineering, Indian School of Mines, Dhanbad, Jharkhand, India
2.	H Kumar, S Mandal	Dynamic modelling and performance analysis of underground mine ventilation system	MENTCA'15	9-10 October, 2015	ISM, Dhanbad
3.	Madan Kr. Das, Akanksha Sinha, K. C. Jana	A New Half-cascaded multilevel inverter topology to improve systems performance parameters	Mining Equipment-New Technologies, Chalenges and Applications (MENTCA-15)	9/10/15-10/10/15	ISM Dhanbad, India

3.9.7 MAJOR ACADEMIC CONTRIBUTIONS:

1. Applied patent (Application No : **201631000136**, Dated 04 / 01 / 2016) for “A High Frequency Fly-Back Multizone Resonant Inverter with AC Input Source for Multi-Area Induction Heating” in the name of inventors Prof. (Dr.) Pradip Kumar Sadhu, KallolBhaumik, AvikDatta, Palash Pal, AvijitChakraborty, Titas Kumar Nag, at Patent Office, Kolkata, Government of India.
2. Applied patent (Application No :1221/KOL/2015, Dated 30 / 11 / 2015) for “An Induction Curing System For Roof Treatment With Asphalt Concrete To Cure A Crack On Roof And A Method For The Same” in the name of inventors Prof. (Dr.) Pradip Kumar Sadhu, Mr. KaushikNeogi, Dr. Atanu Banerjee, Dr. G. Panda, Dr. N. Pal, Dr. K.C. Jana., at Patent Office, Kolkata, Government of India.
3. Applied patent (Application No : 682 / KOL / 2015, Dated 19 / 06 / 2015) for “Photovoltaic-Thermoelectric-Photovoltaic (Pv-Te-Pv) Multilayer Device for Enhancing Solar Electric Power Generation with Reduced Area Requirement” in the name of inventors SupravaChakraborty, Prof. (Dr.) Pradip Kumar Sadhu, UtpalGoswami, at Patent Office, Kolkata, Government of India.
4. Applied patent (Application No : 445 / KOL / 2015, Dated 30 / 04 / 2015) for “A Pacemaker Battery Recharger for Enhancing the Service Life” in the name of inventors Prof. (Dr.) Pradip Kumar Sadhu, AnimeshHalder, Dr. Nitai Pal, Prof. (Dr.) Ankur Ganguly, Dr. Prabir Bhowmik and Moumita Sadhu, at Patent Office, Kolkata, Government of India.

5. Applied patent (Application No : 25/KOL/2015, dated 07 / 01 / 2015) for “A High Frequency Hybrid Resonant Inverter With AC Input Source” in the name of inventors Prof. (Dr.) Pradip Kumar Sadhu, Ananya Bhattacharya , Dr. Vivekananda Mukherjee and Dr. Nitai Pal, at Patent Office, Kolkata, Government of India.
6. Dr. A .Baral and Dr. P.K. Nayak recipient of prestigious “POSOCO Power System Award (PPSA)” in doctoral category from Power System Operation Corporation (POSOCO) and Foundation for Innovation & Technology Transfer (FITT), IIT, Delhi in 2015 for research carried out at doctoral level.

3.9.8 SEMINARS, SYMPOSIA, WORKSHOPS , CONFERENCES ORGANIZED BY THE DEPT/CENTRE:

Sl. No	Title of Course	Duration
1.	Professional Skill Development Program on “MATLAB & Simulink for Engineering Application”	22nd June. -27 th June.,2015
	Certificate Course on, “Advanced Power Electronics and Power Quality”	05 th July, 2015 – 10 th July, 2015
	Certificate Course on, “Advanced Electrical Power Technology”	12 th July, 2015 – 17 th July, 2015

3.9.9 PARTICIPATION OF FACULTY / OFFICERS / STAFF IN SEMINARS / CONFERENCES ETC.

Name	Seminars / Conferences etc.	Date	Place
Sukanta Das	IEEE TENCON	01-04 Nov., 2015	Macau, SAR, China
A. Baral	IEEE 2 nd International Conference on Condition Assessment Techniques in Electrical Systems (CATCON-2015)	10 th to 12 th Dec 2015	CPRI, Bengaluru, India
K. Chatterjee	19th National Training Course on "Wind Energy Technology"	14th - 18th March 2016	NIWE, Chennai

3.9.10 VISITS OF FACULTY MEMBERS ABROAD:

- 1) Dr. N. Pal visited Dubai, UAE during November 16-18, 2015 for oral presentation of the research paper entitled “Study on Non-isolated Power Electronics Converters using State Space Analysis” in 2nd International Conference & Exhibition on “Industrial Engineering-2015”.
- 2) Dr S Mandal, Visited San Diego, USA to present research article in international conference SPIE Optics and Photonics during (05.08.15-06.08.15)
- 3) Dr. S. Das present a paper in IEEE TENCON in Macau, SAR, China

3.10 ELECTRONICS ENGINEERING

3.10.1 ABOUT THE DEPARTMENT

The Department has been running B.Tech. programmes in Electronics Engineering (currently renamed as Electronics & Communication Engineering) since 1998 and in Electronics & Instrumentation Engineering from 2013. It also offers M.Tech. and Ph.D. programmes. The students are exposed not only to the core electronics courses but also to state-of-art courses that are offered by only a few premier institutes in the country.

3.10.1.1 Vision

To achieve excellence in academics and research for worldwide recognition, supporting technological and societal development of the country.

3.10.1.2 Mision:

To achieve our vision the Department will,

- Develop a state-of –the art curriculum to provide quality education and strong foundations of Electronics Engineering, preparing students for careers in industry and research and adapt to rapidly changing technology.
- Pursue and excel in identified key research areas addressing the challenges of industry and society in the global context.
- Nurture students for developing critical thought process, innovation and creativity through engineering problems.
- Promote establishment of Centers of Excellence in emerging technology areas.
- Establish interaction with industry and other higher educational institutes of the country for exchange of ideas of technical expertise.
- Inculcate and foster ethical and human values in stakeholders (students, faculty and staff).

3.10.2 FIELD VISITS/EXCURSIONS/TRAINING PROGRAMMES UNDERTAKEN BY STUDENTS

Particulars	Batch of Students	Place of Visit	Period of visit
Visit to the instrumentation and control divisions of different departments of an integrated steel plant for exposure to state-of-the art technology in Industrial Automation.	26 students of B. Tech Electronics and Instrumentation	IISCO Steel Plant Burnpur	One day (29 th February, 2016)

3.10.3 INTRODUCTION OF NEW COURSES AND PROGRAMMES, IF ANY (GIVE COURSE OUTLINE).

- B.Tech (Hons.) in Electronics and Communication Engineering.
- B.Tech (Hons.) in Electronics and Instrumentation Engineering.
- Minor in Electronics Engineering.
- Minor in Communication Engineering.
- Minor in Instrumentation Engineering.
- 3-Year M. Tech (Electronics and Communication Engineering) (Week-end mode at IIF, New Town, Rajarhat, Kolkata.

3.10.4 BRIEF LIST OF ON-GOING R&D PROJECTS (PROJECT VALUE ₹ 5,00,000/- AND ABOVE)

1.	Project Title : Real-time Implementation of Speech Coders Sponsoring Agency : UGC Coordinator (s) : Prof. Subrata Bhattacharya Project Value : ₹ 7.588 Laks Date of Commencement : 01.04.2013 Date of Completion : 31.3.2016 Objective : To implement a set of Speech coding algorithms on Digital Signal Processors and comparison of their real-time performances Status : Compilation of the results is being done Findings : 1. Selection of a set of speech coders for comparison of real-time performance. 2. Development of a new pitch detection technique. 3. Development of a SIMULINK model to implement the Adaptive Multi Rate (AMR) coder. 4. Development of a a real-time model to implement the Adaptive Multi Rate (AMR) coder using TMS320C6416 DSK 5. Study of different performance parameters e.g. speech quality (including objective measure), execution time, memory consumption(during real-time experimentation) using the simulation and real-time models.
2.	Project Title : Implementation of Spectrum Sensing for Cognitive Radio” Sponsoring Agency : UGC Coordinator (s) : Prof. Debjani Mitra Project Value : ₹ 12.938 Lakhs Date of Commencement : 01.04.2013 Date of Completion : 31.03.2016 Objective : Analysis and development of spectrum sensing algorithms Status : Completed Findings : From USRP acquired data, new wideband sensing algorithms have been developed which are robust to noise uncertainty. Statistical Modeling of spectrum availability from which a HSMM based predictive DSA developed.
3.	Project Title : “University Grants Commission Assistance to The Department of Electronics Engineering, Indian School of Mines, Dhanbad at the Level of DRS-I” in the thrust area: “Modeling of Semiconductor Nanostructured Devices” Sponsoring Agency : UGC (SAP)

	Coordinator (s) : Project Value : Date of Commencement : Date of Completion : Objective : Status : Findings :	Coordinator: Dr. Mukul K Das & Co-coordinator- Dr. J. Kumar ₹ 28.5 Lakhs 1.4.2011 31.3.2016 Performance analysis and optimum design of nanostructured devices, e.g. Solar cell, Photodetector, MOSFET etc. Completed Obtained Maximum efficiency of SiGe/Si thin film heterojunction solar cell is ~17% and SiGe/Si/SiGe triple junction solar cell is 24%. Efficiency of Micro rod array solar cell is 12-14%. Model for Tin incorporated Gr-IV alloy based transistor laser and IR photodetector has been developed.
4.	Project Title : Sponsoring Agency : Coordinator (s) : Project Value : Date of Commencement : Date of Completion : Objective : Status : Findings :	Centre of Excellence for Training and Research: Centre for Renewable Energy at ISM MHRD (FAST) Coordinator of the Project & Head of The Centre- Dr. Mukul K Das Other associated Members-Dr. J. Kumar, ECE; Dr. B. Chowdhury, App Chem; Dr. R.Thangavel, App. Phy; Dr. T. Maity, MME ₹ 400 Lakhs 01.04.2014 31.03.2018 To establish Centre of Excellence in Renewable Energy for Research, Training and Service to the Society. Objectives are as follows. Research Modeling and Fabrication of Micro crystalline SiGe/Si, Cu ₂ ZnSn(Se) ₄ , ZnO –n c-Si, Perovskite on c-Si, Organic (polymer and dye) based thin film solar cell. To make a prototype in the laboratory To transfer the research/ innovation output to the industry. 3) To develop Biomass Power Plant (wasted food to energy) in the ISM Campus Training- 1)Academic Programs (e.g., Ph.D., MS/M.Tech in Renewable Energy) 2)Awareness Camp 3)Training Program (Summer, Winter School) for Graduate & Master Students (Science & Engineering both) Industry Executives Diploma Holders 4)Short Term Course/ Refresher Course 5)Organization of Seminar, Workshop and Conferences Service to the Society- 1) Green campus in ISM and nearby village 2) Solar energy driven pumping system for irrigation in a village Ongoing- (Purchase of Vacuum System for Fabrication is in final stage) Model for ZnO on c-Si solar cell is completed. Maximum efficiency of 15% is obtained.
5.	Project Title : Sponsoring Agency : Coordinator (s) : Project Value : Date of Commencement : Date of Completion : Objective :	Accurate analysis of passive waveguide structures under pulse / FM excitation DST Dr. Sushrut Das ₹ 14.4 Lakhs 28.02.2009 27. 02.2012 (On Extension) Analysis of passive waveguide structures under non- sinusoidal periodic

	Status :	excitations. Ongoing
	Findings :	Different waveguide based circuits have been analyzed under periodic non – sinusoidal excitation to find the aperture field distribution.
6.	Project Title :	Design and Characterization of Compact, High Performance Patch antennas Loaded with Metamaterials
	Sponsoring Agency :	UGC
	Coordinator (s) :	Dr. Santanu Dwari
	Project Value :	₹ 8.555 Lakhs
	Date of Commencement :	01.04.2013
	Date of Completion :	31. 03.2016
	Objective :	To design and characterize compact multiband, broadband, and circular polarized patch antennas using metamaterials.
	Status :	Completed
	Findings :	Applcation of metamaterial helps to reduce the size of antenna
7.	Project Title :	Photonic Microwave Arbitrary Waveform Generation with Adjustable Chirp Parameter based on Remote Sensing Applications
	Sponsoring Agency :	ISRO
	Coordinator (s) :	Dr. S. K. Raghuwanshi(PI) & Dr. Raghvendra Kumar Chaudhary (Co-PI)
	Project Value :	₹ 14.662 Lakhs
	Date of Commencement :	01.12.2014
	Date of Completion :	30.11.2016
	Objective :	To generate the chirp microwave signal
	Status :	Ongoing
	Findings :	Microwave generation through photonics components
8.	Project Title :	Studies on Multi-element Multi-segment Dielectric Resonator Antenna for Wireless Application
	Sponsoring Agency :	DRDO
	Coordinator (s) :	Dr. Ravi Kumar Gangwar
	Project Value :	₹ 17.00 Lakhs
	Date of Commencement :	29/10/2014
	Date of Completion :	29/10/2017
	Objective :	Design and Development of multi-element multi-segment dielectric resonator antenna for wireless application
	Status :	Ongoing
	Findings :	Coourtney resonator (major equipment) has been purchased and four element sectored CDRA has been designed simulated and fabricated
9.	Project Title :	Studies on dielectric resonator antenna arrays
	Sponsoring Agency :	ISM
	Coordinator (s) :	Dr. Ravi Kumar Gangwar
	Project Value :	Rs. 6.8 Lakhs
	Date of Commencement :	July. 2013
	Date of Completion :	July 2016
	Objective :	Design ,simulation and fabrication of dielectric resonator antenna array. Improvement in bandwidth and gain of the dielectric resonator antenna array.
	Status :	Ongoing
	Findings :	Dual segment RDRA array has been designed simulated and fabricated and paper based on these finding is accepted for Publications.
10.	Project Title :	Design and Development of Circularly Polarized dielectric resonator antenna

	Sponsoring Agency : DST-SERB Coordinator (s) : Dr. Ravi Kumar Gangwar Project Value : ₹ 25.45 Lakhs Date of Commencement : November 2015 Date of Completion : November 2018 Objective : 1 Design and analysis of circularly polarized dielectric resonator antenna/antenna array at frequencies used in the area of communication 2 Fabrication and measurement of CP DRA 3 By applying different technique for further improvement in 3-dB axial-ratio bandwidth of the designed CP DRA. Status : Ongoing Findings : Literature Survey and Purchasing of the equipment is going on
11.	Project Title : Wideband Circularly Polarized Dielectric Resonator Antenna Sponsoring Agency : ISM Dhanbad Coordinator (s) : Dr. Raghvendra Kumar Chaudhary Project Value : ₹. 8.2 Lakhs Date of Commencement : January 2014 Date of Completion : December 2016 Objective : Design the Wideband Circularly Polarized Antenna Status : Ongoing Findings : Wideband Circular Polarization
12.	Project Title : Study on opto-Electronics Devices and System Processing Signals at Microwave Frequencies Sponsoring Agency : ISM Dhanbad Coordinator (s) : Mr. Amitesh Kumar Project Value : ₹ 8.00 Lakhs Date of Commencement : 27.03.2013 Date of Completion : 26.02.2015 (On Extension) Objective : To study the combine world of microwave and photonics system to introduce new application which will be able for photonic processing of microwave and mm-wave signals Status : Ongoing Findings : Literature survey and some part of project completed
13.	Project Title : Test development of analog and mixed signal circuits by emulation and implementation of their behavioral models on FPGA Sponsoring Agency : ISM Dhanbad Coordinator (s) : Mr.Rahul Bhattacharya Project Value : ₹ 7.91 Lakhs Date of Commencement : 11.02.2015 Date of Completion : 10.02.2018 Objective : To provide a solution for off-line testing of mixed signal VLSI circuits. Status : Ongoing Findings : Some algorithms have been developed to model faults and to test mixed signal VLSI circuits.

3.10.5 IMPORTANT COLLABORATIVE WORKS

Organisation / Laboratory	Nature of Interaction
Samsung India, Bangalore	A visit was made by Prof. S. Bhattacharya to Samsung, Bangalore to discuss the ways to do collaborative works. The technical team from Samsung expressed interest in it and wanted to hear from our faculty on their research topics even through special arrangement of lectures at Bangalore which is expected to lead to a long-standing technical collaboration. Other avenue of collaboration through our students' projects at Samsung on topics of mutual interest was considered, by both the ends, to be very effective one.
National United University Taiwan	Dr. S. K. Raghuwanshi visited 1 month (13 June 2014-13 July 2014 as visiting professor)

3.10.6 IMPORTANT NEW EQUIPMENT ACQUISITIONED (ABOVE ₹ 5,00,000/-)

Name of Equipment	Purpose	Date of Purchase	Value (₹)
13.5 GHz Vector Network Analyzer	Research	May, 2015	₹ 36,55,050/-
Courtney Resonator	For measuring dielectric properties of ceramic material at High frequency	March 2016	₹ 11.5 Lakh
Handheld VNA	For measuring antenna input parameters	March 2016	₹ 15.9 Lakh
Handheld Vector Network Analyzer	To measure S-parameters of Antennas.	January 2016	₹ 15,76,976/-
Desktop Computers (35 Nos.)	For departmental lab purpose	October 2015	₹ 16,17,960/-
10 KVA Static Converter Online UPS-8 with 128 Nos. SMF Battery & 8 Nos. Battery Stand	For departmental lab purpose		₹ 9,97,325/-

3.10.7 RESEARCH PUBLICATIONS

3.10.7.1 Books published

Title	Fundamental of Electromagnetics Field Theory
Publisher	“AXIOE” Books, India (A division of Agarwal publication)
Author	Sanjeev Kumar Raghuwanshi, (Assistant Prof. ISM Dhanbad)
Co-author	Santosh Kumar (Assistant Prof. DIT Dehradun)
ISBN	978-93-85079-28-3
Date of Publication	First Edition (April 2015)
Cost	260 INR

3.10.7.2 Papers published in International Journals

Sl. No.	Author(s)	Year	Title	Journal	Vol. No.	Page No.
1.	Rajeev Ranjan, Chandan Kumar Choubey, Bal Chand Nagar and Sajal K Paul	2016	Comb Filter for Elimination of Unwanted Power Line Interference in Biomedical Signal	Journal of Circuits, Systems, and Computers	25(6)	14 pages
2.	Ajay Kumar Kushwaha and Sajal K. Paul	2015	Current Mode Universal Filter Using Single Current Controlled Differential Difference Current Conveyor Transconductance Amplifier, Circuits and Systems	Circuits and Systems	6	224-236
3.	Neeta Pandey, Praveen Kumar and Sajal K Paul	2015	Voltage Differencing Transconductance Amplifier Based Resistorless and Electronically Tunable Wave Active Filter	Analog Integrated Circuits for Signal Processing: Mixed Signal Letter	84	107-117
4.	Rajeshwari Pandey, Neeta Pandey, Sourabh Chitranshi and Sajal K Paul	2015	Operational Transresistance Based PID Controller	Advances in Electrical and Electronics Engineering	13	171-181
5.	V. Kumar, A. Sinha, B.P.Singh, A. P. Sinha, and V Jha	2015	Refractive index and Electronic polarizability of ternary chalcopyrites	Chin. Phys. Lett. (IOP)	32	127701
6.	V. Kumar, J. K. Singh and G.M. Prasad	2015	Elastic properties of elemental, binary and ternary semiconductors	Ind. J. Pure & Appl. Phys. (Nascair)	53	429-435
7.	B. P. Pandey & V. Kumar	2016	B. P. Pandey and V. Kumar	Ind. J. Pure & Appl. Phys. (Nascair)	54	66-72
8.	Jitendra K Mishra, Vishnu Priye and B M A Rahman	2015	Error probability performance of a short reach multicore fiber optical interconnect transmission system	Optics Letters	40 (19)	4556 – 4559
9.	Lalit K. Wadhwa, Rashmi S. Deshpande, and Vishnu Priye.	2016	Extended shortcut tree routing for ZigBee based wireless sensor network	Ad Hoc Networks,	37 (2)	295– 300
10.	Sandeep Kumar, Satish Kumar Singh and S. Bhattacharya	Dec 2015	Performance evaluation of a ACF-AMDF based pitch detection scheme in real-time	International Journal of Speech Technology (Springer)	18 (4)	521-527
11.	D. Bepari and D. Mitra	2015	Improved power loading scheme for orthogonal frequency division multiplexing based cognitive radio	IET Communications	9(6),	2033 - 2040
12.	S. Koley and D. Mitra	2015	Band-Reconfigurable Monopole Antenna for Cognitive Radio applications	IETE Journal of Research	61(4)	411-416

13.	S. Koley and D. Mitra	2015	A Compact Dual-band Reconfigurable Open-end Slot antenna for Cognitive Radio Front end System	Progress in Electromagnetics Research C	58	33-41
14.	A. Sharma and D. Mitra	2015	Outage based Underlay Cognitive Radio Deployment for a Cellular network	International Journal of Applied Engineering Research	10(22)	43052-43058
15.	Satish Kumar Singh and Jitendra Kumar	2016	Theoretical Investigation of Polarization Sensitive Terahertz Quantum Dot Infrared Photodetector	IEEE Photonics Technology Letters	28	441
16.	Sneha Sharma and Jitendra Kumar	2015	Numerical analysis of supercontinuum generation in high birefringent solid core photonic crystal fiber	Optik	126	4166
17.	Sneha Sharma and Jitendra Kumar	2015	Numerical analysis of optical logic gate based on nonlinear optical loop mirror with a photonic crystal fiber	Journal of Nonlinear Optical Physics & Materials	24	1550019
18.	Amar Prakash Sinha, Jitendra Kumar, and Virendra Kumar	2015	Effect of Separation and Electric Field on Single Electron States of Lateral Quantum Dots	Journal of Nanoelectronics and Optoelectronics	10	616
19.	Chandra Mohan Singh Negi and Jitendra Kumar	2015	Investigation of p-type multicolour-broadband quantum dot infrared photodetector	Superlattices and Microstructures	82	336
20.	Prakash Pareek and Mukul K. Das	2016	Theoretical analysis of direct transition in SiGeSn/GeSn strain balanced QWIP	Optical and Quantum Electronics, Springer	48	Article no. 228, pp.1-11
21.	Ravi Ranjan and Mukul K Das	2016	Theoretical Estimation of Optical Gain in Tin-incorporated Group IV Alloy Based Transistor Laser	Optical and Quantum Electronics, Springer	48	Article no. 201, pp.1-11
22.	Md. Aref Billaha, Mukul K Das	2016	Influence of Doping on the Performance of GaAs/AlGaAs QWIP for Long Wavelength Applications,	Opto-electronics Review (formerly with Springer)	24(1)	25-33.
23.	Mrinal Sen, Mukul K Das	2015	High-speed all-optical logic inverter based on stimulated Raman scattering in silicon nanocrystal	Applied Optics, OSA	54(31)	9136-9142
24.	L. Murmu and S. Das	2015	A Dual-Band Bandpass Filter for 2.4 GHz Bluetooth and 5.2 GHz WLAN Applications	Progress in Electromagnetic Research Letters	53	65 – 70
25.	D. Gangwar, S. Das and R. L. Yadava	2016	Circularly Polarized Inverted Stacked High Gain Antenna with Frequency Selective Surface	Microwave and Optical Technology Letters	58(3)	732–740

26.	Pritam S. Bakariya, Santanu Dwari, and Manas Sarkar	2015	A Triple Band Notch Compact UWB Printed Monopole Antenna	Wireless Personal Communication (Springer)	80(2)	1095-1106
27.	Rohit Kumar Saini, and Santanu Dwari	2015	CPW-fed broadband circularly polarized rectangular slot antenna with L-shaped feed line and parasitic elements	Microwave and Optical Technology Letters (MOTL)	57(8)	1788–1794
28.	Sandeep Kumar, Binod K. Kanaujia, Santanu Dwari, Ganga P. Pandey, and Dinesh Kumar Singh	2015	A Miniaturization Approach Towards 40 GHz Integrated Single Chip Receiver System for MMW Communication Networks	Wireless Personal Communication (Springer)	84(2)	1285-1302
29.	Mans Sarkar, Santanu Dwari, and Anitha Daniel	2015	Printed Monopole Antenna for Ultra- Wideband Application with Tunable Triple Band-Notched Characteristics	Wireless Personal Communication (Springer)	84(4)	2943-2954
30.	Pritam S. Bakariya, Santanu Dwari, and Manas Sarkar	2015	Printed Ultrawideband Monopole Antenna with Four Notch Band	Wireless Personal Communication (Springer)	84(4)	2989-2990
31.	Dinesh Kumar Singh, Binod Kumar Kanaujia, Santanu Dwari, Ganga Prasad Pandey and Sandeep Kumar	2015	Novel quad-band circularly polarized capacitive-fed microstrip antenna for C-band applications	Microwave and Optical Technology Letters (MOTL)	57(11)	2622–2628
32.	Gunjan Srivastava, Santanu Dwari, and Binod Kumar Kanaujia	2015	A compact UWB antenna with reconfig-urable dual notch bands	Microwave and Optical Technology Letters (MOTL)	57(12)	2737–2742
33.	Sandeep Kumar, Binod K. Kanaujia, Santanu Dwari, Ganga P. Pandey, and Dinesh Kumar Singh	2015	Co-design Approach for Wide-Band Asymmetric Cross Shaped Slotted Patch Antenna with LNA	Wireless Personal Communication (Springer)	85(3)	863-877
34.	Rohit Kumar Saini, and Santanu Dwari	2016	A Broadband Dual Circularly Polarized Square Slot Antenna	IEEE Transactions on Antennas and Propagation	64(1)	290-294
35.	S. K. Raghuwanshi, and B. M. A. Rahman	2015	Analysis of Novel Chirped Types of Refractive Index Profile Metamaterial Planar Slab Optical Waveguide by Finite Element Method for Sensor Application”	IEEE Sensor Journal	15(7)	4141-4147
36.	Sanjeev Kumar Raghuwanshi, and B. M. Azizur Rahman	2015	Propagation and Characterization of Novel Graded and Linearly Chirped Type’s of Refractive Index Profile Symmetric Planar Slab waveguide by Numerical Means	Progress in Electromagnetic Research-B (MIT-USA),	62	255-275
37.	Sumit Kumar Jindal and Sanjeev Kumar Raghuwanshi	2015	A complete analytical model for circular diaphragm pressure sensor with freely supported edge	Microsystems Technology (Springer)	21(5)	1073-1079,

38.	Sanjeev Kumar Raghuvanshi and Vikram Palodiya	2015	Analytical Analysis of Leaky Modes in a Multilayer Planar Slab Waveguide for Sensor Applications	Sensor Letters (American Scientific Publisher), USA,	13	1-8
39.	Vikram Palodiya and S. K. Raghuvanshi	2015	Design and parametric study of depressed core optical fiber	In Procedia Computer Sciences (Elsevier Scopus)	46	1385-1392
40.	A.K. Singh, Ravi Kumar Gangwar and B.K. Kanaujia	2015	Orthogonal slot-loaded coaxially stacked annular ring antenna with circular patch for multiband application	Journal of Electromagnetic Waves and Applications	29	1630-1643
41.	Anand Sharma and Ravi Kumar Gangwar	2015	Triple Band Two-Segment Cylindrical Dielectric Resonator Antenna with a Novel Microstrip Feed for WLAN/WiMAX Applications	Microwave and Optical Technology Letters	57	2649-2655
42.	Pinku Ranjan and Ravi Kumar Ganwgar	2015	Probe feed half split Cylindrical Dielectric Resonator Antenna for Wideband Application	AEU-International Journal of Electronics and Communications	69	1709-1714
43.	Reena Kumari and Ravi Kumar Gangwar	2016	Circular Polarized Dielectric Resonator Antenna: Design and Developments	Wireless Personal Communications	86	851-886
44.	Anand Sharma and Ravi Kumar Gangwar	2016	Compact triband cylindrical dielectric resonator antenna with circular slots for wireless application	Journal of Electromagnetic Waves and Applications	30	331-340
45.	Anand Sharma and Ravi Kumar Gangwar	2016	Hybrid two segments ring dielectric resonator antenna for ultrawideband application	International Journal of RF and Microwave Computer-Aided Engineering	26	47-53
46.	Anand Sharma and Ravi Kumar Gangwar	2016	Compact Quad-Band Cylindrical Dielectric Resonator Antenna with Complementary C-Shaped Defected Ground Structure	Microwave and Optical Technology Letters	58	611-615
47.	A.K. Singh, Ravi Kumar Gangwar and B.K. Kanaujia	2016	Sectorized Annular Ring Microstrip Antenna with DGS for Circular Polarization	Microwave and Optical Technology Letters	58	569-573
48.	S. Chakraborty, S. K. Bera, N. Mandal and S. C. Bera	2015	Study on Further Modification of Non-Contact Capacitance Type-Level Transducer for a Conducting Liquid	IEEE Sensors Journal	15(11)	6678-6688
49.	S. Sinha, D. Banerjee, N. Mandal, R. Sarkar and S. C. Bera	2015	Design and Implementation of Real-time Flow Measurement System using Hall Probe Sensor and PC based SCADA	IEEE Sensor Journal	15(10)	5592-5600
50.	G. Rajita, D. Banerjee, N. Mandal, S. C. Bera	2015	Design and Analysis of Hall effect Probe Based Pressure Transmitter using Bellow as Sensor	IEEE Transactions on Instrumentation and Measurement	64(9)	2548-2556

51.	Sameer Kumar Sharma, Jai Deep Mulchandani, Devvrat Gupta and Raghvendra Kumar Chaudhary	2015	Triple-band Metamaterial-inspired Antenna using FDTD Technique for WLAN/WiMAX Applications	International Journal of RF and Microwave Computer-Aided Engineering (RFMiCAE), Wiley Journals	25(8)	688-695
52.	Prachi Chauthaiwal, Raghvendra Kumar Chaudhary and K. V. Srivastava	2015	Rounded Bevel shaped Fed Cylindrical Dielectric Resonator Antenna for Wideband Applications	Microwave and Optical Technology Letters (MOTL), Wiley Journals	57 (10)	2364-2368
53.	Ashish Gupta and Raghvendra Kumar Chaudhary	2015	A Compact CPW-Fed Wideband Metamaterial Antenna with EBG Loading	Microwave and Optical Technology Letters (MOTL), Wiley Journals	57 (11)	2632-2636
54.	Naveen Mishra, Ashish Gupta and Raghvendra Kumar Chaudhary	2015	A Compact CPW-fed Wideband Metamaterial Antenna using Ω -shaped Interdigital capacitor for Mobile Applications	Microwave and Optical Technology Letters (MOTL), Wiley Journals	57 (11)	2558-2562
55.	Sameer Kumar Sharma, and Raghvendra Kumar Chaudhary	2015	A Compact Zeroth-order Resonating Wideband Antenna with Dual-band Characteristics	IEEE Antennas and Wireless Propagation Letters	14	1670-1672
56.	Sameer Kumar Sharma, Ashish Gupta and Raghvendra Kumar Chaudhary	2015	Epsilon Negative CPW-fed Zeroth-order Resonating Antenna with Backed Ground Plane for Extended Bandwidth and Miniaturization	IEEE Transactions on Antennas and Propagation	63 (11)	5197 - 5203
57.	Rishi Kant Sharan, Sameer Kumar Sharma, Ashish Gupta and R. K. Chaudhary	2016	An Edge Tapered Rectangular Patch Antenna with Parasitic Stubs and Slot for Wideband Applications	Wireless Personal Communications, Springer Journals	86 (3)	1213-1220
58.	Sameer K Sharma and Raghvendra Kumar Chaudhary	2016	Dual Arm Patch Antenna for Wideband Applications using Metamaterial	Wireless Personal Communications, Springer Journals	86 (2)	1087-1094
59.	Rajkishore Kumar and Raghvendra Kumar Chaudhary	2016	Modified Microstrip-line-fed Rectangular Dielectric Resonator Antenna Coupled with Slotted Ground Plane for Wideband Circular Polarization	Microwave and Optical Technology Letters (MOTL), Wiley Journals	58 (1)	206-210
60.	Naveen Mishra and Raghvendra Kumar Chaudhary	2016	A Miniaturized ZOR Antenna with Enhanced Bandwidth for WiMAX Applications	Microwave and Optical Technology Letters (MOTL), Wiley Journals	58 (1)	71-75
61.	Devendra Chack, V. Kumar, S. K. Raghuwanshi	2015	Design and performance analysis of InP/InGaAsP-MMI based 1310/1550-nm wavelength division demultiplexer with tapered waveguide geometry	Opto-Electronics Review	23	271-277
62.	Kaushik Mazumdar, Vishwanath Pratap Singh, Ahna Sharan, Aniruddha Ghosal	2015	Study of the carrier transport in presence of backscattering in InAs nanowire based MOSFET after GaN	Superlattices and Microstructures	88	110-115

3.10.7.3 Papers presented in International Seminars/Conferences

Sl. No.	Author(s)	Title	Seminar/Conference	Date	Place
1.	Ajay Kumar Kushwaha and Sajal K. Paul	First Order Voltage and Current Mode Multifunction Filters using Single CCDDCCTA	6th International Conference on Computers and Devices for Communication (CODEC-2015)	16-18 December, 2015	Institute of Radio Physics and Electronics, University of Calcutta, West Bengal.
2.	Ajay Kumar Kushwaha and Sajal K. Paul	Second Order University Filter Using CCDDCCTA	6th International Conference on Computers and Devices for Communication (CODEC-2015)	16-18 December, 2015	Institute of Radio Physics and Electronics, University of Calcutta, West Bengal.
3.	Ajay Kumar Kushwaha and Sajal K. Paul	Biquadratic Universal Filter Based on CCDDCCTA	International Conference on Microelectronics, Communication and Computing (Micro Com-2016)	23-25 January, 2016	National Institute of Technology, Durgapur, West Bengal.
4.	Bal Chand Nagar and Sajal K. Paul	Negative Inductance Simulator Using OTRA	International Conference on Microelectronics, Communication and Computing (Micro Com-2016)	23-25 January, 2016	National Institute of Technology, Durgapur, West Bengal.
5.	Ashok Kumar and Sajal K. Paul	Cascadable Voltage Mode All Pass Filter with single DXCCII and Grounded Capacitor	International Conference on Microelectronics, Communication and Computing (Micro Com-2016)	23-25 January, 2016	National Institute of Technology, Durgapur, West Bengal.
6.	Khushi Banerjee and Sajal K. Paul	Negative Inductance and Immittance Simulators Employing Differential Voltage Current Conveyor	International Conference on Microelectronics, Communication and Computing (Micro Com-2016)	23-25 January, 2016	National Institute of Technology, Durgapur, West Bengal.
7.	Rupam Das and Sajal K. Paul	Voltage Mode First Order All Pass Filter Design Using Differential Difference Current Conveyor	International Conference on Microelectronics, Communication and Computing (Micro Com-2016)	23-25 January, 2016	National Institute of Technology, Durgapur, West Bengal.
8.	Nishtha Rani, Rajeev Kumar Ranjan, Ratnadeep Pal and Sajal K. Paul	Programmable Electronically Tunable Voltage Mode Universal Biquadratic Filter Based on Simple CMOS OTA	IEEE 3 th International Conference on Devices, Circuits and Systems (ICDCS-2016)	3-5 March, 2016	Karuna University, Coimbatore, Tamilnadu.
9.	C. P. S. Gayathri, D. V. Satyanand, B. S. Kiran, T. N. Sravya, Bhanu P. Singh and V. Kumar	Elastic Properties of zb III-Nitrides: A First-principles Study	IEEE Int. Conf. on Microwave and Photonic (ICMAP)	Dec.11-13, 2015	ISM, Dhanbad

10.	A. Sharma, Mariani, A. Georgetti, D. Mitra and M. Chiani	Subspace-based Spectrum Guarding	IEEE Workshop on Advances in Software defined and context aware cognitive networks	8 -12 June, 2015	London, UK
11.	C. Singh, D. Mitra and K.K. Singh	Utility based Underlay Power Control approach for Dynamic Spectrum Allocation	INDIACom-2016 3 rd Int Conference on “Computing for Sustainable Global Development”	16-18March, 2016	BVICAM, New Delhi
12.	S. Shankar and D. Mitra	Spatial Correlation Analysis of Multi-User MIMO System Capacity	IEEE 3rd International Conference on Innovations in Information Embedded and Communication Systems (ICIIECS),	17-18 March, 2016	Coimbatore, Tamil Nadu
13.	Sukriti and D. Mitra	Spatial Point Process Analysis of a Cognitive Cellular Interference model	IEEE 3rd International Conference on Innovations in Information Embedded and Communication Systems (ICIIECS),	17-18 March, 2016	Coimbatore, Tamil Nadu
14.	A K Varma and D. Mitra	Correlation Based Wide-band Cooperative Sensing	IEEE International conference on Wireless Signal Processing and Networking	23-25 March, 2016	Chennai, Tamil Nadu
15.	Ravi Ranjan and Mukul K. Das	Steady State Analysis of Tin Incorporated Group IV Alloy Based Transistor Laser	2 nd International Conference on Microwave and Photonics (ICMAP)-2015	11-13 December, 2015	Dhanbad, India
16.	Prakash Pareek, Mukul K. Das	Finite Difference Approach for Self-Consistent Solution in Strained and Strain Balanced SiGe/GeSn Quantum Well	2 nd International Conference on Microwave and Photonics (ICMAP)-2015	11-13 December, 2015	Dhanbad, India
17.	Mukul K. Das, Prakash Pareek	Theoretical Analysis of Direct Transition in SiGeSn/GeSn Strain Balanced QWIP	15 th International Conference on Numerical Simulation of Optoelectronics Devices (NUSOD) 2015	7-11 September, 2015	Taipei, Taiwan
18.	Mukul K Das and Ravi Ranjan	Theoretical estimation of optical gain in Tin incorporated group IV transistor laser	15 th Inte.Conference on Numerical Simulation of Optoelectronics Devices (NUSOD) 2015	7-11 September, 2015	Taipei, Taiwan
19.	M. Ram, S. Das	A Hexagonal Multiband Fractal Patch Antenna	IEEE Antenna Propagation Symposium	July, 2015	Vancouver, Canada
20.	S. Das., and R. K. Gayen and A. Chakraborty Das	A High Gain-bandwidth, Nearly Omnidirectional Waveguide Slot Array Antenna	IEEE Antenna Propagation Symposium	July, 2015	Vancouver, Canada

21.	A. Bage and S. Das	Wideband Waveguide Band - pass Filter based on brad Side comple- mentary Split Ring Resonator	International conference on Microwave and photonics	December, 2015	Dhanbad, India
22.	A. Chandra and S. Das	A Twisted Waveguide Slot Antenna	International conference on Microwave and photonics	December, 2015	Dhanbad, India
23.	L. Murmu and S. Das	Wideband Microstrip Bandpass filter using Stub-loaded Resonator	International conference on Microwave and photonics	December, 2015	Dhanbad, India
24.	M. Ram, S. Das and R. L. Yadava	A Dual Band V-Fractal Antenna	Int. conf. on Microwave and photonics	December, 2015	Dhanbad, India
25.	R. K. Yadav, S. Das and R. L. Yadava	A Modified Circular Disk Patch Antenna for 5.8 GHz HIPERLAN and IEEE 802.11/ Wi – Fi Applications	International conference on Microwave and photonics	December, 2015	Dhanbad, India
26.	A. Chandra and S. Das	A Twisted Slot in the Broad – Wall of a Twisted Waveguide	IEEE Applied Electromagnetics Conference	December, 2016	Guwahati, India
27.	Jhuma Saha, S. Jha and S. Kumar	A comparative analysis of some multi gate junctionless transistors.	6th International Conference on Computers and Devices for Communication (CODEC-15)	16-18December, 2015	Kolkata
	Jhuma Saha, S. Jha and S. Kumar	Transient analysis of junctionless and junction based CMOS inverters	XVIII International Workshop on the Physics of Semiconductor Devices (IWPSD 2015)	7-10 December, 2015	IISC Bangalore
28.	Subindu Kumar, S. S. K. Sinha and S. Sen	Investigations on the optical transitions and linewidth of as-grown III-V quantum dot systems	2015 International Conference on Microwave and Photonics (ICMAP)	11-13December, 2015	ISM Dhanbad
29.	Biswajit Pal, and Santanu Dwari	A Compact parallel coupled wideband band-pass filter with DGS and spurline	2015 International Conference on Microwave and Photonics (ICMAP)	11-13December, 2015	ISM Dhanbad
30.	Rohit Kumar Saini, and Santanu Dwari	Design and analysis of multilayer triangular microstrip patch antenna with FSS screen	2015 International Conference on Microwave and Photonics (ICMAP)	11-13December, 2015	ISM Dhanbad
31.	Pawan Kumar, and Santanu Dwari	CPW-fed tri-band monopole antenna for wireless applications	2015 International Conference on Microwave and Photonics (ICMAP)	11-13December, 2015	ISM Dhanbad
32.	Anand Sharma and Ravi Kumar Gangwar	Quad-Band Dual-Polarized Cylindrical Dielectric Resonator Antenna for WiMAX /WLAN Applications	9 th Annual International Conference ATMS – 2016	1-3 February, 2016	Goa

33.	Gourab Das, Anand Sharma and Ravi Kumar Gangwar	Four Element Cylindrical Dielectric Resonator Antenna Array with Annular Shaped Microstrip Feed	9 th Annual International Conference ATMS – 2016	1-3 February, 2016	Goa
34.	Piyuesh Okas, Anand Sharma and Ravi Kumar Gangwar	Semicircular Microstrip Antenna with Concentric Elliptical slot for Super Wideband Application	9 th Annual International Conference ATMS – 2016	1-3 February, 2016	Goa
35.	Reena Kumari and Ravi Kumar Gangwar	Circularly Polarized Cylindrical Dielectric Resonator Antenna fed with Modified Wilkinson Power Divider	9 th Annual International Conference ATMS – 2016	1-3 February, 2016	Goa
36.	Pinku Ranjan and Ravi Kumar Gangwar	Dual Segment Split Cylindrical sector Dielectric Resonator Antenna for X-band application	9 th Annual International Conference ATMS – 2016	1-3 February, 2016	Goa
37.	Anand Sharma and Ravi Kumar Gangwar	Quad-Band Hybrid Ring Shape Dielectric Resonator Antenna for WiMAX/WLAN Applications	2nd URSI Regional Conference on Radio Science	16-19 November, 2015	JNU, New Delhi
38.	Anand Sharma and Ravi Kumar Gangwar	Tri-Band Dual Segment Ring Dielectric Resonator Antenna for WiMAX/ WLAN Applications	2nd International Conference on Microwave and Photonics	11-13 December, 2015	ISM Dhanbad
39.	Anand Sharma and Ravi Kumar Gangwar	Quad-Band Cylindrical Dielectric Resonator Antenna for WiMAX/WLAN Applications	6th International Conference on Computers and Devices for Communication (CODEC-2015),	16-18 December, 2015	Kolkata
40.	Gourab Das, Anand Sharma and Ravi Kumar Gangwar	Two Elements Dual Segment Cylindrical Dielectric Resonator Antenna Array with Annular Shaped Microstrip Feed	Twenty Second National Conference on Communications : NCC 2016	4-6 March, 2016	IIT, Guwahati, India
41.	S. Sinha, N. Mandal, S.C. Bera,	Calibration of Electrode Polarization Impedance type Flow meter Using Neural Network	2 nd International Conference on Control, Instrumentation, Communication and Energy, CIEC-16,	28-30 January, 2016	University of Calcutta, Kolkata
42.	G. Rajita, Nirupama Mandal,	Review on Transit time Ultrasonic Flowmeter	2 nd International Conference on Control, Instrumentation, Communication and Energy, CIEC-16,	28-30 January, 2016	University of Calcutta, Kolkata

43.	Sudipta Chakraborty, Nirupama Mandal, Satish Chandra Bera	Study of a Modified IR Defusing Surface as a uniform source and its application as Non-Contact Level Sensor	2 nd International Conference on Control, Instrumentation, Communication and Energy, CIEC-16,	28-30 January, 2016	University of Calcutta, Kolkata
44.	G. Rajita, B. Mondal, N. Mandal, R. Sarkar,	Design of a PC based Real Time Mass Flow Indicator using AD590 as sensor	IEEE conference on Control, Measurement & Instrumentation, CMI-2016,	8-10 January, 2015	Jadavpur University Kolkata,
45.	N. Mandal, B. Kumar, R. Sarkar	Design and development of an Optical Pressure sensing System using Bellows as Primary Sensor.	IEEE Conference ICTP-2015	26-28 December, 2015	BUET, Dhaka, Bangladesh
46.	Brajesh Kumar, S. Sinha and N. Mandal	Design and Development of an Electro-Optic Type Flow Transmitter using Mach-zehnder Interferometer	IEEE Conference ICIC-2015,	28-30 May, 2015	COEP, Pune,
47.	Haraprasad Mondal, Saurav Chanda, Mrinal Sen and Tanmoy Datta	All Optical AND Gate based on Silicon Photonic Crystal	2 nd International Conference on Microwave and Photonics	11-13 December, 2015	ISM, Dhanbad, Jharkhand, India.
48.	Abhishek Jha and Mrinal Sen	Use of FES with Vibrotactile feedback for Motor Learning	IEEE Int. conference on Internet of Things and Applications (IOTA 2016)	22-24 January, 2016	Maharashtra Institute of Technology, Pune, India.
49.	Ashish Gupta, Sameer Kumar Sharma, Raghvendra Kumar Chaudhary	A Compact CPW-Fed Metamaterial antenna for WLAN/ Wi-Fi Applications	2015 IEEE Inte.Symposium on Antennas and Propagation and North American Radio Science Meeting.	July 19-25, 2015	Vancouver, British Columbia, Canada
50.	Sameer Kumar Sharma, Raghvendra Kumar Chaudhary	Metamaterial Inspired Dual-band Antenna with Modified CSRR and EBG Loading	2015 IEEE Int. Symposium on Antennas and Propagation and North American Radio Science Meeting.	July 19-25, 2015	Vancouver, British Columbia, Canada
51.	Sameer Kumar Sharma, Raghvendra Kumar Chaudhary	Investigation on SRR-loaded Metamaterial Antenna with Different Feeding Methods	2015 IEEE Int. Symposium on Antennas and Propagation and North American Radio Science Meeting.	July 19-25, 2015	Vancouver, British Columbia, Canada
52.	Rajkishor Kumar, Raghvendra Kumar Chaudhary	Circularly Polarized Ring Dielectric Resonator Antenna Excited with Cross-Slot	2015 IEEE Int. Symposium on Antennas and Propagation and North American Radio Science Meeting.	July 19-25, 2015	Vancouver, British Columbia, Canada
53.	Sameer Kumar Sharma, Ashish Gupta, Raghvendra Kumar Chaudhary	UWB Ring-shaped Metamaterial Antenna with Modified Phi-shaped SRR	2015 IEEE Int. Symposium on Antennas and Propagation and North American Radio Science Meeting.	July 19-25, 2015	Vancouver, British Columbia, Canada

54.	Sameer Kumar Sharma, Ashish Gupta, Raghvendra Kumar Chaudhary	Zeroth-order Resonating Circular Patch Antenna with Triangular Stub for WLAN	2015 International Conference on Microwave and Photonics (ICMAP)	December 11-13, 2015	ISM Dhanbad
55.	Sameer Kumar Sharma, and Raghvendra Kumar Chaudhary	Frequency Reconfigurable Mobile Antenna with Multi-band Characteristics Based on Metamaterials	2015 International Conference on Microwave and Photonics (ICMAP)	December 11-13, 2015	ISM Dhanbad
56.	Dilip Kumar Choudhary, and Raghvendra Kumar Chaudhary	Via-less Wideband Band pass Filter using CRLH Transmission Line with Semi-circular stub	2015 International Conference on Microwave and Photonics (ICMAP)	December 11-13, 2015	ISM Dhanbad
57.	Rajkishor Kumar, and Raghvendra Kumar Chaudhary	A Wideband Circularly Polarized Slotted Rectangular Dielectric Resonator Antenna Excited with a Cross-slot	2015 International Conference on Microwave and Photonics (ICMAP)	December 11-13, 2015	ISM Dhanbad
58.	Naveen Mishra, and Raghvendra Kumar Chaudhary	Compact CPW-fed ZOR Antenna for WiMAX Applications	2015 International Conference on Microwave and Photonics (ICMAP)	December 11-13, 2015	ISM Dhanbad
59.	Rajkishor Kumar, and Raghvendra Kumar Chaudhary	Wideband Circularly Polarized H-shaped Dielectric Resonator Antenna Excited with Cross-slot feed	5th IEEE Applied Electromagnetics Conference (AEMC-2015)	December 18-21, 2015	IIT Guwahati, India.
60.	Devendra Chack, V. Kumar and Dev Prakash Singh	Performance Analysis of 1310/1490 nm Demultiplexer based on Multimode Interference Coupler for PON	4th International Conference on Photonics, Optics and Laser Technology (PHOTOPTICS 2016)	27-29 February, 2016	Rome, Italy
61.	Ritu Raj Singh, Amitesh Kumar Abhinav Gautam and Vishnu Priye	Microwave Frequency Estimation with high Accuracy based on Mach-Zehnder Modulator and Phase Modulator	2 nd International Conference on Microwave and Photonics	11-13 December, 2015	ISM, Dhanbad, Jharkhand, India.
62.	Amitesh Kumar, Vishnu Priye and Kowshik Moyya	Performance Analysis of Photonicallly Generated Microwave Signal using a Dual-Parallel Dual-Drive Mach-Zehnder Modulator in Dispersive Media	4th International Conference on Photonics, Optics and Laser Technology (PHOTOPTICS 2016)	27-29 February, 2016	Rome, Italy
63.	Abhinav Gautam, Ritu Raj Singh, Amitesh Kumar and Vishnu Priye	Architecture of Optical Sensing and Monitoring for Pipelines using FBG	RAIT-2016	March, 2016	ISM, Dhanbad, Jharkhand, India.

64.	Rakesh Kumar Maurya, Jaisingh T, Vishnu Priye	Statistical Analysis of Blocking Probability for Dynamic Traffic in WDM Network based on Erlang B model	IEEE Conference on Wireless Signal Processing and Networks WiSPNET 2016	21-23 March, 2016	Chennai, India
65.	Jaisingh Thangaraj, Shilpee Kumari	Evaluating Feasibility of Using Wireless Sensor Network in Agricultural land through simulation of DSR, AOMDV, AOVD and DSDV protocol	IEEE Conference on Wireless Signal Processing and Networks WiSPNET 2016	21-23 March, 2016	Chennai, India
66.	Govind Murmu, Abhishek Mukherjee	A Novel Sub-band Filtering Based LMS Adaptive Algorithm for Acoustic Echo Cancellation	International Conference ON Electrical, Electronics, and Optimization Techniques (ICEEOT) - 2016	03-05 March, 2016	Chennai, India
67.	Govind Murmu, Pravin Yadav	Study and Hardware Implementation of JPEG Algorithm on C6713DSK	Wireless Communications,Signal Processing and Networking (WISPNET) 2016	23-25March, 2016.	Chennai, India
68.	Rahul Bhattacharya and Subindu Kumar	A New Approach for Modeling Parametric Faults in Linear Analog VLSI Circuits	6th IEEE international conference on Computers and Devices for Communication (CODEC 15)	16-18 December, 2015	Kolkata, India

3.10.7.4 Papers presented in National Seminars/Conferences

Sl. No.	Author(s)	Title	Seminar/Conference	Date	Place
1.	Anand Sharma and Ravi Kumar Gangwar	Triple Band Hybrid Cylindrical Dielectric Resonator Antenna for WiMAX/WLAN Applications	5th IEEE Applied Electromagnetics Conference (AEMC-2015)	18-21 December, 2015	IIT, Guwahati, India

3.10.8 MAJOR ACADEMIC CONTRIBUTIONS

- Dr. Subindu Kumar has been included in “2015 EDL IEEE Golden Reviewers List (<http://eds.ieee.org/edl/edl-golden-reviewers.html>).
- Ten students of the department were awarded Ph.D degree.

3.10.9 SEMINARS, SYMPOSIA, WORKSHOPS, CONFERENCES ORGANIZED BY THE DEPT/CENTRE

Second International Conference on Microwave & Photonics, ICMAP 2013 General Chair: Prof. Vishnu Priye Program Chair: Dr. Subindu Kumar Program Co-Chair: Dr. Sushrut Das Technical Chairs: Dr. Santanu Dwariand Dr. J. Kumar	Dec 11 – 13, 2015
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Technical Co-Chairs: Dr. Mrinal Sen and Dr. R. K. Gangwar Finance Chair: Dr. R. K. Chaudhary	
Short term course on “Modern Antenna Technology: from Theory to Practice” Co-ordinators: Dr. S. Das & Dr. S. Dwari	29 th June – 3 rd July, 2015
Workshop on “Recent Trends in Photonics Technology” (RTPT- 2015)	21 st August – 22 nd August, 2015
Short term course on “Optical Communication, Network & Photonic Devices” Co-ordinators: Prof. Vishnu Priye & Mr. Amitesh Kumar	18 th December-20 th December, 2015

3.10.10 PARTICIPATION OF FACULTY/OFFICERS/STAFF IN SEMINARS/ CONFERENCES ETC

Prof. S. K. Paul	International Conference on Microelectronics, Communication and Computing (MicroCom-2016)	23-25 January, 2016	Durgapur
Dr. Mukul K. Das	15 th International Conference on Numerical Simulation of Optoelectronics Devices (NUSOD) 2015	7-11 September, 2015	Taipei, Taiwan
All faculty Members of Electronics Engineering	2 nd International Conference on Microwave and Photonics (ICMAP)-2015	11-13 December, 2015	Dhanbad, India
Dr. Sushrut Das	IEEE International Symposium of Antenna and Propagation and North American Radio Science Meeting.	19-24 July, 2015	Vancouver, Canada
Dr. Nirupama Mandal	2 nd Inte. Conf. on Control, Instrumentation, Communication and Energy, CIEC-16	28-30 January 2016	University of Calcutta, Kolkata
Dr. Nirupama Mandal	IEEE conference on Control, Measurement & Instrumentation, CMI-2016	8-10 January, 2015	Jadavpur University, Kolkata
Dr. Nirupama Mandal	IEEE Conference ICTP-2015	26-28 December 2015	BUET, Dhaka, Bangladesh
Dr. R. K. Chaudhary	2015 IEEE International Symposium on Antennas and Propagation and North American Radio Science Meeting.	19-25 July, 2015	2015 Vancouver, British Columbia, Canada
Mr. R K Ranjan	ICDCS-16	3-5 March, 2016	Coimbtore, India
Mr. Devendra Chack	International Conference on Photonics, Optics and Laser Technology (PHOTOPTICS 2016)	27-29 February, 2016	Rome, Italy
Mr. Amitesh Kumar	Int. Conf. on Photonics, Optics and Laser Technology (PHOTOPTICS 2016)	27-29 February, 2016	Rome, Italy
Mr. Jaisingh Thangaraj	The 12th edition of annual NIDays conference	November 19, 2015	Bangalore, India
Mr. Govind Murmu	Short Term Training Programme on "Effective Teaching"	28-30 March, 2016	Ranchi, India

Mr. Rahul Bhattacharya	IEEE Intl Conference on Computers and Devices for Communication (CODEC 15).	16-18 December, 2015	Kolkata, India
Dr. Ravi Kumar Gangwar, Dr. Raghvendra Kumar Chaudhary, and Mr. Jaisingh T.	First Orientation Programme at Faculty Development Center (FDC)	9-29 February, 2016.	ISM Dhanbad

3.10.11 VISITS OF FACULTY MEMBERS ABROAD

- Dr. Mukul Kumar Das visited Institute of Photonics and Optoelectronics, National Taiwan University, Taipei, Taiwan during his participation in the International Conference: 15th International Conference on Numerical Simulation of Optoelectronics Devices (NUSOD) 2015, September 07-11, 2015.
- Dr. Sushrut Das visited Vancouver, Canada during 18th-24th July 2015 to attend 2015 IEEE International Symposium of Antenna and Propagation and North American Radio Science Meeting.
- Dr. Nirupama Mandal visited Dhaka, Bangladesh during 26th-28th December 2015 to attend IEEE Conference, ICTP-2015.
- Dr. R. K. Chaudhary visited Vancouver, Canada during 1^{8th}-2^{4th} July 2015 to attend 2015 IEEE International Symposium of Antenna and Propagation and North American Radio Science Meeting.
- Mr. Devendra Chack presented a research paper in International Conference on Photonics, Optics and Laser Technology (PHOTOPTICS 2016) at ROME Italy during 27-29 February, 2016.
- Mr. Amitesh Kumar presented a research paper in International Conference on Photonics, Optics and Laser Technology (PHOTOPTICS 2016) at ROME Italy during 27-29 February, 2016.

3.10.12 SPECIAL LECTURES BY DISTINGUISHED GUESTS

Dr. K. P. Ray, Head, RF and Microwave System (RFMS) Division, SAMEER, Mumbai delivered a Lecture on “Design Considerations of Antenna for Ultra Wide Band Applications”	10 th Dec. 2015
Dr. Nan-KuangChen, National United University, Mialoi, Taipei Taiwan delivered a Lecture on “The miracle of light in micro-sensing”	22 nd Dec. 2015
Prof. Martijn De Sterke, University of Sydney delivered a Lecture on “Perfect absorption in near-dielectric gratings”	18 th March, 2016.

3.10.13 MISCELLANEOUS :

- Prof. V. Kumar received “Best Research Publication Award-2015” of the ECE Department, which is based on SCI publications and Impact Factor.
- Prof. V. Priye, and V. Kumar received “ISM Alumni Association award” for the year of 2013-2014 and 2014-2015 respectively by Honourable Minister of Human Resource Development, GOI, Smt Smriti Zubini Irani for Highest Ph. D Supervision.

- Mr. Shiv Sharma of 3rd Year B.Tech in Electronics and Instrumentation Engineering went to Barcelona School of Telecommunication Engineering, Universitat Politecnica de Catalunya, Spain for ten months (September 2015 – June 2016) through Erasmus Mundus AREAS+ program.
- Mr. Jitendra Mishra, Ph.D student of the department went to City University, London, UK for one year (September 2014 – December 2015).
- Ms. Amruta Pai went to Laval University, Quebec, Canada for Internship Project.
- School Outreach Activity Programs were arranged by ISM OSA student chapter at RajLamal School, Dhanbad and Dayanand Anglo-Vedic(DAV) School, Dhanbad on 24.04.2015 and 06.05.2015 respectively.
- “Training cum Awareness Program on Renewable Energy” for School Students(10+2) under the program, ‘Rashtriya Avishkar Abhiyan’ was organized during 27-28 February, 2016. Nearly 20 students from nearby schools were attended the program.
- Extensive Software Hands On Training was arranged by ISM OSA student chapter during 21-22 August, 2015.
- Photonics QUIZ Competition in CONCETTO-2015 was arranged by ISM OSA student chapter during 30th October, 2015.

3.11 ENVIRONMENTAL SCIENCE AND ENGINEERING

3.11.1 ABOUT THE DEPARTMENT:

Centre of Mining Environment was created by the Ministry of Environment and Forest in 1987 at ISM, Dhanbad as a Centre of Excellence in Mining Environment. The Department of Environmental Science & Engineering was established out of the existing Centre of Mining Environment in June 2007 with the commencement of a regular B.Tech program in Environmental Engineering under IIT-JEE (first of its kind offered by any national institute).

3.11.1.1 Vision

The department envisions to render:

- Innovative and transformative research in Environmental Science and Engineering
- Excellent education for future environmentalists and for the general public
- Service to humanity through expansion and dissemination of environmental knowledge
- To prepare engineers and managers for various academic, institutional as well as other services.

3.11.1.2 Mission

- To contribute quality instruction and scientific expertise in the field of environmental sciences, engineering and management through its undergraduate, postgraduate and doctoral programme.
- Dissemination of knowledge and skills through training programme, workshops and conferences to different stakeholders.
- Undertake research and consultancy work to mitigate the industrial problems related to environmental issues.

3.11.2 FIELD VISITS/EXCURSIONS/TRAINING PROGRAMMES UNDERTAKEN BY STUDENTS

Particulars	Batch of Students	Place of Visit	Period of visit
Industrial Visit accompanied by Dr Alok Sinha and Dr Suresh Pandian E	B.Tech VI Semester Environmental Engineering	Bokaro Steel plant	March 11, 2016

3.11.3 BEST PRACTICES OF THE DEPARTMENT

The Department of Environmental Science & Engineering was established out of the existing Centre of Mining Environment at Indian School of Mines in June 2007 with the commencement of a regular B.Tech program in Environmental Engineering under IIT-JEE (first of its kind offered by any national institute). The Department follows the following best practices:

- (i) Offers basic engineering and science subjects on Air, Water and Soil Quality Monitoring, Assessment and Management; Socio-economic Aspects; Environmental Legislation, EIA, Environmental Audit; Environmental Chemistry, Environmental Ecology & Microbiology, Environmental Geotechnology, Wastewater Engineering, Soil Mechanics, Fluid Mechanics & Hydraulics, Remote Sensing & GIS, etc.
- (ii) The Department offers Environmental Leadership Projects starting from III semester onwards to individual student of B.Tech. – Environmental Engineering to carry out research projects throughout the programme. .
- (iii) The Department has the State-of-the-art facilities in its laboratories for air, water, soil, microbiology, noise and GIS etc. for practical and hands on Summer Training cum Internship for students in various industries such as Chemical, Petroleum, Pulp & Paper, Textiles Industries, Metallurgical, Mining and Allied Industries, Energy sectors, etc.
- (iv) The Department has an Environmental Information System on Mining Environment (MINENVIS) with a distinctive web-site: <http://www.ismenvis.nic.in> and maintains a database management system to cater the requirements of various users/ stakeholders of the mineral industry and regularly publishes Newsletters and Monographs. The ENVIS has been upgraded to “A” category by Ministry of Forestry & Environment and climate change, GOI.
- (v) The Department has been accredited temporarily by NABET, GOI.
- (vi) Department has a system of revising & upgrading the UG & PG syllabus through BOCS.
- (vii) Emphasis on topics of current interest in the academic program and project based learning instead of the traditional subjects and examination centric pedagogy.
- (viii) Innovations in academic program: (a) Creation of an ambiance of academic excellence that is conducive to growth of innovative research and support to industry; (b) Special emphasis to the post-graduate and research programs; and (c) Strengthening of Ph.D. program.
- (ix) Emphasis on 100% attendance in all courses.
- (x) Job function of faculty and staff has been redefined in terms of creative work rather than dissemination of existing knowledge.
- (xi) Each of the faculty members of the Department has been nominated as faculty adviser of the students for their personal counseling.

3.11.4 BRIEF LIST OF ON-GOING R&D PROJECTS (PROJECT VALUE ` 5,00,000/- AND ABOVE)

1.	Project Title : Estimation of aquifer potential in Jharia coal mining region with suitable techniques to improve the recharge Sponsoring Agency : MoWR Coordinator (s) : PI: Dr. P.K.Singh Project Value : ₹ 28.547 Lakhs Date of Commencement : 2012 Date of Completion : 2015 Objective : Hydrological study along with assessment of aquifer potential and estimation of recharge near the storage structure Status : Extension asked for one more year Findings : Aquifer potentiality has been identified. Other works are still under progress.
2.	Project Title : Assessment of groundwater level fluctuations with respect to changing patterns of rainfall in Jharia coal mining region Sponsoring Agency : UGC Coordinator (s) : PI: Dr. P.K.Singh Project Value : ₹ 9.256 Lakhs Date of Commencement : 2012 Date of Completion : 2015 (Draft report submitted on the UGC) Objective : Identify rainfall, water Table Fluctuation & Evapotranspiration Pattern and evaluate the relationship between rainfall & Aquifer recharge of the region Status : Extension asked for one more year Findings : Rainfall data and water level fluctuation data have been taken.
3.	Project Title : ENVIS Centre on Environmental Problems of mining Industry Sponsoring Agency : MOEF&CC Coordinator (s) : PI: Dr M K Jain, Co-PI: Dr. Vipin Kumar Project Value : ₹ 13.54 Lakhs Date of Commencement : 1991 Date of Completion : On-going Objective : Collection, storage, retrieval and dissemination of information Status : Ongoing Findings : Ongoing
4.	Project Title : Remediation of Ground Water Contaminated with Hexavalent Chromium in Sukinda Valley, Odisha, Using Nano Zero Valent Iron (n-ZVI) Technology Sponsoring Agency : MOEF&CC Coordinator (s) : PI: Dr. Alok Sinha Project Value : ₹ 24.80 Lakhs Date of Commencement : 2015 Date of Completion : 2017 Objective : Use of Nano Valent Iron Technology for removal of hexavalent chromium Status : On going Findings : Ongoing
5.	Project Title : Microbial Remediation of Arsenic with Zero-valent Iron Sponsoring Agency : ISM, Dhanbad Coordinator (s) : PI: Dr Sheeja Jagadevan Project Value : ₹ 13.22 Lakhs

	Date of Commencement :	2015
	Date of Completion :	2018
	Objective :	Assess degradation of As employing a combined biological- ZVI induced oxidation.
	Status :	Ongoing
	Findings :	Literature Review
6.	Project Title :	Electro Kinetic Removal of Toxic Contaminants from Municipal Sewage Sludge
	Sponsoring Agency :	ISM Dhanbad
	Coordinator (s) :	PI: Dr. B.K.Mishra
	Project Value :	₹ 8.65 Lakhs
	Date of Commencement :	2013
	Date of Completion :	2016
	Objective :	To study the performance of EC process for Removal of Toxic Contaminants from Municipal Sewage Sludge
	Status :	Fund allocated
	Findings :	Basic properties of sludge is monitored and Reactor for the EC is designed.
7.	Project Title :	Influence of Chlorine Disinfectant and Natural Organic Matter Gradients on Disinfection By-Product Formation in Drinking Water of Some Indian Cities
	Sponsoring Agency :	SERB-DST
	Coordinator (s) :	PI: Dr. B. K. Mishra, Co-PI: Dr S K Gupta & Dr Alok Sinha
	Project Value :	Rs. 20.60 Lakhs
	Date of Commencement :	2014
	Date of Completion :	2017
	Objective :	Monitoring of DBPs in drinking water along with Modelling for DBPs prediction and removal of DBPs.
	Status :	On going
	Findings :	Monitoring of DBPs is going on
8.	Project Title :	Physical and Chemical Characterization of PM for Dhanbad City to identify the contribution from traffic sources
	Sponsoring Agency :	Indian School of Mines
	Coordinator (s) :	Dr. Suresh Pandian E
	Project Value :	₹ 9.40 Lakhs
	Date of Commencement :	2013
	Date of Completion :	2016
	Objective :	The influence of vehicle type and fuel used upon emission rate of PM from traffic sources and analyze the various factors that lead to ambient PM levels.
	Status :	On-going
	Findings :	Soot particles from different source were examined for toxic metals.
9.	Project Title :	Phosphorus Fractionation in Surface Sediments: An Implication in Restoration and Conservation of Govind Balabab Pant Sagar, Singrauli, MP
	Sponsoring Agency :	MoES
	Coordinator (s) :	PI: Dr Anshumali
	Project Value :	₹ 32.46 Lakhs
	Date of Commencement :	2014
	Date of Completion :	2017
	Objective :	Brief study on Phosphorus Fractionation in Surface Sediments.
	Status :	On going
	Findings :	Sampling and analysis is going on.

10.	Project Title : Geochemical Investigation of Heavy Metals and REES in Water and Surface Sediments: An Implication in Restoration and Conservation of Ken and Betwa Rivers Sponsoring Agency : DST Coordinator (s) : PI: Dr Anshumali Project Value : ₹ 24.50 Lakhs Date of Commencement : -- Date of Completion : 2015 Objective : Geochemical Investigation of Heavy Metals and REES in Water and Surface Sediments Status : On going Findings : Ongoing
11.	Project Title : Algal biomass harvesting through bio-polymeric approach Sponsoring Agency : DST Coordinator (s) : PI: Dr. Chiranjib Banerjee Project Value : ₹ 35.0 Lakhs Date of Commencement : 2015 Date of Completion : 2020 Objective : Status : On Going Findings : Ongoing
12.	Project Title : DST – FIST Level – I 2015 Sponsoring Agency : DST Coordinator (s) : PI: Prof. S.K.Maiti, Co-PI: Dr. Sheeja Jagadevan Project Value : ₹ 147 Lakhs Date of Commencement : 2015 Date of Completion : 2020 Objective : Improvement of S&T infrastructure Status : Fund awaited Findings : Ongoing
13.	Project Title : Control of Disinfection By-products Formation in Drinking Water Supplies of India Sponsoring Agency : Ministry of Drinking Water & Sanitation Coordinator (s) : PI: Prof. S. K. Gupta Project Value : ₹ 25.20 Lakhs Date of Commencement : 2015 Date of Completion : 2017 Objective : To assess the efficacy of various advanced treatment techniques for removal of THMs Status : Ongoing (Ministry of Drinking Water & Sanitation) Findings : Ongoing

3.11.5 IMPORTANT NEW EQUIPMENT ACQUISITIONED (ABOVE ₹ 5,00,000/-)

Name of Equipment	Purpose	Date of Purchase	Value (₹)
Shimadzu UV-VIS Spectrophotometer (Model UV1800 with accessories)	For Microbiology Lab.	16.4.2015	₹ 4,49,500

3.11.6 RESEARCH PUBLICATIONS

3.11.6.1 Book reviews/contribution of chapters in a book

Sl. No.	Author(s)	Year	Title	Name of the Book	Page No.
1	Prof. S. K. Maiti	2015	Energy plantations, Medicinal and Aromatic plants on Contaminated soil	Bioremediation and Bioeconomy, Elsevier ISBN: 978-0-12-802830-8	29-47
2	Prof. S. K. Maiti	2016	Treatment of Coke Oven Effluents by Duckweeds Ponds – A Laboratory Scale Study	Geostatistical and Geospatial Approaches for the Characterization of Natural Resources in the Environment Springer International Publishing ISBN 97 8-3-31 9-1 8662-7	435-439
3	Dr. S. K Gupta	2015	Multi-pathway risk assessment of trihalomethanes exposure in drinking water supplies	Recent Trends in Asian Water Environment and Technology	

3.11.6.2 Papers published in International Journals

Sl. No.	Author(s)	Year	Title	Journal	Vol. No.	Page No.
1	Snigdha Kundu and Asim Kumar Pal	2015	The evaluation of airborne respirable particulates in opencast mining area of Jharia coal field using grimm 1.109 real-time portable aerosol spectrometer	Journal of Biodiversity and Environmental Sciences	6(4)	276-87
2	Snigdha Kundu and Asim Kumar Pal	2015	Estimation of air quality in the opencast mine of Jharia Coalfield, India.	Current World Environment	10(2)	691-697
3	S.N.Bag, U.C.Kumar and A.K.Pal	2015	Challenges, threats and opportunities of jute industry - a review	Manmade Textile in India		385-391
4	Deepa Agarwal, Jai K. Pandey, Bably Prasad, Asim K. Pal	2016	Serum copper and zinc level as biomarker for dust exposed lung diseases among coal miners	J. Bio. Env. Sci.	8(1)	65-74

5	S. N. Bag, U. C. Kumar and A.K. Pal	2016	Analytical study on causes of industrial health hazards in jute industry and possible management there in for improvement of industrial safety	International Journal of Research in Engineering and Applied Sciences	6(1)	187-201
6	Maiti, S. K., Adarsh Kumar, J Ahirwal & Rimi Das	2015	Comparative study on bioaccumulation and translocation of metals in Cynodon dactylon naturally growing on fly ash and topsoil.	Applied Ecology and Environmental Research	14(1)	112
7	Kumar, A., Maiti, S.K.	2015	Effect of Organic Manures on the Growth of Cymbopogon citratus and Chrysopogon zizanioides for the Phytoremediation of Chromite-Asbestos Mine Waste: A Pot Scale Experiment	International Journal of Phytoremediation	17(5)	437-447
8	Kumar, A., Ahirwal, J., Maiti, S.K., Das, R	2015	An assessment of metal in fly ash and their translocation and bioaccumulation in perennial grasses growing at the reclaimed opencast mines	International Journal of Environmental Research	9(3)	1089-1096
9	Banerjee, S., Maiti, S.K. and Kumar, A.	2015	Metal contamination in water and bioaccumulation of metals in the planktons, molluscs and fishes in Jamshedpur stretch of Subarnarekha River of Chotanagpur plateau, India	Water and Environment Journal	29(2)	207-213
10	Maiti, S.K. and Maiti, D.	2015	Ecological restoration of waste dumps by topsoil blanketing, coir-matting and seeding with grass-legume mixture	Ecological Engineering	77	74-84
11	Kumar, A. and Maiti, S.K.	2015	Assessment of potentially toxic heavy metal contamination in agricultural fields, sediment, and water from an abandoned chromite-asbestos mine waste of Roro hill, Chaibasa, India	Environmental Earth Sciences	74(3)	2617-2633
12	Sanjoy Kumar, Subodh Kumar Maiti and Subrato Chaudhuri	2015	Soil development in 2–21 years old coalmine reclaimed spoil with trees: A case study from Sonepur-Bazari opencast project, Raniganj Coalfield, India	Ecological Engineering	84	311-324
13	S.K. Verma, R.E. Masto, Shalini Gautam, D.P. Choudhury, L.C. Ram, S.K. Maiti and Sudip Maity	2015	Investigations on PAHs and trace elements in coal and its combustion residues from a power plant	Fuel	162	138-147

14	Maiti, S. K, Kumar, A., Ahirwal, J. and Das, R	2016	Comparative study on bioaccumulation and translocation of metals in bermuda grass (cynodon dactylon) naturally growing on fly ash lagoon and topsoil	Applied Ecology and Environmental Research	14(1)	1-12
15	Subhabrata Banerjee, Adarsh Kumar, Subodh Kumar Maiti and Abhiroop Chowdhury	2016	Seasonal variation in heavy metal contaminations in water and sediments of Jamshedpur stretch of Subarnarekha river, India	Environ Earth Sci DOI 10.1007/s12665-015-4990-6		
16	Jitendra Ahirwal and Subodh Kumar Maiti	2016	Assessment of soil properties of different land uses generated due to surface coal mining activities in tropical Sal (Shorea robusta) forest, India	Catena	140	155-163
17	Subodh Kumar Maiti, Adarsh Kumar and Jitendra Ahirwal	2016	Bioaccumulation of metals in timber and edible fruit trees growing on reclaimed coal mine overburden dumps	International Journal of Mining, Reclamation and Environment	30(3)	231-244
18	Singh, A.K., Singh, G., Mehra, D.S. and Niyogi, U.K.	2015	In vitro cytotoxicity study for electron beam cured adhesive tape for bio-medical application	Journal of Environmental Biology	36(4)	897-901
19	Roy, D., Singh, G., Gosai, N.	2015	Identification of possible sources of atmospheric PM10 using particle size, SEM-EDS and XRD analysis, Jharia Coalfield Dhanbad, India	Environmental Monitoring and Assessment	187: 680	1-13
20	Debananda Roy, Sneha Gautam, Pradyumn Singh, Gurdeep Singh, Bidus Kanti Das & Aditya Kumar Patra	2015	Carbonaceous species and physicochemical characteristics of PM10 in coal mine fire area—a case study	Air Qual Atmos Health		
21	Gurdeep Singh and Atahar Perwez	2015	Depreciation in Ambient Air Quality in Iron Ore Mining Region of Goa	Current World Environment	10(1)	149-160
22	Sasmita Chand, Biswajit Paul and Manish Kumar	2015	An Overview of Use of Linz-Donawitz (LD) Steel Slag in Agriculture	Current World Environment	10(3)	975-984
23	Bruno Valentim, Neha Shreya and Biswajit Paul et.al	2016	Characteristics of ferro-spheres in fly ashes derived from Bokaro and Jharia (Jharkhand, India) coals	International Journal of Coal Geology	153	52–74
24	Anuradha, Paul, B. and Jagdish	2015	Microbial degradation of expired slurry explosives in mines: a review	Int. Journal of Environmental Studies	72(1)	117-131

25	Gupta, A.K., Paul, B	2015	A review on utilisation of coal mine overburden dump waste as underground mine filling material: A sustainable approach of mining	International Journal of Mining and Mineral Engineering	6(2)	172-186
26	Shreya, N., Valentim, B., Paul, B., Ward, C.R., Flores, D.	2015	Multi-technique study of fly ash from the Bokaro and Jharia coalfields (Jharkhand state, India): A contribution to its use as a geoliner	International Journal of Coal Geology	152	25-38
27	Md. Asif Ekbal, Shashikanta Keisham and B. Paul	2015	Assessment of Water Quality in North-Eastern Jharia Coalfield-Jharkhand by WQI and GIS Mapping	International Journal of Technology Innovations and Research	14	1-10
28	Neha Shreya and Biswajit Paul	2015	Effective utilization and environmental management of fly ash as a geoliner constituent material	Journal of Biodiversity and Environmental Sciences	6(1)	511-519
29	Neha Shreya and Biswajit Paul	2015	Effective utilization and environmental management of fly ash as a geoliner constituent material	Journal of Biodiversity and Environmental Sciences	6(1)	511-519
30	Anuradha, Biswajit Paul and Jagdish	2015	Biodegradation of cellulose containing gum product utilized as salt binders and fuels in the slurry explosives by bacillus thuringiensis (BAB-2592)	Asian Journal of Biological and Life Sciences	4(1)	7-12
31	Swati Tomar, Sunil Kumar Gupta	2015	Investigating the Process Kinetics and Nitrogen Gas Production in Anammox Hybrid Reactor with Special Emphasis on the Role of Filter Media	International Journal of Environmental, Chemical, Ecological, Geological and Geophysical Engineering	9(9)	1033-1039
32	Swati Tomar and S.K. Gupta	2015	A new mathematical model for nitrogen gas production with special emphasis on the role of attached growth media in anammox hybrid reactor	Applied Microbiology and Biotechnology	99(21)	9245-54
33	Kumari, M., Gupta, S.K. and Mishra, B.K.	2015	Multi-exposure cancer and non-cancer risk assessment of trihalomethanes in drinking water supplies – A case study of Eastern region of India	Ecotoxicology and Environmental Safety	113	433-438
34	Tomar,S., Gupta, S.K. and Mishra, B.K.	2015	A novel strategy for simultaneous removal of nitrogen and organic matter using anaerobic granular sludge in anammox hybrid reactor	Bioresource Technology	197	171-177
35	Minashree Kumari and S. K. Gupta	2015	Modeling of trihalomethanes (THMs) in drinking water supplies: a case study of eastern part of India	Environ Sci, Pollut. Res.	22 (16)	12615-23

36	Swati Tomar and S.K. Gupta	2016	Investigating the role of co-substrate-substrate ratio and filter media on the performance of anammox hybrid reactor treating nitrogen rich wastewater	Journal of Bioscience and Bioengineering	121 (3)	310-316
37	Swati Tomar, S.K. Gupta and B.K. Mishra	2015	Performance evaluation of anammox hybrid reactor seeded with mixed inoculum sludge	Environmental Technology		
38	Prasoon Kumar Singh, Poonima Verma, Ashwani Kumar Tiwari, Shonam Sharma and Parveen Purty	2015	Review of Various Contamination Index Approaches to Evaluate Groundwater Quality with Geographic Information System (GIS).	International Journal of Chem. Tech Research.	7(04)	1920-1929
39	Binay Prakash Panigarhy, Prasoon Kumar Singh, Ashwani Kumar Tiwari, Bijendra Kuanr and Anjani Kumar	2015	Assessment of heavy metal pollution index for groundwater around Jharia Coalfield Region, India.	Journal of Biodiversity and Environmental Sciences.	6(3)	33-39
40	Binay Prakash panigarhy, Prasoon Kumar Singh, Ashwani Kumar Tiwari and Bijendra Kuanr	2015	Impact of Climate Change on Groundwater Resources	International Research Journal of Environment Sciences	4(3)	86-92
41	Prasoon Kumar Singh, Shonam Sharma	2015	A review on impacts of climate change on groundwater resources and its adaptation.	Bioscience Discovery	6(1-1)	5-10
42	Binay Prakash Panigrahy, Prasoon Kumar Singh, Ashwani Kumar Tiwari and Bijendra Kumar	2015	Variation in Groundwater Quality with Seasonal Fluctuation in Jharia Coal Mine Region, Jharkhand, India	Current World Environment	10(1)	171-178
43	Prasoon K Singh, Ritu Ranjan Sinha, Anjani Kumar	2015	A Review on Methodology Regarding the Measurement of Soil Infiltration.	International Journal of ChemTech Research	7(5)	2381 - 2390
44	Singh, P., Tiwari, A.K. and Singh, P.K.	2015	Assessment of groundwater quality of Ranchi township area, Jharkhand, by using water quality index method	International Journal of Chem Tech Research	7(1)	73-79
45	Singh, P.K., Panigrahy, B.P., Tiwari, A.K., Kumar, B. and Verma, P.	2015	A statistical evaluation for the groundwater quality of Jharia coalfield, India	International Journal of ChemTech Research	7(4)	1880-1888

46	Tiwari, A.K., De Maio, M., Singh, P.K., Amanzio, G. And Lavy, M	2015	Surface water quality assessment for the suitability of drinking and domestic purposes in West Bokaro coalfield, India	Società Geologica Italiana	35	13-16
47	Chandra, S., Singh, P.K., Tiwari, A.K., Panigrahy, B.P. and Kumar, A.	2015	Evaluation of hydrogeological factors and their relationship with seasonal water table fluctuation in Dhanbad district, Jharkhand, India	ISH Journal of Hydraulic Engineering	21(2)	193-206
48	Tiwari, A.K., De Maio, M., Singh, P.K. and Mahato, M.K.	2015	Evaluation of Surface Water Quality by Using GIS and a Heavy Metal Pollution Index (HPI) Model in a Coal Mining Area, India	Bulletin of Environmental Contamination and Toxicology	95(3)	304-310
49	Prasoon Kumar Singh, Binay Prakash Panigrahy and A. K. Tiwari	2015	Hydro chemical investigation and qualitative assessment of surface water resources in Jharia Coal field region, Dhanbad	Journal of Chemical and Pharmaceutical Research	7(2)	36-41
50	Tiwari, A.K., Singh, P.K., Chandra, S. and Ghosh, A.	2016	Assessment of groundwater level fluctuation by using remote sensing and GIS in West Bokaro coalfield, Jharkhand, India	ISH Journal of Hydraulic Engineering	22(1)	59-67
51	Radha Rani and Manish Kumar Jain	2015	Physiochemical and Engineering characteristics of fly ash and its application in various field - a review	Journal of Biodiversity and Environmental Sciences	6(2)	161-174
52	Rahul, J., Jain, M.K., Singh, S.P., Kamal, R.K., Anuradha, Naz, A., Gupta, A.K. and Mrityunjay, S.K.	2015	Adansonia digitata L. (baobab): A review of traditional information and taxonomic description	Asian Pacific Journal of Tropical Biomedicine	5(1)	79-84
53	Jitin Rahul and M. K. Jain	2015	Floristic assessment of the important least concern plant species with taxonomic descriptions along the National Highway	Braz. J. Bot	38(4)	851– 864
54	Krishnendu Banerjee, Surajit Panda M. K. Jain and A.T Jeyaseelan	2015	Surface Water Management of Pandaveswar Block by Remote Sensing & GIS Techniques	International Journal for Scientific Research & Development	3(5)	271-278
55	Surajit Panda, Krishnendu Banerjee, M K Jain, Sanjay Kumar Shaw	2015	Estimation of Bedrock Peak Ground Acceleration for Bagmati Area, Nepal by using GIS Technique	International Journal of Earth Science and Engineering, ISSN 0974-5904	8(6)	2588- 2593
56	Naaz, A. and Anshumali		Hydrogeochemistry of fluoride-rich groundwaters in semiarid region of Central India	Arabian Journal of Geosciences		

57	Lama, Y., Sinha, A., Singh, G.	2015	Reductive Dehalogenation of Aldrin by Cast Iron	Ecology Environment and Conservation	21(2)	771-775
58	Srivastava, R.K., Yadav, G.K., Sinha, A., Mishra, B.K.	2015	Comparative Study for reduction of hexavalent chromium by high carbon iron filings and electrolytic iron: Mass transfer limitations	Asian Journal of Chemistry	27(4)	1398-1402
59	Mukherjee, R., Sinha, A.,Lama, Y. and Kumar, V.	2015	Utilization of Zero Valent Iron (ZVI) particles produced from steel industry waste for in-situ remediation of ground water contaminated with organo-chlorine pesticide heptachlor	International Journal of Environmental Research	9(1)	19-26
60	Pande G., Sinha A. and Agrawal S.	2015	Impacts of leachate percolation on ground water quality: a case study of Dhanbad city	Global NEST Journal	17(1)	162-174
61	Yangdup Lama, Alok Sinha, Gurdeep Singh and Reginald E. Masto	2015	Reductive dehalogenation of endosulfan by cast iron: Kinetics, pathways and modeling	Chemosphere		
62	Lama, Y., Sinha, A., Singh, G., Sahu, S.A. and Mishra, B.K.	2016	Modeling the impacts of corrosion product formation on simultaneous sorption and reductive dehalogenation of organochlorine pesticide aldrin by high carbon iron filings (HCIF)	Desalination and Water Treatment	57(16)	7155-7165
63	Ritika Mukherjee, Rahul Kumar, Alok Sinha, Yangdup Lama, Amal K. Saha	2015	A Review on Synthesis, Characterization and Applications of nano-Zero Valent Iron (nZVI) for Environmental Remediation	Critical Reviews in Environmental Science and Technology		
64	Chandra, A., Kumar, V. and Jain, M.K.	2015	The seasonal changes in soil properties due to coal mine impacts	Carpathian Journal of Earth and Environmental Sciences	10(1)	241-248
65	Mritunjay, S.K. and Kumar, V.	2015	Fresh farm produce as a source of pathogens: A review	Research Journal of Environmental Toxicology	9(2)	59-70
66	Hansda, A., Kumar, V. and Anshumali	2015	Biosorption of copper by bacterial adsorbents: A review	Research Journal of Environmental Toxicology	9(2)	45-58
67	Mritunjay S.K. and Kumar V.	2015	Potential Hazards of Microbial Contamination Associated with Raw Eaten Salad Vegetables and Fresh Produces.	Middle East Journal of Scientific Research	23(4)	741-749
68	Usmani Z. and Kumar V.	2015	Role of earthworms against metal contamination: a review	Journal of Biodiversity and Environmental Sciences	6(1)	414-427

69	Tripti, Adarsh Kumar, Vipin Kumar and Anshumali	2015	Effect of commercial pesticides on plant growth-promoting activities of Burkholderia sp. strain L2 isolated from rhizosphere of Lycopersicon esculentum cultivated in agricultural soil	Toxicological & Environmental Chemistry	97(9)	1180-189
70	Mishra, B.K., Manisha, A., Gupta, R. and Sinha, A.	2015	Mobility of toxic elements in crop and agricultural soil treated with municipal sewage sludge	Asian Journal of Water, Environment and Pollution	12(2)	13-19
71	Amit Kumar Sarkar, Soumitra Ghorai, Abhay Shankar Patra, Brijesh K. Mishra, N.R. Mandre and Sagar Pal	2015	Modified amylopectin based flocculant for the treatment of synthetic effluent and industrial wastewaters	International Journal of Biological Macromolecules	72	356–363
72	Prasenjit Adak, Ravi Sahu, Suresh Pandian E	2016	Development of emission factors for motorcycles and shared auto-rickshaws using real-world driving cycle for a typical Indian city	Science of the Total Environment	544	299-308
73	Lata, S., Singh, P.K. and Samadder, S.R.	2015	Regeneration of adsorbents and recovery of heavy metals: a review	International Journal of Environmental Science and Technology	12(4)	1461-1478
74	Khan, D., Samadder, S.R.	2015	A simplified multi-criteria evaluation model for landfill site ranking and selection based on AHP and GIS	Journal of Environmental Engineering and Landscape Management	23(4)	267-278
75	Lata, S., Samadder, S.R.	2015	Removal of Arsenic from Water Using Nano Adsorbents and Challenges: A Review	Journal of Environmental Management,	166	387-406
76	Yadav, P and Samadder, S. R	2015	System Boundaries for Life Cycle Assessment of Municipal Solid Waste Management Options	International Journal of Engineering Technology Science and Research	2	86-91
77	Sneh Lata and S. R. Samadder	2015	Arsenic Detection Techniques and Their Drawbacks	Int.Journal of Biological Sciences and Engineering.	6(2)	87-93
78	Ashvani Kumar and S. R. Samadder	2015	Analysis of the leaching behavior of elements from coal combustion residues for better management	Environmental Monitoring and Assessment		
79	Chiranjib Banerjee, P. Kumar Singh and Pratyosh Shukla	2016	Microalgal bioengineering for sustainable energy development: Recent transgenesis and metabolic engineering strategies	Biotechnol.		

3.11.6.3 Papers published in National Journals

Sl. No.	Author(s)	Year	Title	Journal	Vol. No.	Page No.
1	A. K. Singh and A. K. Jha	2015	RFID based tracking of explosives and accessories	Journal of Mines, Metals & Fuels	April	69-74
2	Singh, G., Perwez, A.	2015	Estimation of assimilative capacity of the airshed in iron ore mining region of Goa	Indian Journal of Science and Technology	8(23)	1-7
3	Sampurna Nand, Biswajit Paul and Mrinal K. Ghose	2015	Development of the method of simultaneous backfilling in highly inclined and deep opencast mines: a case study of India	TIDE	14(2)	167-177
4	Avantika Chandra, M.K.Jain and Vipin Kumar	2015	Impact of mine waste leachate on water quality in coal mining area with emphasis to heavy metals contamination	Journal of Mines, Metals & Fuels	63(4)	104-108
5	M. K. Jain and V. Vinod Babu	2015	Evaluation of spatial distribution of erosion potential of Jharia Coalfield by Geographical Information System	Indian Journal of Environmental Protection	35(3)	200-215
6	A. Chandra, V. Kumar and M.K.Jain	2015	Seasonal impact studies of coal mining activities on surface water quality.	Indian Journal of Environmental Protection	35 (12)	981-989

3.11.6.4 Papers presented in International Seminars/Conferences

Sl. No.	Author(s)	Title	Seminar/Conference	Date	Place
1	Anil Kumar & Suresh Pandian E	Characterization and Quantification of Pollutants Emitted from Backup Diesel Generators	International Conference on Advances in Chemical Engineering	20-22 Dec, 2015	NITK Surathkal
2	Shweta Singh, S.Pandian E, Pragati Rai, A. K. Pal	Dew Study as an Indirect Method for Assessment of Pollutants in the Air	International Conference on Advances in Chemical Engineering	20-22 Dec. 2015	NITK Surathkal
3	Prasenjit Adak, Suresh Pandian E, Ravi Sahu	Study on Impacts of Auto-Rickshaws on Fuel Consumption and Delay of Personal Vehicles	World Congress on Sustainable Technologies (WCST-2015)	14-16 Dec. 2015	London, UK
4	Kumar, A., and Pandian,S.	Impacts of urbanization on urban heat island	Youth Ready for Climate Change Transformation	July 28-29, 2015	IIFM, Bhopal
5	Ashwani Kumar Tiwari, M. De Maio., P. K.Singh	GIS-based Evaluation of Mine Water Quality in West Bokaro Coalfield, India	Esri User Conference in San Diego	20-24 July, 2015	California, USA
6	A. K. Tiwari, M. Lavy, G. Amanzio, M.D. Maio & Prasoon Kumar Singh	Identification of suitable locations for artificial groundwater recharge in a mining area of India by using remote sensing and GIS techniques.	42nd IAH, Congress-AQUA-2015	13-18 Sept. 2015	Sapienza University of Rome

7	P. K. Singh, A. K. Tiwari and B. P. Panigrahy	Hydrogeochemical and qualitative assessment of groundwater resources in Jharia Coalfield, Jharkhand	42nd IAH, Congress-AQUA-2015	13-18 Sept. 2015	Sapienza University of Rome, Italy
8	P. K. Singh, P. Verma, Parveen Purty, Binay Prakash Panigrahy	Approaches, Challenges and Sustainable Utilization of Water Resources In India	International Seminar on Challenges to Ground Water Management: Vision 2050 CGWS	13 -14 Nov., 2015	Centre for Ground Water Studies, Kolkata
9	Prasoon Kumar Singh and Ritu Ranjan Sinha	Evaluation of steady state infiltration rates in the different geological formations of the Dhanbad-Jharia Township Area	International Seminar on Challenges to Groundwater Management: Vision-2050 CGWS	13-14 Nov. 2015	Centre for Ground Water Studies, Kolkata
10	Pooja Yadav and S.R. Samadder	Role of LCA of Solid Waste Management in Sustainable Development: A review.”	Indian Conference on Life Cycle Management (ILCM 2015) (Int.Conference)	14-15 Sept., 2015.	FICCI, New Delhi
11	Pooja Yadav and S.R. Samadder	“System Boundaries for Life Cycle Assessment of Municipal Solid Waste Management Options.”	International conference on Innovative Research in Engineering Science and Management (ESM-15)	20 Sept., 2015.	Jawaharlal Nehru University, New Delhi.
12	SK Verma, LC Ram, S.K. Maiti, RE Masto	Effect on the Physio-Chemical and Biological Characteristics of Soil in the Vicinity of Thermal Power Plant, Unchahar, Raebareli	Geo-Engineering and Climate Change Technologies for Sustainable Environmental Management Int. Conf. on (GCCT-2015)	9-11th Oct. 2015	Dept of Civil Engg Motilal Nehru National Institute of Technology Allahabad Allahabad-UP
13	Lothe A., Kalra S. and Sinha A.	A comparative Study on Biodiesel Production from Waste Cooking Oil	9th Int. Conf. on Innovative Research in “Civil Engineering, Architecture and Environmental Engg. for Sustainable Development”	12-13 Dec. 2015.	Jawaharlal Nehru University, New Delhi
14	Hariraj Singh and B K Mishra	Performance Evaluation of the Electro-Coagulation Treatment Process for the Removal of Total Suspended Solids and Metals from Water	(WCST2015) World Congress on Sustainable Technologies	Dec 14-16, 2015	London, U K
15	Tomar Swati, Gupta S.K	Effects of seed culture and attached growth system on the performance of Anammox Hybrid Reactor treating nitrogenous wastewater	International Research Conference on Science, Management and Engineering (IRCSME 2016),	Feb17, 2016	Dubai, UAE,
16	Kumari, Minashree, Gupta, S.K.	Modelling of trihalo-methanes drinking water supplies-a case study of eastern region of India	Annual conference and exposition, American Water Works Association (AWWA)	June 7-10, 2015	Anaheim, California, United States of America

17	Tomar Swati, Gupta S.K	Process Performance and Nitrogen Removal Kinetics in Anammox Hybrid Reactor,	International Conf. on Water and Environmental Sciences (ICWES 2015),	April 20-21, 2015	Boston, USA
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3.11.6.5 Papers presented in National Seminars/Conferences

S. No.	Author(s)	Title	Seminar/Conference	Date	Place
1	Asim Kumar Pal	Safety aspects of working in noisy environment	National Workshop on Risk Assessment of Occupational Exposure to Noise and Vibration in Mines	23-25 Feb. 2016	NIMH, Nagpur, JNARDDC Auditorium, Wadi, Nagpur
2	Sanjoy Kumar, S. K. Maiti, Subrata Chowdhury, Prosenjit Ghosh	Potential Soil Organic Carbon Sequestration in Reclaimed Afforested Post-Mining Sites of Raniganj Coalfield	National Climate Science Conference	2-3 July , 2015	Divecha Centre for Climate Change, IISc, Bangalore
3	N.Kumar and M. K. Jain	A Review on Heavy Metal Concentration and its Health Risk Assessment: A Comparison	National Seminar on Recent Practices and Innovations in Mining Industry	19-20 February , 2016	Dept of Mining Engineering National Institute of Technology, Raipur (C.G
4	Tanwi Priya, Vijay Laxmi Mohanta and B K Mishra	Comparative study of Coagulants on reduction of natural organic matter in synthetic Water	(ICWEES – 2016) International Conference on Water Environment, Energy & Society-2016	March 15-18, 2016	Bhopal, India
5	Shiv Kumar Yadav, m. k. Jain, Dinesh K. Patel	Monitoring of air pollution in different region along road network, Jharia Coalfield, Dhanbad	(ICWEES – 2016) International Conference on Water Environment, Energy & Society-2016	March 15-18, 2016	Bhopal, India
6	Singh, S., Pandian, S., Rai, P., and Pal, A. K.	Dew study as an indirect method for assessment of pollutants in the air	International Conference on Advances in Chemical Engineering	Dec 20-22, 2015	NITK Surathkal, Karnataka
7	Kumar, A., Sahu, R., and Pandian, S.	Characterization and quantification of pollutants emitted from backup diesel generators.	International Conference on Advances in Chemical Engineering	Dec 20-22, 2015	NITK Surathkal, Karnataka
8	Kumar, A., and Pandian, S.	Impacts of urbanization on urban heat island	Youth Ready for Climate Change Transformation	July 28-29, 2015	IIFM, Bhopal

3.11.7 MAJOR ACADEMIC CONTRIBUTIONS

Dr. Suresh Pandian E, Assistant Professor, Dept. of Environmental Science & Engineering, ISM, Dhanbad - Secured 2nd best research paper award (with Rs. 3000/-) for research paper titled “Impacts of urbanization on urban heat island” in national seminar “Youth Ready for Climate Change and Transformation” organized by Indian Institute of Forest Management (IIFM), Bhopal”, Bhopal, during 28-29 July, 2015.

3.11.8 SEMINARS, SYMPOSIA, WORKSHOPS, CONFERENCES ORGANIZED BY THE DEPT/CENTRE

3 Day Training program on “Environmental Aspects of Mining Industry” at IIIIF, New Town, Rajarhat, Kolkata.	03-05 September, 2015
3 Day training program on “Air Quality Assessment, Prediction and Control for Industrial Areas” at ISM Dhanbad	17-19 September, 2015
3 Day training program on “EIA/EMP Preparation of Ecology & Biodiversity (EB) and Soil Conservation (SC)” at IIIIF, New Town, Rajarhat, Kolkata	2-4 December, 2015
Training program on Water Quality and Treatment at ISM Dhanbad	17-19 December, 2015
3 Day Training programme was organized on the topic of “Availability & Management of Water Resources near Mining & Industrial Areas” at IIIIF, New Town, Rajarhat, Kolkata.	28-30 December, 2015
Five day training programme on “Recent Advances in Water Resources and Environmental Engineering Computation” in collaboration with civil department at IIIIF, New Town, Rajarhat, Kolkata.	22-26 December, 2015
Three-day training program on Occupational Health, Safety & Environment at IIIIF, New Town, Rajarhat, Kolkata.	7-9 January, 2016
Training programme on “Design and Implementation of Rainwater Harvesting System for Augmentation of Rural Water Supply” at ISM Dhanbad.	21-23 January, 2016
3 Days training programme on Water Quality and Treatment at ISM Dhanbad.	28-30 January, 2016
Short term course on Sustainable Waste Management Practices at IIIIF, New Town, Rajarhat, Kolkata.	17-19 ebruary, 2016

3.11.9 PARTICIPATION OF FACULTY/OFFICERS/STAFF IN SEMINARS/ CONFERENCES ETC

Faculty Name	Name of the Conference	Date	Place
Prof. A. K. Pal	National Workshop on Risk Assessment of Occupational Exposure to Noise and Vibration in Mines	23-25 Feb. 2016	NIMH, JNARDDC Auditorium, Wadi, Nagpur
Dr. P. K. Singh	42nd IAH- AQUA Congress at the Sapienza University	13-8 Sept., 2015	Rome, Italy
Dr. M. K. Jain	National Interaction-cum-Evaluation Workshop for Environmental Information System (ENVIS) Centers	17-20 Feb., 2016	Banquet Hall, The Ashok, New Delhi
Dr. S. R. Samadder	Indian Conference on Life Cycle Management (ILCM 2015) (International Conference)	14-15 Sept., 2015.	FICCI, New Delhi
	International conference on Innovative Research in Engineering Science and Management (ESM-15),	20 Sept., 2015.	Jawaharlal Nehru Univ., New Delhi.
Dr. Suresh Pandian E	(WCST2015) World Congress on Sustainable Technologies	14-16 Dec., 2015	London, UK
Dr. B K Mishra	(WCST2015) World Congress on Sustainable Technologies	Dec 14-16, 2015	London, UK
Dr. Vipin Kumar	Short term Course on Biological Treatment of Solid Waste	February 8-10, 2016	IIT, Guwahati

Dr. S. K. Gupta	International Research Conference on Science, Management and Engineering (IRCSME 2016)	Feb17-18, 2016	Dubai, UAE
Dr. Anshumali	5th international Conference on Biodiversity	March 10-12, 2016	Madrid, Spain

3.11.10 VISITS OF FACULTY MEMBERS ABROAD

- 1 Dr. P. K. Singh visited Rome, Italy for attending 42nd IAH- AQUA Congress at the Sapienza University and given oral presentation on his research paper
- 2 Dr. Suresh Pandian E. visited London for attending (WCST2015) World Congress on Sustainable Technologies, London, UK during Dec 14-16, 2015 and given oral presentation on his research paper.
- 3 Dr B K Mishra visited London for attending (WCST2015) World Congress on Sustainable Technologies, London, UK during Dec 14-16, 2015 and given oral presentation on his research paper.
- 4 Dr. S. K. Gupta visited Dubai, UAE for participation in International Research Conference on Science, Management and Engineering (IRCSME 2016) during Feb17-18, 2016 and given oral presentation on his research paper.
- 5 Dr. Anshumali visited Madrid, Spain for attending 5th international Conference on Biodiversity during March 10-12, 2016 and given oral presentation on his research paper

3.11.11 TESTING SERVICES (LAB FACILITIES AVAILABLE FOR TESTING IN THE DEPARTMENT / CENTRE)

- 1 To evaluate the environmental parameters i.e. water, soil, air, noise and solid waste following state of art laboratory is available in department level.
- 2 Instrumentation Laboratory
- 3 Soil Quality & Soil Mechanics Laboratory
- 4 Water Chemistry Laboratory
- 5 Environmental Microbiology Lab
- 6 Micrometeorological Lab
- 7 Land Use & Hydrogeology Lab
- 8 Noise Quality Monitoring Lab
- 9 Fluid Mechanics Lab
- 10 Air Pollution Lab
- 11 Wastewater Engg. Lab
- 12 Weather Station
- 13 Land Surveying
- 14 Remote Sensing & GIS Lab

3.11.12 DISTINGUISHED VISITORS TO THE SCHOOL (INDICATING OCCASION/PURPOSE)

Dr. Jayant Kumar Tripathi, Associate Professor, Dept. of School of Environmental Science, Jawaharlal Nehru University (JNU), New Delhi	Examiner for Ph.D. viva-voce of Mr. Prabhunath Singh, Centre of Mining Environment, ISM on June 16, 2015
Dr. P. K. Ghosh Professor, Dept. of Civil Engineering, IIT Guwahati	Examiner for Ph.D. viva-voce of Ms. Yangdup Lama, Centre of Mining Environment, ISM on June 30, 2015

Dr. Dinesh Mohan, Professor, School of Environmental Sciences, Jawaharlal Nehru University, New Delhi	Examiner for Ph.D. viva-voce of Mr. Sandipan Ray, Centre of Mining Environment, ISM on August 14, 2015
Dr. Pradeep Kumar, Professor, IIT, Roorkee	Examiner for Ph.D. viva-voce Examination of Mr. Raja Kumar, Centre of Mining Environment, ISM on August 21, 2015
A team of Coal India Limited (CIL)	The members visited all the facilities available at Centre along with ENVIS Centre on 19th September 2015.
Lt Gen R M Mittal AVSM, SM, VSM, Director General, Border Roads Organisation	He interacted with the Faculty Members and visited all the facilities available with the Centre on 28.9.2015.
Dr. Pradip Kumar Sikdar, Professor, Indian Institute of Social Welfare & Business Management, College Square, Kolkata	Examiner for Ph.D. viva-voce of Ms. Debishree Khan, Centre of Mining Environment, ISM on November 11, 2015.
Dr. Jagdish, Scientist, Central Institute of Mining and Fuel Research, Dhanbad	Examiner for Ph.D. viva-voce of Ms. Anuradha Kumari, Centre of Mining Environment, ISM on November 20, 2015.
Dr. A. Jamal, Professor, Department of Mining Engineering, Indian Institute of Technology (Banaras Hindu University), Varanasi	Examiner for Ph.D. viva-voce of Mr. Sampurna Nand, Centre of Mining Environment/ Department of Environmental Science & Engg., ISM on January 18, 2016.
Dr. V. P. Upadhyay, Director, MOEF&CC, Eastern Regional Office, A/3 Chandrasekharpur, Bhubaneswar	Examiner for Ph.D. viva-voce of Mr. Subhabrata Banerjee, Centre of Mining Environment/ Department of Environmental Science & Engg., ISM on January 20, 2016.

3.11.13 SPECIAL LECTURES BY DISTINGUISHED GUESTS

Professor Suklyan Chakraborty, Australian Award Ambassador, appointed by the Australian High Commission, New Delhi has given a brief presentation on The Scholarship and Fellowship to the Students Scholars & Faculty Member for their Professional Development in Australia	May 14, 2015
Prof. Venki Uddameri, Director, Water Resources Center and Professor of Civil, Environmental and Construction Engineering, Texas Tech University, Lubbock delivered a special lecture on “Groundwater Management - Problems and Prospects for Sustainability”	June 11, 2015
Dr. Shyam R. Asolekar, Professor, Centre for Environmental Science & Engineering, IIT Mumbai delivered talk on “Recent trend of Research in Environmental Science & Engineering in India”	July 14, 2015
Dr. Ajay Singh Nagpure (Post Doctoral Associate, University of Minnesota, Twin Cities, Minneapolis, MN, USA) delivered a special lecture on “Urban Infrastructure, Environment, and Health”	February 10, 2016
Shri N. Kumar, Director Technical, Coal India Limited and officiating Chairman-cum-Managing Director (CMD), BCCL delivered guest lecture on challenges to mining industry and research initiative revised for uplift meant of coal industry in India.	March 12, 2016

3.12 FUEL AND MINERAL ENGINEERING

3.12.1 ABOUT THE DEPARTMENT

The Department of Fuel and Mineral Engineering was established in 1976 and is actively engaged in teaching, research and consultancy activities. The Department offers academic programmes, such as B. Tech. in Mineral Engineering, 5-years integrated dual degree programmes, M. Tech. courses and Ph. D. programmes.

3.12.1.1 Vision

To become global leaders in imparting quality education, carrying out innovative research and contributing to the growth mineral and coal/energy sectors.

3.12.1.2 Mission

The primary mission of Department is to thoroughly characterize the ores and minerals, and develop the beneficiation strategies. Some of the key aspects in carrying out our mission includes:

- Identifying the best talents of the country and train them as Mineral Engineers by imparting latest knowledge on the subject through the specially designed B Tech, M Tech and Dual degree programmes.
- Conducting tailor made professional development programs for the working engineers of coal/mineral beneficiation plants.
- Finding solutions to the live problems of the industry by offering industrial consultancy services
- Developing a state-of-the-art research facility in the country and make this institute as one of the internationally renowned center of excellence for processing of low/lean grade ores and minerals.
- Augmenting the country's energy requirements and bring sustainability in mining Sector through optimum unitization of natural resources, recovery of values from industrial wastes besides minimizing pollution problems.

3.12.2 FIELD VISITS/EXCURSIONS/TRAINING PROGRAMMES UNDERTAKEN BY STUDENTS

Particulars	Batch of students	Place of Visit	Period of Visit
Plant Visits/ Excursions	I M.Tech MLE+FLE)	Chasnala Coal Washery	One Day
	V-B. Tech (MLE) Group-I (1-28)	Jamadoba Coal Washery	One Day
	V-B. Tech (MLE) Group-II (29-58)	Bhelatand Coal Washery	One Day
	VII-B. Tech(MLE) + DD (MLE)	Jamadoba Coal Washery	One Day
	VIII-B. Tech(MLE) + DD (MLE)	ACC Sindri	One Day

	VI-B. Tech (MLE) Group-I (1-28)	Bhojudih Coal Washery	One Day
	VI-B. Tech (MLE) Group-I (29-58)	Bhojudih Coal Washery	One Day
	II-M. Tech (MLE+FLE)	Moondih Coal Washery	One Day
Industrial Training	III-M. Tech (MLE+FLE)	Tata Steel Jamadoba	42 days
		Tata Steel Bheltand	
		UCIL Jaduguda	
		SAIL Chasnala	
	B.Tech+DD (MLE)	Electrosteel Steel Ltd. Bokaro, TEGA Industries Ltd	
		RINL, Vishkapataniam, Tata Jamadoba, HZL, WB Tata SKMines, MCP, Ambuja Cement BCCL, NMDC, Balasore Aooloys, McNally Bharat	

3.12.3 BRIEF LIST OF ON –GOING R&D PROJECTS

1.	Project Title	:	Effect of feed characteristics on performance of Industrial Dense Medium Cyclones
	Sponsoring Agency	:	DST
	Coordinator (s)	:	Anand Aupam
	Project Value	:	₹ 21.47 lakhs
	Date of Commencement	:	1-7-1014
	Date of Completion	:	Ongoing
	Objective	:	To correlate feed characteristics with the performance of the Dense Medium Cyclone for Metallurgical Coals
	Status	:	Ongoing
	Findings	:	In progress
2.	Project Title	:	Beneficiation of law grade iron fines/alloys by selective flocculation
	Sponsoring Agency	:	MOM
	Coordinator (s)	:	Prof. N.R.Mandre (PI) & Prof. R.Venugopal (CoPI)
	Project Value	:	₹ 25.82 Lakhs
	Date of Commencement	:	1-4-2013
	Date of Completion	:	Ongoing
	Objective	:	To study the Beneficiation of law grade iron fines/alloys by selective flocculation
	Status	:	Ongoing
	Findings	:	In progress
3.	Project Title	:	Treatment of contaminated drinking water using a hybrid low-cost process.
	Sponsoring Agency	:	INNO-INDIGO (DBT)
	Coordinator (s)	:	Dr. B. K. Nandi
	Project Value	:	₹ 33.882 lakhs

Date of Commencement	:	26-11-2015
Date of Completion	:	Ongoing
Objective	:	To generate an innovative technological process for decentralized supply of contaminant- free drinking water to the rural society by developing environmental friendly and economically viable phototype units through the use of innovative chemistry and engineering research.
Status	:	Ongoing
Findings	:	In progress

3.12.4 IMPORTANT COLLABORATIVE WORKS

Organisation/Lab.	Nature of Interaction
1. Indian Institute of Technology Guwahati (IITG), India 2. University of Porto (FEUP), Portugal 3. Technische Universitat Munchen (TUM), Germany 4. Indian School of Mines Dhanbad (ISM), India 5. Jadavpur University (JU), India	Collaborative research project sponsored by INNO INDIGO EU MS/AC and India Joint Call on Clean Water and Health
CSIRO Australia	Collaborative research proposal submitted under Indo-Australian Clean Coal Initiative
IIT Kharagpur	Participated as external faculty member in the first programme on Separation of fine and ultra-fine particulates in fluid medium: fundamentals and applications in mineral and coal rocessing, organized under GIAN/ MHRD
IMMT, Bhubaneswar	MOU has been signed to carryout collaborative research work of mutual interest

3.12.5 RESEARCH PUBLICATIONS

3.12.5.1 Book reviews/contribution of chapters in book.

- Prof. R. P. Bhagat:
Agglomeration (Invited)
Encyclopedia of Iron, Steel and their Alloys (Eds Rafael Colas, George E. Totten
January 06-2016
Series: Materials & Alloys Encyclopedia Collection
Publisher: CRC Press (Taylor & Francis Group) New York, ISBN 9781466511040-
CAT#K14814

3.12.5.2 Papers Published in International Journals

Sl. No	Authors	Year	Title	Journal	Vol. No	Page No
1.	Amit Kumar Sarkar, Soumitra Ghorai, Abhay Shankar Patraa, Brijesh K. Mishra, N.R. Mandre and Sagar Pal.	2015	Modified amylopectin based flocculant for the treatment of synthetic effluent and industrial wastewaters	International Journal of Biological Macromolecules	72	356-363

2.	Rakesh Kumar and N. R. Mandre	2015	Characterization and Beneficiation of Iron Ore Tailings by Selective Flocculation	Trans Indian Inst Met	69	1459-1466
3.	Veerendra Singh, V.K. Saxena, Rashim Raj and R. Venugopal	2015	Artificial weathering of coal to enhance milling performance	Fuel	142	117-120
4.	Veerendra Singh, I. Obed Samuelraj, R. Venugopal, G. Jagadeesh, and P.K. Banerjee.	2015	Study the effect of electrical and mechanical shock loading on liberation and milling characteristics of mineral materials	Minerals Engineering	70	207-216
5.	Rachit Tiwari, S Bhattacharya, and Piyush Raghav.	2015	A Discussion on Noncoking Coal Pricing Systems Adopted in Different Countries	The Journal for Decision Makers	40 (1)	62-73
6.	S. Gautam, R. S. Yadav & N. Suresh	2015	Evaluation of the Characteristics of As-received and Washed Low Grade Indian Coals for their Industrial Applications	Energy Sources, Part A: Recovery, Utilization, and Environmental Effects	Vol 37, 2015 Issue 19	1556-7036
7.	S. K. Verma, R.E.Masto, Shalini Gautam, D.P. Choudhury, L.C. Ram, S.K. Maiti, Sudip Maity	2015	Investigations on PAHs and trace elements in coal and its combustion residues from a power plant	Fuel	Vol 162, 2015	138-147
8.	Shalini Gautam	2015	Assessment of Low-volatile Poor Coking Indian coal for coke making	International Journal of Coal Preparation and Utilization	V-37, 2017, pub. online 2015	33-43
9.	R P Bhagat	2015	Reduction of solid fuel consumption in sintering of Indian iron ore.	Science of Sintering, Belgrade, Serbia	47	205-213
10.	S.K. Verma, R.E. Masto, Shalini Gautam, D.P. Choudhury, L.C. Ram, S.K. Maiti and Sudip Maity	2015	Investigations on PAHs and trace elements in coal and its combustion residues from a power plant	Fuel	162	138-147

11.	Shravan Kumar, N. R. Mandre & S Bhattacharya	2016	Flocculation Studies of Coal Tailings and Development of 'Settling Index'	International Journal of Coal Preparation and Utilization	36	293-305
12.	Shravan Kumar, Sumantra Bhattacharya & N. R. Mandre	2016	Modeling of Settling Rate of Coal Fine Tailings using 3D Response Surface Methodology	Journal of Dispersion Science and Technology	37	251-257
13.	Sunil Kumar Tripathy, P K Banerjee and Nikkam Suresh	2015	Effect of Desliming on the magnetic Separation of Low-grade Ferruginous Manganese Ore	International Journal of Minerals, Metallurgy and Materials	Vol. 22	p667
14.	Nikkam Suresh, Surabhi, and Udayabhanu G	2015	Removal of Unburnt Carbon from Fly Ash to Use It as an Adsorbent	Pollution Research	Issue 34 (4):	33-38 ISSN 0257-8050
15.	Kumar, R. Mandre, N.R.	2016	Development of a Statistical Model for Selective Flocculation of Iron Ore Slimes	Journal of Dispersion Science and Technology	37 (2)	231-238
16.	Jena, M.S., Mohanty, J.K., Venugopal, R. and Mandre, N.R.	2016	Characterization of low grade PGE ores of Boula Nuasahi Area, Odisha, India and implication on beneficiation	Ore Geology Reviews	72	629-640
17.	Gharai, M. and Venugopal, R.	2016	Modeling of flot- ation process An overview of diffe- rent approaches	Mineral Processing and Extractive Metallurgy Review	37(2)	120-133
18.	Nadeem, M., Banka, H. and Venugopal, R.	2016	SVM Based Predictive Modelling of Wet Pelletization Using Experime- ntal and GABased Synthetic Data	Arabian Journal for Science and Engineering	41 (3)	1053- 1065
19	Shravan Kumar N. R. Mandre S. Bhattacharya	2016	Settling Study of Refuse Coal Fines: Performance Analysis Using Full Factorial Statistical Design Methodology	Transactions of the Indian Institute of Metals	69	1951-1957

20	Pankaj Kumar Jain · Sumantra Bhattacharya · Shravan Kumar.	2016	Recovery of combustibles from electrostatic precipitator discharge	Waste management and Research	34	542-552
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3.12.4.2 Papers Published in National Journals

Sl. No	Authors	Year	Title	Journal	Vol. No	Page No
1.	J. Sharma . T. Sharma . N. R. Mandre	2015	Processing of Goethitic Iron Ore Fines	J. Inst. Eng. India	96 (2)	143-149
2.	S. Siddique, K. Srinivas N. R. Mandre R. Venugopal S. and K. Srivastava	2015	Improvements in Autoclave Heat Recovery Circuit in Uranium Ore Processing Mill at Tummalapalle, India	Trans Indian Inst Met	68 (4)	665-668
3.	Divya Jyoti, S. Bhattacharya, A Anupam and V K Saxena	2015	Washing of low volatile coking (LVC) coal - Is that difficult?	Transactions Indian Institute of Metals (IIM)	68 (4)	649-660
4.	Nikkam Suresh	2015	Fine particles processing by gravity concentration	METAL NEWS Special Issue	Vol.18	pp.25
5.	Ram Pravesh Bhagat	2015	Study on Utilisation coal fines generated in sponge iron making through pelletisation	Journal of Metallurgy and Material Science	57 (3)	143-149
6.	Bhattacharya, S., Maheshwari, A. and Panda, M.	2016	Coal Cleaning Operations: The Question of Near Gravity Material	Transactions of the Indian Institute of Metals	69 (1)	157-172

3.12.4.3 Papers Published in International Seminars/ Conferences

Sl. No	Authors	Title	Seminars/ Conferences	Date	Place
1.	Rakesh Kumar and N. R. Mandre	Beneficiation of Iron ore Slimes using natural polymer by selective flocculation process	XV Int. Seminar: Mineral Processing Technology (MPT 2016)	5-7 th January 2016	Pune, Maharashtra
2.	M. S. Jena, P. Sahu, J. K. Mohanty, R. Venugopal and N. R. Mandre	Recovery of PGE values from low grade Chromite ores of Boula area, Odisha	NMD-ATM	13-16 th November, 2015	Coimbatore
3.	Satyananda Patra, R.Venugopal	Preliminary beneficiation studies on Barsua iron ore by spiral concentrator followed by WHIMS	MPT-2016	5-7 th January 2016	Pune, Maharashtra
4.	Abhyarthana Pattanaik, R.Venugopal, Diptimayee Nanda	Effects of reagent and kinetic studies on flotation performance of Dugda coal	MPT-2016	5-7 th January 2016	Pune, Maharashtra
5.	Mousumi Gharai, R. Venugopal	Analysis of effect of dissolved ion-water chemistry on the performance of coal flotation	MPT-2016	5-7 th January 2016	Pune, Maharashtra

6.	Lopamudra Panda, Amit Ranjan, N.R.Mandre, R.Venugopal	Selective separation of kaolinite from ultrafine chromite ore by dispersion and selective flocculation	MPT-2016	5-7 th January 2016	Pune, Maharashtra
7.	Shrenivas Ashrit, Ravikrishna Chatti, K.N.Udpa, R.Venugopal, G.Udaybhanu	Application of ICP-MS technique for analysis of trace and heavy metal content in LD slag fines at Tata Steel plant, Jamshedpur	MPT-2016	5-7 th January 2016	Pune, Maharashtra
8.	M.S.Jena, P.Sahu, M.Satyanarayanan, J.K.Mohanty, R.Venugopal, N.R.Mandre	Performance evaluation of Knelson concentrator to pre-concentrate the low grade PGE ore	MPT-2016	5-7 th January 2016	Pune, Maharashtra
9.	Silpa Sweta Jena, G.Siva Kumar, R.Venugopal	A pilot plant study on beneficiation of Mangampet barite for drilling mud application	MPT-2016	5-7 th January 2016	Pune, Maharashtra
10.	Ajita kumari, B. C. Bhattacharya and R. Venugopal	Characterization and beneficiation of low grade magnesite of Parshad area (Udaipur, Rajasthan)	MPT-2016	5-7 th January 2016	Pune, Maharashtra
11.	Sumantra Bhattacharya	Cleaning of LVHR Coal: Characterization Studies Leading to Flowsheet Development (Invited Talk)	Int.Seminar: Mineral Processing Technology (MPT 2016)	5-7 th January 2016	Pune, Maharashtra
12.	Divya Jyoti, Sumantra Bhattacharya, Sanchita Chakraborty and V. K. Saxena	Characterization Studies of Low Volatile High Rank Coal and Cleaning Products	Int.Seminar: Mineral Processing Technology (MPT 2016)	5-7 th January 2016	Pune, Maharashtra
13.	S R Paul and Sumantra Bhattacharya	Separation Characteristics of a Coal Cleaning Jig	Int.Seminar: Mineral Processing Technology (MPT 2016)	5-7 th January 2016	Pune, Maharashtra
14.	Deepak Singh Panwar, V Saxena and A.K. Singh	Prospects of coal bed methane production in Kulti	CHEMCON 2015	27-30 Dec, 2015	IIT Guwahati, Assam, India
15.	Deepak Singh Panwar, V Saxena and A.K. Singh	Possibility of methane recovery in Kulti Block	Technical Advancement in Chemical Engineering and Mineral	12-13 Sep 2015	Bhubaneswar, India
16.	Deepak Singh Panwar, V Saxena and A.K. Singh	Estimation of coal mine methane potential in Sitarampur	CHEMCON 2015	27-30 Dec, 2015	IIT Guwahati, Assam, India
17.	Swapan Suman, V.K. Saxena, Deepak Singh Panwar, and A.K. Singh	Is extraction of Natural gas from Kalidaspur coal block.	CHEMCON 2015	27-30 Dec, 2015	IIT Guwahati, Assam, India
18.	Deepak Singh Panwar, V.K. Saxena and A.K. Singh	Energy generation from coal mine waste.	Mineral Processing Technology conference (MPT) 2016	5-7 th January 2016	Pune, Maharashtra

19.	Ram Chandra Chaurasia Suresh Nikkam	Prediction of yield and combustible recovery of coal using Artificial Neural Network in MGS	Mineral processing conference-2016 (MP 2016)	5-7 th January 2016	Pune, Maharashtra
20.	Saroj Sahoo and Suresh Nikkam	Studies on separation of macerals from coal by using froth flotation technique and Characterization of KBr-FTIR Spectroscopy	Mineral processing conference-2016 (MP 2016)	5-7 th January 2016	Pune, Maharashtra
21.	Smita Rani Jena and N. Suresh	Separation characteristics of selected size fraction of dense medium cyclone feed	Mineral processing conference-2016 (MP 2016)	5-7 th January 2016	Pune, Maharashtra

3.12.4.4 Papers Published in National Seminars/ Conferences

Sl. No	Authors	Title	Seminars/ Conferences	Date	Place
1.	Rakesh Kumar and N. R. Mandre	Processing of iron ore slimes by selective flocculation	National seminar on technological advancement in Chemical Engineering and Mineral Processing-2015	12-13 September 2015	Bhubaneswar, Odisha
2.	Ram Chandra Chaurasia and Suresh Nikkam	The Effects of Drum Inclination, Shake Frequency and Drum Speed Combinations on Cleaning of Ultra-fines coal by Multi Gravity Separator”–	National seminar on technological advancement in Chemical Engineering and Mineral Processing	12-13 September 2015	Bhubaneswar, Odisha
3.	Ram Chandra Chaurasia and Suresh Nikkam	Beneficiation of Coal fines by Multi Gravity Separator	National Seminar on Mining Industry: Challenges & Opportunities by Indian Mine Managers Congress	11-13 December 2015	Dhanbad
4.	Ram Chandra Chaurasia and Suresh Nikkam	An Efficient Process for Recovery of Fine Clean Coal from Tailing of Coal Washing Plant”	Sustainable Technology for Cleaner Environment (STCE-2016)	13-14 February 2016	Rourkela
5.	Gaurav Jha, S. Soren	Studies on Effective Replacement of Coke Breeze using Biomass,	National seminar on Environment Issues: Protection, Conservation and Management (EIPCM)	26-27th February 2016	BIT Sindri, Dhanbad, Jharkhand
6.	Gaurav Jha, S. Soren	Advantages of Biomass over fossil fuels: Indian scenario,	68th Annual Session of Indian Institute of Chemical Engineers	27-30 December 2015	IIT Guwahati, India
7.	S. Hembrom, S. Soren	Life Cycle Assessment in Charcoal and Steelmaking Processes	National seminar on Environment Issues: Protection, Conservation and Management (EIPCM)	26-27th February 2016,	BIT Sindri, Dhanbad, Jharkhand.
8.	Satyananda Patra and R. Venugopal	A Study on status of iron ore pellet industry in India	CMMI - 2015	26th sept 2015	GCE, Keonjhar
9.	Gaurav Jha and S. Soren	Studies on effective replacement of Coke breeze using Biomass	EIPCM-2016	26-27th Feb, 2016	BIT Sindri, Dhanbad, Jharkhand
10.	Gaurav Jha and S. Soren	Studies and Processing of Sinters and its handling parameters	MPT-2016	5-7 January 2016	Pune, Maharashtra

11.	Abhishek Anand Hembrom	Performance of water only cyclone to treat open cast coal mines	MPT-2016	5-7 January 2016	Pune, Maharashtra
12.	Abhishek Anand Hembrom	Study on the kinetics and reduction behaviour of iron ore pellets	CHEMCON-2016	27-30th Dec, 2015	IIT Guwahati
13.	Ajita Kumari and R. Venugopal	Main and Interactional effects of variables on beneficiation of tin ore by mozley mineral separator	National seminar on technological advancement in Chemical Engineering and Mineral Processing-2015	12-13 September 2015	Bhubaneswar, Odisha
14.	Kichakeswari Tudu	Beneficiation of low grade iron ore fines using selective flocculation	MPT-2016	5-7 January 2016	Pune, Maharashtra
15.	Kichakeswari Tudu	Application of selective flocculation process for beneficiation of low grade iron ore fines	RASE-2016	28-29th March, 2016	ISM Dhanbad, Jharkhand
16.	Mousumi Gharai and R. Venugopal	Froth flotation-an interactive phenomenon an effective process in fine particle separation	National seminar on technological advancement in Chemical Engineering and Mineral Processing-2015	12-13 September 2015	Bhubaneswar, Odisha
17.	Smita Rani Jena and N. Suresh	Separation characteristics of selected size fraction of dense medium cyclone feed	MPT-2016	5-7 January 2016	Pune, Maharashtra

3.12.5 MAJOR ACADEMIC CONTRIBUTION

- ❖ Prof N. R. Mandre and Prof. R. Venugopal received SADANANDA MEMORIAL AWARD for the paper, 'Pre-concentration of low grade PGE ores A Scarce Resource of Odisha' from Institute of Engineers (India), Odisha, Bhubaneswar during 57th Annual Technical Session held on 14th February, 2016.

3.12.6 SEMINARS, SYMPOSIA, WORKSHOPS, CONFERENCES ORGANIZED BY THE DEPARTMENT

A 5 week Training Program on Coal preparation – Principles and Plant practices organized by Prof N. Suresh, FME.	22.02.2016 to 26.03.2016
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3.12.7 PARTICIPATION OF FACULTY/OFFICERS/STAFF IN SEMINARS/ CONFERENCES

Prof. N. R. Mandre	International Seminar: Mineral Processing Technology (MPT 2016)	5-7. January 2016	TCS, Pune, Maharashtra
Prof. N. R. Mandre	National Seminar on Technological advancement in Chemical Engineering and Mineral Processing, Institute of Engineers (India)	12-13 September, 2015	Bhubaneswar, Odisha
Prof. R. Venugopal	International Seminar: Mineral Processing Technology (MPT 2016)	5-7. January 2016	TCS, Pune, Maharashtra

Prof S. Bhattacharya	International Seminar: Mineral Processing Technology (MPT 2016)	5-7. January 2016	TCS, Pune, Maharashtra
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Testing service

- * Crushing & Grinding
- * Sample Preparation
- * Chemical Analysis by conventional and Instrumental methods
- * Beneficiation of Mineral and Coal
- * Coal analysis
- * TGA Analysis
- * AAS Analysis
- * CHNSO Analysis
- * Determination of calorific Value
- * Size Analysis

3.12.8 SPECIAL LECTURES BY DISTINGUISHED GUESTS

S No.	Name	Date
1.	Prof. L N Jha, Ex-SAIL Chair Professor	Feb 03-06, 2016
2.	Prof. A. Chattopadhyay Former Professor/EMM & Dean (F&P) & DT (I/C) ISM	Feb 10-12,2016
3.	Prof. V K Gupta Adjunct Professor /FME	Feb. 15-19, 2016
4.	Mr S.K.Sett	March 7-10,2016
5.	Dr.D.Banerjee NTPC AGM	March 15-17,2016
6.	Dr. Shivakumar I. Angadi Scientist, Mineral Processing Dept. CSIR-Indian Institute of Minerals and Materials Technology Bhubaneswar	March 30-31, 2016

3.13 HUMANITIES AND SOCIAL SCIENCES

3.13.1 ABOUT THE DEPARTMENT

The Department of Humanities and Social Sciences started in the year 1926. It is essentially inter-disciplinary Department to make budding engineers and technologists linguistically communicative, socially aware and ethically conscious individuals. The Department offers Ph.D. in the emerging areas of Humanities and Social Sciences.

3.13.1.1 VISION

To be a widely acclaimed Department with Academic Excellence in different interdisciplinary areas of teaching and research in Humanities and Social Sciences.

3.13.1.2 MISSION

To educate the budding Engineers in Ethical Values, Communicative Skills and Social Consciousness.

To develop and conduct different Certificate Courses/ Consultancy in

- (a) Foreign Languages
- (b) Communication Skills
- (c) Ethics and Human Values
- (d) Social Impact Analysis

To offer different Undergraduate/ Postgraduate Programmes in

- i) English Language Teaching
- ii) Comparative Literature and Translation Studies
- iii) Different areas of Ethics and Applied Ethics
- iv) Intercultural Communication Studies
- v) Developmental Studies
- vi) Religious Studies
- vii) Indian Culture and Philosophy

3.13.2 BEST PRACTICES IN THE DEPARTMENT

1. All the courses at UG and PG level have bias towards skills and Personality development.
2. Students are given regular exposure in interpersonal skills. Special emphasis is given on character and personality building of students. Values and Ethics are inculcated through workshops and interactive programs.

3.13.3 INTRODUCTION OF NEW COURSES AND PROGRAMMES, IF ANY (GIVE COURSE OUTLINE)

Introduced **Minor Degree Course in Philosophy** for B. Tech Students

3.13.4 BRIEF LIST OF ON-GOING R & D PROJECTS

1.	Project Title	:	An Introductory Study to the History and Evolution of Comic Art in India
	Sponsoring Agency	:	Indian Council of Historical Research
	Coordinator (s)	:	Dr. Aju Aravind
	Project Value	:	₹ 4.00 Lakhs
	Date of Commencement	:	01.03.2016
	Date of Completion	:	28.02.2018
	Objective	:	An Introductory Study to the History and Evolution of Comic Art in India
	Status	:	Ongoing
	Findings	:	In progress
2.	Project Title	:	Ethical Leadership: A Study on Macintyre and Levinas
	Sponsoring Agency	:	Indian Council of Philosophical Research
	Coordinator (s)	:	Dr. Sarita Kar
	Project Value	:	₹ 3.00 Lakhs
	Date of Commencement	:	27.7.2015
	Date of Completion	:	27.7.2018
	Objective	:	Theoretical Analysis of Ethical Leadership
	Status	:	Ongoing
	Findings	:	In progress
3.	Project Title	:	Traversing the Territory of Comparative Philosophy
	Sponsoring Agency	:	Indian Council of Philosophical Research
	Coordinator (s)	:	Dr. Gyan Prakash
	Project Value	:	₹ 2.00 Lakhs
	Date of Commencement	:	2015
	Date of Completion	:	2017
	Objective	:	Traversing the Territory of Comparative Philosophy
	Status	:	Ongoing
	Findings	:	In progress

3.13.5 RESEARCH PUBLICATION

3.13.5.1 Books Published

Md. Mojibur Rahman (ed.). Integrating Technology and Culture: Strategies and Innovations in ELT. Jaipur: Yking Books, 2016. ISBN 978-93-85528-10-1.

3.13.5.2 Book Reviews/Contribution of chapters in a book

Manna, Nirban Trans. Winkle Twinkle by Bratya Basu. Collected plays ed. Amitav Roy. Kolkata: Deep Prakashan. 2015. Print.

Manna, Nirban & Avishek Deb Trans. Black Hole by Bratya Basu. Collected plays ed. Amitav Roy. Kolkata: Deep Prakashan. 2015. Print.

3.13.5.3 Papers published in International Journals

Sl. No.	Author (s)	Year	Title	Journal	Vol. No.	Page No.
1	R. K. Singh	2015	Multilingualism, Global Competency and Communicative Performance for Business	Aussie-Sino Studies	Vol. 1, No. 1	26-32
2	R. K. Singh	2015	Original Sin: Revisiting a Biblical View	Modern Research Studies: An Int. Journal of Humanities and Social Sciences	Vol. 2, Issue 4	890-895

3	Mohini Dubey and R. K. Singh	2015	Eve Ensler's Vision of the Body in The Vagina Monologues	Modern Research Studies: An Int.journal of Humanities and Social Sciences	Vol. 2, Issue 2	
4	Abhinav Anand and Ajit Kumar Behura	2015	Right to Life of an Unborn: Practice of Abortion in South Korea from a Buddhist Standpoint	Journal of the International Association of Buddhist University (JIABU)	Vol. VI	78-85
5	Archana Nath, Ritesh Kumar, Ajit Kumar Behura	2015	Watershed Programme: An Innovative way to Solve Scarcity and Provide Security of Water in Rural Areas of Sustainable Human and Social Development – Some Cases	Current World Environment	Vol.10 (3)	839-847
6	Rajni Singh	2015	The 7 th TS Eliot International Summer School	Time Present: The Newsletter of the TS Eliot Society, Missouri, USA	No.87, Fall 2015	pp. 16-18.
7	Rajni Singh	2015	(Re) Narrating the History through Ambiguous Gender Discourse: A Study of Salman Rushdie's Shalimar the Clown	English Language and Literature,	Vol.61, No.3	pp. 501-18.
8	Nirban Manna		Rhetoric of Desire and Despair: Badal Sircar's That Other History in Existential Vision	The Atlantic Literary Review	15:3	60-72

3.13.5.4 Papers published in National Journals

Sl. No.	Author (s)	Year	Title	Journal	Vol. No.	Page No.
1	Simon Kisku R. K. Singh	2015	The Poetry of Ross Donlon	POETCRIT	Vol. XXVIII, No. 2	10-16
2	Naznin and Ajit Kumar Behura	2015	Teacher's Education in the Changing Horizons: An Ethical Study	Anusandhan Anveshika	Vol. 5	60-65
3	Pankojini Mulia, Ajit Kumar Behura and Sarita Kar	2015	Deep Ecology: A Remedy for Environmental Problems	Sucharitha: A Journal of Philosophy and Religion	Vol. 3, No. 4	8-18
4	Ipsita Roy and Ajit Kumar Behura	2015	Revisiting the Relationship Between Man and Nature	Revenshaw Journal of Philosophy	Vol. 1	64-71
5	Ipsita Roy, and Ajit Kumar Behura	2015	Tracing the Course of Man-Nature Relationship: Past, Present and Future	Sucharitha: A Journal of Philosophy and Religion	Issue: 2, Volume: 3	1-10
6	Kiran, Pallavi and Md. Mojibur Rahman	2015	Gulzar's Poetry in Translation: A Discourse Perspective	Langlit	Vol. 1, Issue 4	776-784

7	Soumyajyoti Banerjee & Rajni Singh	2015	Food for Thought: Multiculturalism, Femininity and Identity in Chitra Banerjee Divakaruni's The Mistress of Spices	Dialogue	Vol. XI, Issue 2,	12-24
8	Swagata Ray & Rajni Singh	2015	Asserting the 'Self through Food: A Study of Fay Weldon's The Fat Woman's Joke	Poetcrit	Vol XXVIII, No. 2, July 2015	106-114
9	Seema Ladsaria & Rajni Singh	2015	Voices from Assam: Socio-Political Concerns in the Poetry of Hirendranath Dutta, Harekrishna Deka, Nilmoni Phookan and Hireh Bhattacharyya	Poetcrit	Vol XXVIII, No. 2, July 2015	92-100
10	Swagata Ray & Rajni Singh	2015	Rape Narratives in Shashi Deshpande's The Binding Vine and Fay Weldon's Praxis	The Indian Journal of English Studies	Vol LII	156-170
11	Sarita Kar	2015	Abortion and Personhood: In Pursuit of an Alternative Ethical Consideration	The Philosophical Quarterly	XIII	39-49
12	Sarita Kar	2015	Corporate Social Responsibility: An Analysis of Corporate Moral Status	Sucharita: A Journal of Philosophy and Religion	Vol. 3	11-18
13	Pankojini Mulia, A. K Behura, Sarita Kar	2015	Deep Ecology: A Remedy for Environmental Problems	Sucharita: A Journal of Philosophy and Religion	Vol. 3, No. 4	8-18
14	Gyan Prakash	2015	Ryle and Subjectivity	The Philosophical Quarterly	XIII (1-4)	50-60

3.13.5.5 Papers presented in International Seminars/Conferences

Sl. No.	Author (s)	Title	Seminar/Conference	Date	Place
1	Rajni Singh	Politics of Religion in creating an identity and nation in The Midnight's Children	International Commonwealth Conference on Postcolonial Literature	25-27 January 2016	Deptt of Humanities and Liberal Arts, O.P. Jindal Global University, Sonipat, Haryana
2	Aju Aravind	Politics of Power: Seeking Peace through Peace Force military in India and Sri Lanka in the Film Madras Café	International Conference on English Studies: The Evolving Paradigms of Employability and Power	18th to 19th February, 2016	Amity University, Lucknow Campus

3	Aju Aravind	“Devdas (2002) to Dev. D (2009): Transformation of Mind, Culture and Society in the Cinematic world of Devdas “	International Conference English Studies: The Evolving Paradigms of Employability and Power	18th to 19th February, 2016	Amity University, Lucknow Campus
4	Aju Aravind	“ Reflection on the Emerging Trend of Comic Culture: Adaptation of Sholay as Comics Book”	LITFEST’ 15: 4th International Conference on Comics as Visual Literature	2 nd to 4 th Sept., 2015	Dr. MGR University, Chennai.
5	Aju Aravind Abou Rihan Rinku	Muscles and Pornography: Masculine attitude towards Pornographic addiction in Indian Popular Culture.	II International Rit Vimarsh Conference on Gender and Violence	16-20 Nov. 2015	New Delhi
6	Nirban Manna & Eeshan Ali	Featuring Feminine Man : configuring the New Man Hero in The Select Bollywood films	International Conference on English Studies	18-19; February 2016	Amity University, Lucknow
7	Nirban Manna & Eeshan Ali	Of Belief and Believers : Abduk Sultan’s Graffiti and Question of Identity, Faith and Security	Litfest 5: International Seminar on Comics as Visual Culture	2-4, Sep. 2015	MGR University, Chennai

3.13.5.6 Papers presented in National Seminars/Conferences

Sl. No.	Author (s)	Title	Seminar/ Conference	Date	Place
1	Naznin, Ajit Kumar Behura	Teachers’ Dispositions in Higher Education: A Philosophical Study	National Seminar on ‘Professional Ethics for Higher Education Faculties: Roles and Responsibilities of Teachers	29th-30 th , August, 2015	IIT Madras, Chennai
2	Ajit Kumar Behura	Explanation of Human Action	28 th Annual Conf. of All Odisha philosophical Association	24 th & 25 th , January 2016	SVM College Jagatsinghpur
3	Pankojini Mulia, Ajit Kumar Behura, Sarita Kar	Environmental Responsibility of Business: A Sustainable Approach	28 th Annual Conference of All Odisha Philosophical Association	24 th & 25 th , January 2016	SVM College Jagatsinghpur
4	Abhinav Anand, and Ajit Kumar Behura	A Review on ‘Three Dimension Interpretation of Interdependence’ of Jay L. Garfield	28 th Annual Conference of All Odisha Philosophical Association	24 th & 25 th , January 2016	SVM College Jagatsinghpur
5	Mukesh Kumar Behera, and Ajit Kumar Behura	Myth of Technological Determinism and Instrumentalism	28 th Annual Conference of All Odisha Philosophical Association	24 th & 25 th , January 2016	SVM College Jagatsinghpur
6	Naznin and Ajit Kumar Behura	Ethics in Contemporary Teaching and Teachers’ Professional Beliefs	28 th Annual Conference of All Odisha Philosophical Association	24 th & 25 th , January 2016	SVM College Jagatsinghpur
7	Jyoti Kumari and Ajit Kumar Behura	Ecofeminism and Development	28 th Annual Conference of All Odisha Philosophical Association	24 th & 25 th , January 2016	SVM College Jagatsinghpur

8	Ajit Kumar Behura	Understanding Gandhi as a critique of Modernity	Indian Philosophical Congress, 90th Session	1 to 4 February, 2016	Magadh University, Bodh Gaya
9	Pankojini Mulia, Ajit Kumar Behura, and Sarita Kar	The Ethical Reasoning behind Sustainability: A CSR Approach	Indian Philosophical Congress, 90th Session	1 to 4 February, 2016	Magadh University, Bodh Gaya
10	Abhinav Anand, and Ajit Kumar Behura	An Analysis of Jay L. Garfield 'Three Dimension Interpretation' of 'Paticca-samuppada	Indian Philosophical Congress, 90th Session	1 to 4 February, 2016	Magadh University, Bodh Gaya
11	Mithilesh Kumar Singh and Ajit Kumar Behura	Religion for Environmental Conservation: An Analysis with Special Reference to Jharia Coal Fire	Indian Philosophical Congress, 90th Session	1 to 4 February, 2016	Magadh University, Bodh Gaya
12	Naznin and Ajit Kumar Behura	Ethics of Care in the Social Philosophy: A Study from Philosophical Perspective	Indian Philosophical Congress, 90th Session	1 to 4 February, 2016	Magadh University, Bodh Gaya
13	Rajni Singh	From rejection to self-assertion: Reconstructing the black female identity in Gloria Naylor's The Women of Brewster Place and Galye Jones' Corregidora	60 th All India English Teacher's Conference	18 th -20 th December 2015	VSKD University, Belari, Karnataka
14	Aju Aravind	Flyers of the Body: Commercialization of Sexuality in Indian Popular Culture	UGC-SAP-DSA-I sponsored National Young Researcher's Conference	4 th to 5 th February, 2016	Jawaharlal Nehru University, New Delhi
15	Aju Aravind	Ethnic Violence and search for Identity in Michael Ondaatje's Anil's Ghost	60 th All India English Teacher's Conference	19 th to 21 st Dec. 2015	Bellary, Karnataka (Vijayanagra SriKrishna Devrai University)
16	Sarita Kar	Role of CSR in a Globalized World	Indian Philosophical Congress	1-4 February 2016	Magadha University, Bodh-Gaya,
17	Nirban Manna & S,A,Mamun Sarkar	Virtual Territory and the Real...	UGC national Seminar on Boarder, Globalization and Identity	27-28 November 2015	P.D .Women's College, Jalpaiguri
18	Nirban Manna & S,A,Mamun Sarkar	Construction and Reformation of Juvenile Periphery in Colonial Bengal	History, Literature Translation Studies : Bhasha Culture	9-11th September 2015	University of Hyderabad
19	Gyan Prakash	Mind and Emotion in Early Buddhism	Conference on Philosophy of Mind, Matter, and Morals in Buddhist Perspective	12 th February-14 th February 2016.	Center for Mahayana Studies, Acharya Nagarjuna University, A.P.

3.13.6 MAJOR ACADEMIC CONTRIBUTION

Coordinating the **Foreign Language Certificate Course** (German, French and Chinese)

Ajit Kumar Behura delivered Guest Lecture in the UGC Refresher Course on the topic ‘**Research Methodology**’ at the Academic Staff College, North Bengal University on 11 & 14 July 2015.

Ajit Kumar Behura delivered two special lectures as a resource person on the topic ‘**Responsible Conduct of Research**’ and ‘**The Basic Human Values**’ in the first Orientation Programme, Faculty Development Centre, ISM Dhanbad, on 11 & 12 February 2016.

Ajit Kumar Behura examined a Ph.D Thesis on the topic, ‘**A Study of Some Contemporary Bio-Ethical Issues From Philosophical Perspective**’ of Ms. Joyeeta Addya, Jadavpur University, Kolkata and submitted Report on 17-09-2015.

Ajit Kumar Behura examined a Ph.D Thesis on the topic, ‘**The Concept of Man in the Spiritualistic Framework of Tagore, Aurobindo, Gandhi & Radhakrishnan**’, of Mr. Chandra Kumar Pattanayak, North Orissa University, Baripada, Mayurbhanj, Odisha and submitted Report on 11-12-2015.

Ajit Kumar Behura conducted Ph.D. Viva at the North Orissa University, Baripada, Mayurbhanj, Odisha on 19-01-2016.

Md. Mojibur Rahman examined a Ph. D. thesis on “**A study on the use of translation and other remedial materials for teaching English at the primary level**” of KIIT University Bhubaneswar.

Rajni Singh received “**Ionian Splendour and Gold Bursary**” for **TS Eliot International Summer School, Institute of English Studies, University of London, UK** (July 11th -20th July 2015).

Rajni Singh received **Indian School of Mines & Canara Bank Best Researcher Publication Award-2015**

Rajni Singh received **Scroll of Honour for year 2016 for contributing to the field of academics at ASOM VIDYA, Gauhati University, Assam.**

Rajni Singh evaluated four Ph.D theses, two from Lucknow University and two from Guahati University and also acted as examiner for Ph.D Viva- Voce for these.

Rajni Singh gave an invited plenary talk on “**Transgressing Boundaries: The Relevance of Comparative Literature in India**” at Deptt. of Modern Indian Languages and Literary Studies, Gauhati University, Assam on 26th February 2016.

Nirban Manna delivered a Special Lecture on Indian Theatre in State Level Seminar and Workshop on Indian Writing In English organized by Department of English, Kashipur Michael Madhusudhan Mahavidyalaya, West Bengal on 25th August 2015.

Nirban Manna prepared content module entitled “**Women as represented in Marathi Theatre**” for E-Pathshala – Gender Studies, MHRD-GOI Project Module.

Nirban Manna prepared content module entitled “**Women in Bengali Theatre**” for E-Pathshala – Gender Studies, MHRD-GOI Project Module.

**3.13.7 PARTICIPATION OF FACULTY/OFFICERS/ STAFF IN SEMINAR /
CONFERENCES**

Dr. Rajni Singh	International Commonwealth Conference on Postcolonial Literature	25-27 January 2016	Jindal Global University, Sonapat
Dr. Rajni Singh	TS Eliot International Summer School	July 11th - 20th July 2015	Institute of English Studies, University of London, UK
Dr. Aju Aravind	International Conference on English Studies: The Evolving Paradigms of Employability and Power	18th to 19th February, 2016	Amity University, Lucknow
Dr. Aju Aravind	LITFEST' 15: 4th International Conference on Comics as Visual Literature	2 nd to 4 th September, 2015	Dr. MGR Education and Research Institute University, Chennai.
Dr. Aju Aravind	II International Rit Vimarsh Conference on Gender and Violence	9 th -12 th October 2015	Delhi
Dr. Aju Aravind	60th All India English Teacher's Conference	19 th to 21 st December, 2015	Vijayanagra SriKrishna Devrai University, Karnataka
Dr. Ajit Kumar Behura	Indian Philosophical Congress, 90th Session	1 to 4 February, 2016	Magadh University, Bodh Gaya

3.14 MANAGEMENT STUDIES

3.14.1 ABOUT THE DEPARTMENT

Department of Management Studies started as the Department of Industrial Engineering and Management in the year 1977. The Department offered the program of M.Tech Industrial Engineering & Management to cater to the need of imparting both technical and managerial education. Keeping pace with the need of the changing times, the Department of Industrial Engineering and Management (IE&M) was restructured and rechristened as Department of Management Studies in 1997. The Department became only the second institute in the country to offer M. Tech IEM and MBA. The Department currently offers M.Tech (Industrial Engineering & Management), MBA (2 year) and Executive MBA (3 year) programmes. It also offers Ph.D programme in Industrial Engineering & Management and in Management.

3.14.1.1 Vision

To become a leading Management Education Institute with a global standing through teaching, training and research.

3.14.1.2 Mission

To impart quality management education to students of MBA and M. Tech (IEM) to make effective managers and responsible citizens contributing to the growth and development of the country in all spheres.

3.14.2 INTRODUCTION OF NEW COURSES AND PROGRAMMES, IF ANY (GIVE COURSE OUTLINE).

The department has introduced minor programs in Operations Management and Finance Management for B.Tech students. The details of the courses offered is provided below-

B.Tech with Minor in Operations Management

Semester	Course No.	Name of the Course	L T P	Credit Hours
Semester V	MSM 41104	Decision Sciences	3 0 0	6
	MSM 41201	Business Communication –I (Lab)	0 0 2	2
		Total Credit Hours		8
Semester VI	MSM 42103	Operations Management	3 0 0	6
	MSM 42106	Advance Data Analysis (S)	2 0 0	4
		Total Credit Hours		10
Semester VII	MSM 43122	Materials Management	3 0 0	6
	MSM 43102	Entrepreneurship Management (S)	2 0 0	4
		Total Credit Hours		10
Semester VIII	MSM 44101	Project Management	3 0 0	6
	MSM 44102	International Business (S)	2 0 0	4
		Total Credit Hours		10

B.Tech with Minor in Financial Management

Semester	Course No.	Name of the Course	L T P	Credit Hours
Semester V	MSM 41101	Financial Accounting and Reporting	3 0 0	6
	MSM 41201	Business Communication – I (Lab)	0 0 2	2
		Total Credit Hours		8
Semester	MSM 42101	Corporate Finance	3 0 0	6

VI	MSM 42106	Advanced Data Analysis (S)	2 0 0	4
		Total Credit Hours		10
Semester VII	MSM 43112	Security Analysis and Portfolio Management	3 0 0	6
	MSM 43102	Entrepreneurship Management (S)	2 0 0	4
		Total Credit Hours		10
Semester VIII	MSM 44111	Merchant Banking and Financial Services	3 0 0	6
	MSM 44102	International Business (S)	2 0 0	4
		Total Credit Hours		10

3.14.3 BEST PRACTICES OF THE DEPARTMENT

3. Seminars and group assignments are regular part of the pedagogy to develop interpersonal and other soft skills while enriching knowledge base.
4. Students are given regular exposure to leading practitioners of the art and science of management through extramural lectures and corporate interactions.
5. There is special emphasis on building character and personality of students. Values and ethics are inculcated through regular workshops and interactive programs.

3.14.4 BRIEF LIST OF ON-GOING R&D PROJECTS (PROJECT VALUE ` . 5,00,000/- AND ABOVE)

1.	Project Title :	System Dynamics based Decision Support System for Indian Microfinance Institutions
	Sponsoring Agency :	UGC, GOI.
	Coordinator (s) :	Prof.ChandanBhar
	Project Value :	₹ 6.45 Lakhs
	Date of Commencement :	April, 2013
	Date of Completion :	Ongoing
	Objective :	To develop a Decision Support System for Micro-Finance Institutions in India
	Status :	Ongoing
	Findings :	In progress
2.	Project Title :	Developing an accounting system for small and micro entrepreneur of Jharkhand
	Sponsoring Agency :	UGC, GOI.
	Coordinator (s) :	Prof. J.K.Pattanayak
	Project Value :	₹ 5.39 Lakhs
	Date of Commencement :	01.04.2013
	Date of Completion :	Ongoing
	Objective :	To develop an accounting System for Small and micro entrepreneurs of Jharkhand
	Status :	Ongoing
	Findings :	In progress
3.	Project Title :	Corporate Entrepreneurship in India: An Exploratory Study
	Sponsoring Agency :	UGC, New Delhi
	Coordinator (s) :	Prof.Govind Swaroop Pathak
	Project Value :	₹ 7.77 Lakhs

	Date of Commencement :	13 March, 2013 (1.4.13 to 30.4.15)
	Date of Completion :	Ongoing
	Objective :	To conduct anexploratory corporate entrepreneurship in India
	Status :	Ongoing
	Findings :	In progress
4.	Project Title :	A Framework of Entrepreneurial Success among aspiring Entrepreneurs of Micro-enterprises in Jharkhand Region
	Sponsoring Agency :	UGC, GOI.
	Coordinator (s) :	Dr.Niladri Das
	Project Value :	₹ 6.57 Lakhs
	Date of Commencement :	01.04.2013
	Date of Completion :	Ongoing
	Objective :	To develop a framework of entrepreneurial success for small and micro entrepreneurs in Jharkhand
	Status :	Ongoing
	Findings :	In progress
5.	Project Title :	Developing a Framework of Critical Indicators for Entrepreneurial Success of Science and Technology (S&T) Graduates in Eastern India
	Sponsoring Agency :	DST, GOI
	Coordinator (s) :	Dr.Niladri Das
	Project Value :	₹ 10.73 Lakhs
	Date of Commencement :	01.08.2014
	Date of Completion :	Ongoing
	Objective :	To develop a framework of Critical Indicators for Entrepreneurial Success of Science and Technology (S&T) Graduates in Eastern India
	Status :	Ongoing
	Findings :	In progress

3.14.5 RESEARCH PUBLICATIONS

3.14.5.1 Papers published in International Journals

Sl. No.	Author (s)	Year	Title	Journal	Vol. No.	Page No.
1	P. Pathak (with Tudu P N)	2015	Social network Sites: Can they enhance employee productivity in an organization?	Int. journal of management science and Infor. Technology	17	22-35
2	Chandan Bhar (with PariharShwetank)	2015	Climate Change and Project Risk: A Mutual Effect in Case of Electrical Transmission Line Installation Project	Current World Environment	10	581-587
3	Chandan Bhar (with Kundu, Nirmal , V Pandurangan)	2015	Managing Technology Transfer: An Analysis of Intrinsic Factors	South Asian Journal of Management	22	69-95
4	Chandan Bhar (with Singh, Ritika)	2016	System dynamics to turnaround an Indian Microfinance Institution	Kybernetes	45	411-433
5	Chandan Bhar (with Parihar, Shwetank)	2015	Development of Framework for Mitigating Production Bottleneck Related Risks: A Case Study on Thermosetting Plastic Products Manufacturing Firm	Management Insight	Vol XI	91-99

6	J.K.Pattanayak (with Kumari, P)	2015	Linking earnings management practices with corporate governance: A study of Indian public and private sector banks	VidyaBharati International Interdisciplinary Research Journal	4	63-75
7	J.K.Pattanayak (with Das, N)	2015	Corporate governance mechanism for academic institutions imparting higher education in India	International Journal of Management in Education	10	204-217
8	Govind Swaroop Pathak (with Yadav, R)	2016	Intention to purchase organic food among young consumers: Evidences from a developing nation	Appetite	96	122-128
9	Sandeep Mondal (with N.K. Srivastava, N.K)	2015	Predictive Maintenance Using Modified FMECA Method	Int. J. of Productivity and Quality Management	16	267-280
10	Sandeep Mondal (with N.K. Srivastava, N.K)	2015	Development of Predictive Maintenance Model for N-Component Repairable System Using NHPP Models and System Availability Concept	Global Business Review	17	1-11.
11	Niladri Das (with Ghosh, S)	2015	Effective Implementation of Performance Management in Higher Educational Institutions	Journal of Scientific Research and Development	2	17-21
12	Niladri Das (with Chatterjee, N)	2015	A Study on the Impact of Key Entrepreneurial Skills on Business Success of Indian Micro-entrepreneurs- A Case of Jharkhand Region	Global Business Review	17	1-12.
13	Niladri Das (with Raut, R K)	2015	Influence of Social Interaction on Behavior of Small Investors in Capital Market	Journal of Scientific Research and Development	2	38-41
14	Niladri Das (with Palit, S)	2015	Evaluating the Efficiency of Financial Inclusion (Special Reference to Jharkhand, India)	GadjahMada International Journal of Business (Gama IJB),	17	204-217
15	Niladri Das (with Pattanayak, J.K)	2015	Corporate Governance Mechanism for Academic Institutions Imparting Higher Education in India	International Journal of Management in Education	10	204-217
16	Niladri Das (with Daizy)	2015	Sustainability Reporting Practices in Indian Mining Companies	Current World Environment	10	642-655
17	Niladri Das (with Sadhu, M, Chakraborty, S, Sadhu, P)	2015	Role of Solar Power in Sustainable Development of India'	Telkonnika, Institute of Advance Engineering and Science	14	34-41
18	Niladri Das (with Chatterjee, N)	2015	Key Psychological Factors as Predictors of Entrepreneurial Success: A Conceptual Framework	Academy of Entrepreneurship Journal, Allied Academies, USA	21	102-114

19	Niladri Das (with Rashmi)	2015	Designing a Framework for Integrating Environmental Management with Drivers of Economic Performance: A Case Study of Indian Coal Mining Industry	International Journal of Energy Sector Management	9	376-392
20	Niladri Das (with Nag, D.)	2015	Development of Various Training Methods for Enhancing the Effectiveness and Skill Development among Micro entrepreneurs in India	Journal of Entrepreneurship Education, Allied Academies	18	1-18.
21	Niladri Das (with Akhatar, F, Thyagaraj, K.S.)	2015	A Review of Literature on Financial Investment Decisions of Individual Investor: Behavioural and Risk Related Explanations	International Journal of Applied Business and Economic Research	13	13-1.
22	Niladri Das (with Roy, R)	2016	Cultivating Evidence-Based Entrepreneurship Education (EBEE): A Review on Synchronization Process Behind Entrepreneurial Spirit	DLSU Business and Economics Review	25	98-114
23	K.S.Thyagaraj (with Peeyush Mehta, &KripaShanker)	2015	Managing Product Variety with Advance Selling and Capacity Restrictions	International Journal of Production Economics	170	287-296
24	Krishnendu Shaw (with Ravi Shankar, Surendra S. Yadav)	2016	Carbon constrained dual sourcing supplier selection problem: a Benders decomposition approach	International Journal of Logistics Systems and Management	Vol. 23 No. 3	363-393

3.14.5.2 Papers published in National Journals

Sl. No.	Author (s)	Year	Title	Journal	Vol. No.	Page No.
1	P. Pathak (with Pandey P., Singh S.)	2015	Ethical Leadership: the need for a new approach in Retail	Purushartha	VIII	91-99
2	P. Pathak (with Tudu P.N. and Pathak N)	2015	Making Management Teaching Effective – Issues and Challenges	Management Insight	11	1-5.
3	P. Pathak	2015	Administrative Wisdom in Ramayana	PrabuddhaBharata	120	307-313
4	ChandanBhar (with Kundu, Nirmal, VisvesvaranPandurangan)	2015	Development of Framework for an Integrated Model for Technology Transfer	Indian Journal of Science and Technology	8	-
5	J.K.Pattanayak (with Kumari, P)	2015	The trend of earnings management practices in the Indian financial sector	Indian Journal of Finance	9	44-54
6	J.K.Pattanayak (with Kumari, P)	2015	Earnings management and firm performance: an insight into Indian commercial banks	Journal of Scientific Research and Development	11	63-75

7	Govind Swaroop Pathak(with Yadav, R)	2015	Going green: A case study of information technology (IT) sector in India	International Journal of Applied Business and Economic Research	13	83-92
8	Saumya Singh (with Tara K)	2015	Green Banking : An approach towards Environmental Management	Prabandhan: Indian Journal of Management	7	19-34
9	Saumya Singh (with Tara K, Kumar, R,)	2015	Green Marketing : The New Strategic Imperative by Firms in India	Indian Journal of Marketing	45	19-34
10	Saumya Singh (with Shukla N, Pandey M)	2015	Service Laws and Working Women: Filling Inclusion Gaps in National Development	Vidyabharati International Interdisciplinary Research Journal	4	43-46
11	Saumya Singh (with Rahman M)	2015	CRM in Organised Retailing: Exploring the Customer Relationship Building Factors	Asian Journal of Research in Business Economics and Management	5	70-82
12	Saumya Singh (with Nandi S)	2015	Impact of Marketing Stimuli on Mobile Phone Buying Behaviour of Young Indian Adults: An EFA and CFA approach	Tattva: International Journal for Advanced Research in Commerce and Management	1	13-29
13	Saumya Singh (with Shrivastava A, Pare, S K,)	2015	A Study to Understand the Price Sensitive Buying Behaviour of Consumers	Pacific Business Review International	7	63-73
14	Niladri Das (with Raut,R K)	2015	Behavioural Perspective of Individual Investor Decision Making Process: A Review	Indian Journal of Finance	9	44-55
15	Bibhas Chandra (with Saha, S.,)	2015	Study on identification of the factors impacting blood donation in Jharkhand, India	Indian Journal of Fundamental and Applied Life Sciences	5	1-4.
16	Bibhas Chandra (with Ghose, A.)	2015	Identification of the Factors Building Consumers' Perception on Green Durable Products: A Short Communication.	Indian Journal of Fundamental and Applied Life Sciences	5	1589-1592
17	Bibhas Chandra (with Saha, S., Mukherjee, K.,)	2015	Channel Distribution Performance in Cold Chain Management: A Comparative Scenario between Two States of India	Indian Journal of Marketing	45	19-35
18	Bibhas Chandra (with Dasgupta, A)	2015	Unfolding consumption dynamics of handmade in India: A correspondence analysis	Vidyabharati International Interdisciplinary Research Journal	4	27-38

19	Bibhas Chandra (with Jana, A.)	2016	Mediating Role of Customer Satisfaction in the Mid-market Hotels: An Empirical Analysis	Indian Journal of Science and Technology	9	1-16
20	Bibhas Chandra (with Dasgupta, A)	2016	Indian Consumers of Handicrafts shaped by Globalization: A profiling based on Materialism, Consumer Ethnocentrism and World-mindedness.	Indian Journal of Science and Technology	9	1-14
21	Bibhas Chandra (with VivekVerma)	2016	Hotel Guest's Perception and Choice Dynamics for Green Hotel Attribute: A Mix Method Approach	Indian Journal of Science and Technology	9	1-9
22	Mrinalini Pandey (with Anuradha)	2015	A Review of work-life balance practices prevalent in public sector undertakings in India	Prabhandhan: Indian Journal of Management	8	49-56
23	Mrinalini Pandey (with A Giri)	2015	Effect of Contemporary issues and challenges on yoga awareness and acceptance in Indian urban market: An empirical study	Journal of Marketing Vistas	5	66-78
24	Mrinalini Pandey (with S Jerath)	2015	Rural Women Psychology and Emotional Contents in Indian Television Advertisements	Media Watch	6	182-192
25	Mrinalini Pandey (with A Giri)	2015	Effect of Contemporary Issues and Challenges on Yoga Awareness and Acceptance in Indian Urban Market: An Empirical Study	Journal of Marketing Vistas. The Institute of Public Enterprise (IPE)	5	66-78
26	Mrinalini Pandey (with S Jerath)	2015	Emotional Response of children of semi urban area to contents of television advertisement and psychology towards brand	Vidyabharati International Interdisciplinary Research Journal	4	7-11.
27	Mrinalini Pandey (with N Shukla and S Singh)	2015	Service Laws And Working Women: Filling Inclusion Gaps In National Development	Vidyabharati International Interdisciplinary Research Journal	4	43-46
28	Mrinalini Pandey (with G Malla)	2015	Backward Integration Of Short Shelf Life Period Perishables At Supermarkets: A Case Study	I-manager's Journal on Management	10	33-43

29	Mrinalini Pandey (with A. Giri)	2016	Relationship Marketing as an Effective Promotional Tool of Yoga Marketing in Indian Urban Market: An Empirical Study	Indian Journal of Marketing	46	33-43
30	Mrinalini Pandey (with S. Kumar)	2015	The Impact of Price Endings on The Customers Perception and Their Buying Behavior: A Study	Vidyabharati International Interdisciplinary Research Journal	4	99-107
31	Mrinalini Pandey (with Anuradha)	2015	A Study on Work-Life Conflict among Women Employees Working in a Leading Private Manufacturing Firm	Vidyabharati International Interdisciplinary Research Journal	4	115-128
32	Mrinalini Pandey (with P Rajan)	2015	Jharcraft as a promoter of Entrepreneurship: An Exploration	SMS journal of Entrepreneurship and innovation	1	93-98
33	K.S.Thyagaraj (with Ahmad A)	2015	Consumers Intention to Purchase Green Brands: the roles of environment concern, environmental knowledge and self-expressive benefits	Curr World Environ	10	-

3.14.5.3 Papers presented in International Seminars/Conference

Sl. No.	Author (s)	Title	Seminar/ Conference	Date	Place
1	P. Pathak	Reinventing Self for Stress Management	International Conference ICISSS 2015	19-21 October, 2015	Newnham College, Uni. of Cambridge
2	Govind Swaroop Pathak (with Kumar, Rajesh)	Barriers to Intrapreneurship in India: An Exploratory Study	14th European Congress of Psychology	7 th -10 th , July, 2015	Milan, Italy
3	Govind Swaroop Pathak (with Kumar, Rajesh)	Intrapreneurship as a challenge for the HR Function: A case study of an IT organization in India	14th European Congress of Psychology	7 th -10 th , July, 2015	Milan, Italy
4	Govind Swaroop Pathak (with Srivastava, M. & Vyas, R)	Factors influencing empowering leadership behavior: a study of team leaders' locus of control, team members' task characteristics, tenure and power distance	14th European Congress of Psychology	7 th -10 th , July, 2015	Milan, Italy
5	Govind Swaroop Pathak (with Srivastava, K.B.L.)	The Impact of Transformational Leadership and Organizational Culture on Employee Engagement and Psychological Well Being	14th European Congress of Psychology	7 th -10 th , July, 2015	Milan, Italy

6	Govind Swaroop Pathak (with Yadav, R..)	Environmental sustainable practices among service sector organizations in India: A study of select organizations	3 rd World PAN-IIM	December 16-18, 2015	Indian Institute of Management Indore, Madhya Pradesh, India
7	Saumya Singh	Making Advertising Ethical	International Conference ICISSS 2015	19-21 October, 2015	Newnham College, University of Cambridge
8	Sandeep Mondal (with Ankita Ray)	An impact of buyback price on managing spare parts in remanufacturing business	Proceedings of the International Conference on Remanufacturing	14 – 16 June, 2015	Amsterdam
9	Sandeep Mondal (with Kampan Mukherjee, Kaustav Chakraborty)	Impact on various issues on extending the useful life of a product through product recovery options	Proceedings of the International Conference on Remanufacturing	14 – 16 June, 2015	Amsterdam
10	Sandeep Mondal (with Md. Tanweer Ahmad)	Pre-evaluation study of Dynamic Supplier under Two-echelon System	XIX Annual Int.Conference of the Society of Operations Management	December 11-13, 2015	IIM, Kolkata, India
11	Sandeep Mondal (with AparnaChoudhary, Kampan Mukherjee)	Study of Factors Influencing the Performance of Green Supply Chain Management- An ISM approach	XIX Annual Int.Conference of the Society of Operations Management	December 11-13, 2015	IIM, Kolkata, India
12	Sandeep Mondal (with Ankita Ray)	Possible business proposition of managing e-waste in India	Int.Conference on E-Business and Supply Chain Competitiveness (EBSCC 2016)	12-14 February 2016	IIT Kharagpur& POMS India Chapter
13	Sandeep Mondal (with Kaustov Chakraborty, Kampan Mukherjee)	Analysis of product design characteristics in remanufacturability: A case study	International Conference on E-Business and Supply Chain Competitiveness (EBSCC 2016)	12-14 February 2016	IIT Kharagpur& POMS India Chapter
14	Sandeep Mondal (with Ankita Ray)	An evaluation of buyback price for OEM in spare parts	4th Int. Conf. on "Computing, Communication and Sensor Network', CCSN2015	24th-25th December 2015	Kolkata, India
15	K.S.Thyagaraj (with Samir Gokarn)	Interpreting the Performance of Fresh Produce Supply Chain Management	XIX Annual Conf. of the Society of Operations Management	11-13 Dec., 2015	Indian Institute of Management Calcutta,Kolkata, India
16	Krishnendu Shaw (with Rajak. Manindra)	Study of Technology Acceptance Model (TAM) for mHealth Adoption	XIX Annual International Conference of Society of Operations Management	11-13 Dec., 2015	Indian Institute of Management Calcutta,Kolkata, India

3.14.5.4 Papers Presented in National Seminars/Conference

Sl. No.	Author (s)	Title	Seminar/Conference	Date	Place
1	Govind Swaroop Pathak	Subjective Well Being in Management Students. Paper presented in the Invited Symposium on 'Advances in Positive Organizational Behaviour'	Silver Jubilee Convention of National Academy of Psychology 2015-16	February 2-5, 2016	Department of Psychology and Centre of Behavioural and Cognitive Sciences, University of Allahabad, Allahabad.

***Accepted for Publication/Communicated papers are NOT to be included.**

3.14.6 MAJOR ACADEMIC CONTRIBUTIONS

Distinctions (Academic/Professional or otherwise) received during the year:

- a) Invited to write a Testimonial for the Famous Textbook in Human Resource Management by Dessler:

Pearson India Education Services Private Limited, India. Invited Dr. Govind Swaroop Pathak to write a testimonial for The fourteenth edition of Human Resource Management by Gary Dessler is being adapted by Professor Biju Varkkey from IIM-A for the Indian subcontinent and will be published very shortly.

- b) Invited to review an article for International Journal of Indian Culture and Business Management as anonymous reviewer:

Dr. Govind Swaroop Pathak was invited to review a research article for International Journal of Indian Culture and Business Management as anonymous reviewer

- c) Invited to review an article for International PAN IIM World Management Conference as anonymous reviewer:

Dr. Govind Swaroop Pathak was invited to review a research article International PAN IIM World Management Conference 2015 organized by IIM Indore as anonymous reviewer

- d) Invited to be a Member of the Advisory & Editorial Board of Amity Journal of Human Resource Management:

Dr. Govind Swaroop Pathak was invited to be a member of the Advisory & Editorial Board of Amity Journal of Human Resource Management published by Amity International Business School, Amity University

3.14.7 SEMINARS, SYMPOSIA, WORKSHOPS, CONFERENCE ORGANISED BY THE DEPT/CENTRE

Workshop on Stress Management	18/02/2016.
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3.14.8 PARTICIPATION OF FACULTY/OFFICERS/STAFF IN SEMINARS/ CONFERENCES

Dr Sandeep Mondal	International Conference on Remanufacturing	14-16 June 2015	Amsterdam
Dr Sandeep Mondal	XIX Annual International Conference of the Society of Operations Management,	11-13 December 2015	IIM Kolkata
Dr Sandeep Mondal	International Conference on E-business and Supply chain Competitiveness (POMS)	12-14 February 2016	IIT Kharagpur

3.14.9 VISITS OF FACULTY MEMBERS ABROAD

- Pramod Pathak published “Reinventing Self for Stress Management” in the conference proceedings of International Conference ICISSS 2015 held at Newnham College, University of Cambridge during 19-21 October, 2015
- Govind Swaroop Pathak presented “Barriers to Intrapreneurship in India: An Exploratory Study” in the 14th European Congress of Psychology, organized at the Milan, Italy during 7th -10th , July, 2015
- Govind Swaroop Pathak presented “Intrapreneurship as a challenge for the HR Function: A case study of an IT organization in India” in the 14th European Congress of Psychology, organized at the Milan, Italy during 7th -10th , July, 2015
- Govind Swaroop Pathak presented “Factors influencing empowering leadership behavior: a study of team leaders’ locus of control, team members’ task characteristics, tenure and power distance” in the 14th European Congress of Psychology, organized at the Milan, Italy during 7th -10th , July, 2015
- Govind Swaroop Pathak presented “The Impact of Transformational Leadership and Organizational Culture on Employee Engagement and Psychological Well Being” in the 14th European Congress of Psychology, organized at the Milan, Italy during 7th -10th , July, 2015
- Saumya Singh published “Making Advertising Ethical” in the conference proceedings of International Conference ICISSS 2015 held at Newnham College, University of Cambridge during 19-21 October, 2015
- Dr. Sandeep Mondal, Associate Professor participated and present a paper entitled, “An impact of buyback price on managing spare parts in remanufacturing business”, International Conference on Remanufacturing, Amsterdam, Netherlands, jointly organized by University of Strathclyde, Glasgow, Linkoping University, Sweden and ReMaTec, Amsterdam from June 14-16, 2015

3.14.10 DISTINGUISHED VISITORS TO THE SCHOOL (INDICATING OCCASION/ PURPOSE)

Prof. Gautam Gangopadhyay, UNSW Australia Business School	Workshop on Business Forecasting, 7-8 Dec, 2015
Shri P.K. Lahiri, Retired IAS officer, Ex. Chairman I.S.M, Dhanbad	Imperatives of Ethics and Morality in Managerial Decision Making, 26 Aug, 2015

3.14.11 SPECIAL LECTURES BY DISTINGUISHED GUESTS

Prof. Prabal K. Sen, XLRI, Jamshedpur	Entrepreneurship
Dr. T.K Lahiry, CMD, BCCL	Strategy
Dr. A.K. Dubey, Additional Secretary, Ministry of Coal,GOI	Reinventing the Coal Sector

DEPARTMENT OF MECHANICAL ENGINEERING

3.15.1 ABOUT THE DEPARTMENT

The Department of Mechanical Engineering is the offshoot of the erstwhile Engineering Department that existed since the time of establishment of the institute. The Department offers B.Tech. programmes, M.Tech. programmes and Ph.D. programmes. The Department strives to maintain a high standard of teaching and research at all the levels.

3.15.1.1 Vision

The Department of Mechanical Engineering strives to attain national and international recognition for its superior education ambience, state-of-the-art facility for research, and academic programs that imparts ability to deliver the solutions for advancement, and Social sustenance.

3.15.1.2 Mission

- To enable graduates and post-graduates students for successful engineering career by inculcating sound technical knowledge to pursue life-long learning, serve the profession and meet intellectual, ethical and career challenges.
- To create and maintain state-of-the-art research facilities to provide students and faculty members with opportunities to create, interpret, apply and disseminate knowledge for the benefit of the society.
- To foster R&D activities to disseminate the technology through publications, providing technical expertise and training academic/industry personnel through professional courses.

3.15.2 FIELD VISITS/EXCURSIONS/TRAINING PROGRAMMES UNDERTAKEN BY STUDENTS

Particulars	Batch of Students	Place of Visit	Period of visit
Field Visit of 3rd Year B.Tech (Mechanical Engineering) Students	2012	Chittaranjan Rly. Works shop	One day
Thermal Power Plant Visit	M.Tech (Thermal Engg) 2014-15 batch	Chandrapura Thermal Power Plant	One day April 2015
Industrial Visit to Sinidih workshop of BCCL	M.Tech (Specialization MET)2014-15 batch	Sinidih workshop of BCCL	Half day Visit (5 th March, 2016)

3.15.3 INTRODUCTION OF NEW COURSES AND PROGRAMMES, IF ANY (GIVE COURSE OUTLINE).

Three year M.Tech course in Mechanical Engg. for working Executives have been initiated for working executives and academicians since July, 2015. Currently, seventeen candidates are pursuing this course.

3.15.4 BEST PRACTICES OF THE DEPARTMENT

- Encourage students to take part in technical competition of national/international importance by actively involving and guiding students providing available infrastructure and workmanship.
- Encourage students to attend national and international seminars/ conferences/symposium and to present paper both for general forum and student's level competitions.
- Inculcate student's innovative minds in computational research work through latest softwares like FEM, CFD, CATIA, COMSOL, and MATLAB.
- Encourage students in organizing technical competition in ISM (national level) where students from various Institutions from India can participate.
- Motivate the UG students to pursue Post Graduate studies in India and abroad.

3.15.5 BRIEF LIST OF ON-GOING R&D PROJECTS (PROJECT VALUE ₹ 5,00,000/- AND ABOVE)

1.	Project Title : Study, investigation and development of machining parameters of FRP composites using a laser to maintain better surface integrity Sponsoring Agency : DRDL (DRDO) Coordinator (s) : Dr. A. K Das (PI) and Dr. A.R. Dixit (Co-PI) Project Value : ₹ 9.77 Lakhs Date of Commencement : 15/12/2015 Date of Completion : 15/06/2017 Objective : Optimization of laser cutting parameters of FRP composites Status : Ongoing Findings : In progress
2.	Project Title : Wear & Friction Study of Nano Composites Sponsoring Agency : University Grant Commission (U G C), New Delhi Coordinator (s) : Dr. K. K. Singh Project Value : ₹ 6.85 Lakhs Date of Commencement : 1st April 2014 Date of Completion : On-going Objective : To study the wear & Friction study of Advanced Material (Composite & Nano Materials) for application in the field of automobiles and aircraft industry. Status : On-going Findings : In progress
3.	Project Title : Synthesis and characterization of dental polymeric nanocomposite materials Sponsoring Agency : DST, Govt. of India Coordinator (s) : Ashis Mallick Project Value : ₹ 54 lakhs

	Date of Commencement :	February, 2014
	Date of Completion :	February, 2018
	Objective :	Synthesis & Characterization of dental materials
	Status :	Ongoing
	Findings :	Chemical and mechanical properties
4.	Project Title :	Modal control of composite structure
	Sponsoring Agency :	DST (SERC)
	Coordinator (s) :	Dr P. K. Mahato
	Project Value :	₹ 27.10 Lakhs
	Date of Commencement :	1.12.2014
	Date of Completion :	31.3.2017
	Objective :	To control the damaging mode of structure
	Status :	Ongoing
	Findings :	In progress
5.	Project Title :	Design and fabrication of an experimental facility for measurement of acoustic impedance of afterburner screech liner
	Sponsoring Agency :	DRDO
	Coordinator (s) :	R N Hota
	Project Value :	₹ 99.5 lakhs
	Date of Commencement :	1st Jan 2016
	Date of Completion :	31st Dec 2017
	Objective :	Constructing a test facility in order to test the attenuation/damping capability of screech liner to be used inside afterburner of a turbo jet engine of a jet fighter as a foundation for deeper research into acoustics of cylindrical shell with perforated liner.
	Status :	On going
	Findings :	In progress
6.	Project Title :	Critical Analysis of heat distribution in submerged Arc Welding Process
	Sponsoring Agency :	UGC
	Coordinator (s) :	Dr.Somnath Chattopadhyaya
	Project Value :	₹ 10.16 Lakh
	Date of Commencement :	01.04.2013
	Date of Completion :	31.03.2016
	Objective :	To record Heat dissipation through Infra Red Camera
	Status :	ongoing
	Findings :	Mechanical properties of the weld.

3.15.6 Important Collaborative Works

Organization / Lab	Nature of interaction
Politecnico di Torino, Italy	Research collaboration
University of Maribor, Slovenia	Joint PhD programme under Erasmus Mundas of Md. Shariq (ISM JRF) [Guide : Dr A R Dixit; Co-Guide : Dr. Rebeka Rudolfa (University of Maribor, Slovenia) and Dr S. Chattopadhyaya (ISM, Dhanbad)
Department of Material Disintegration, Institute of Geonics, Czech republic and Technical University of Kosice, Slovakia	Joint PhD programme under MOU Student 1.Ms Madhulika Srivastava (ISM JRF) 2.Ms.Rupam Tripathy [Guide : Dr S. Chattopadhyaya; Co-Guide : Dr. Sergej Holch and Dr A R Dixit (ISM, Dhanbad) 3. Ms.Shakuntala Nahak (Part Time Research Scholar) – Guide – Dr.Somnath Chattaopadhyaya, CoGuide-

	<p>Prof.Sergej Hloch of Technical University of Kosice and Dr.Saurabh Dewangan, Graphic Era University, Dehradun, Uttarakhand.</p> <p>Ms.Madhulika Srivastava and Ms.Rupam Tripathi will be leaving for Ostrava, Czech Republic in 16th March,2016 for three month research work at the Institute of Geonics under their external guide Prof.Sergej Hloch.</p> <p>Four undergraduate students of III Year Mechanical Engineering have been invited in March,2016 for their summer training assignment in the Institute of Geonics, Czech Republic from May,2016 to July,2016.</p>
City University of London, UK	<p>Collaborative work on “Application of Dynamic Stiffness Method on Free vibration analysis of Levy plate” under Erasmus Mundus AREAS+ program at City University London, UK during 18 June-17 July 2015</p> <p>Collaborator: Prof. J. R. Banerjee, Department of Mechanical Engineering and Aeronautics, City University London, London, United Kingdom</p>
Institute of Geonics, Ostrava, Czech Republic	MoUs already signed.
Technical University of Kosice, Slovakia	MoUs already signed.
University of Osijek, Croatia	MoUs already signed.
University of Poznan, Poznan, Poland	MoUs will be signed shortly.
Opole University, Poland	<p>Dr.Somnath Chattopadhyaya and Dr.Amit Rai Dixit along with Prof.Sergej Hloch and Prof.Grzegorz Krolczyk met Vice Rector of Opole University, Opole, Poland on 5th June, 2015 to initiate joint talk related to MoU with ISM, Dhanbad.</p>
WORTH Project of European Union	<p>Dr.Somnath Chattopadhyaya and Dr.Amit Rai Dixit were invited speakers in the Second WORTH (Water jet as an ORTHopaedic technique) workshop at Presov, Slovakia organised on problems related to the revision surgery and to the bone cement demolition. The workshop was funded by Danube Region Project Fund partly financed by European Union during 7th to 9th June, 2015.</p>
Aalto University, Helsinki, Finland	<p>Joint M.Tech carried out with co-guides from Prof.Pedro Vilaca, Aalto University, Helsinki, Finland</p> <p><u>Already awarded M.Tech Degree</u></p> <p>Name of the M.Tech Students :</p> <ol style="list-style-type: none"> 1. Madhulika Srivastava (Dr.Somnath Chattopadhyaya of ISM and Prof. Pedro Vilaca of Aalto University Finland) – M.Tech Awarded in May,2015 2. Rupam Tripathi (Dr.Somnath Chattopadhyaya of ISM and Prof. Pedro Vilaca of Aalto University Finland) - M.Tech Awarded in May,2015 3. Mohd. Shariq (Dr.Somnath Chattopadhyaya of ISM and Prof. Pedro Vilaca of Aalto University Finland) - M.Tech Awarded in May,2015

Aachen University, Germany	Mohd. Shariq, Full time research scholar of ISM working under Dr.Amit Rai Dixit and Dr.Somnath Chattopadhyaya and Rebecca Rudolpha of Maribor University, Slovenia went to University of Maribor of Slovenia for 18 months under Erasmus Mundus – Euphrates II Cohort project and will be doing project in Aachen University of Germany for one month under this 18 month mobility period as a part of the assignment from University of Maribor.
University of Maribor,Slovenia	Communication has been initiated for a possible MoU with ISM, Dhanbad.
Transilvania University of Brasov,Romnia	In January, 2016 Dr.Somnath Chattopadhyaya became a member of the International Scientific Committee of the computing and solutions in manufacturing engineering – CoSME '16 Conference to be held in Transilvania University of Brasov, Romnia during 03-04, 2016 Brasov, Romania.
Books published with Co-authorship of Foreign Authors	Title “Hydro Abrasive Cutting – a surface structure study” Authors – Sergej Hloch, Peter Monka – Slovakia Grzegorz Krolczyk – Poland Drazan Kozak, Ivan Samardzic, Antun Stoic – Croatia Aleksandar Sedmak – Serbia Somnath Chattopadhyaya – India Publisher – Victoria Publishing House, May 2015.
Papers published in SCI Journals with the co-authorship of foreign universities	

1. Authors : Andrijana Djurdjevic · Srdjan Tadic · Ratnesh Kumar · Somnath Chattopadhyaya · Sergej Hloch · Aleksandar Sedmak · Elisaveta Donceva,	Title of the paper: Heat input effect of friction stir welding on aluminium alloy AA 6061-T6 welded joint, J. of Thermal Science, DOI: 10.2298/TSCII50814147D, 2015, Impact Factor – 1.22
2. Authors : Ratnesh Kumar, Somnath Chattopadhyaya, Sergej Hloch, Grzegorz Krolczyk, Stanisław Legutko	Title of the paper: Wear characteristics and defects analysis of friction stir welded joint of aluminium alloy 6061-T6, EKSPLOATACJA I NIEZAWODNOSC - maintenance and reliability, vol. 18(1), pp. 128-135, 2016, Impact Factor 0.98.
Arrangement of International Conference on Manufacturing Engineering and Materials, ICMEM 2016 to be held at Novy Smokovec,High Tatras, Slovakia during 6 th – 10 th June,2016 Partners: <ol style="list-style-type: none"> Institute of Geonics of the Czechoslovakian Academy of Science, v.v.i, Ostrava-Poruba, Czech Republic (having MoU with ISM) Faculty of Mechanical Engineering Opole, Poland Indian School of Mines, Dhanbad, India 4. International TEAM Society 	
Department of Material Disintegration, Institute of Geonics, Ostrava, Czech Republic	Somnath Chattopadhyaya along with his colleague Dr.Amit Rai Dixit carried out one month Post-Doctoral research in High Pressure Water Jet Machining from 15 th May, 2015 to 15 June, 2015.

3.15.7 IMPORTANT NEW EQUIPMENT ACQUISITIONED (ABOVE ₹ 5,00,000/-)

Name of Equipment	Purpose	Date of Purchase	Value (₹)
Ultrasonic flow meter (Portlok 7s)	Non destructive type fluid flow measurement in a pipe	13.10.15	6.98 Lakhs
Real Time Transient Analysis Experimental Setup for Pipe Network	Real time Pressure and flow measurement in a pipe network	13.10.15	9.48 Lakhs
Nano/Micro indenter	Mechanical characterization of polymeric material	November, 2015	42 lakhs
MIG/MAG TIG& MMA Multipurpose Welding Machine	Welding	01.07.2015	6.095 Lakhs
CNC Cutting System	Profile cutting	30.09.2015	6.381 Lakhs
Dspace controller 1104 ACE kit	Vibration control	12.02.2016	6 Lakh
Dell workstation T1700	CAD Lab , Mechanical Engg	August 2016	62,09,940

3.15.8 RESEARCH PUBLICATIONS

3.15.8.1 Books published

Hydro Abrasive Cutting – a surface structure study

Authors - Sergej Hloch, Peter Monka – Slovakia

- Grzegorz Krolczyk – Poland
- Drazan Kozak, Ivan Samardzic, Antun Stoic – Croatia
- Aleksandar Sedmark – Serbia
- Somnath Chattopadhyaya – India

Publisher - Victoria Publishing House, May, 2015.

3.15.8.2 Book reviews / contribution of chapters in a book

Ghosh, S. K., Das, A. K., & Saha, P. (2015). Selective Laser Sintering: A Case Study of Tungsten Carbide and Cobalt Powder Sintering by Pulsed Nd: YAG Laser. In Lasers Based Manufacturing (pp. 441-459). Springer India.

3.15.8.3 Papers published in International Journals

Sl. No.	Author (s)	Year	Title	Journal	Vol. No.	Page No.
1.	D. Kumar and S. Sarkar	2016	A review on the Technology, Performance, design optimization, Reliability, Techno-Economics and Environmental impacts of hydrokinetic energy conversion systems	Renewable & Sustainable Energy Reviews, ELSEVIER	58	796–813

2.	Mandal, A., Dixit, A. R., Das, A. K., & Mandal, N.	2015	Modeling and Optimization of Machining Nimonic C-263 Superalloy using Multicut Strategy in WEDM	Materials and Manufacturing Processes	Vol. 31, issue 7	1-9
3.	Pankaj Kumar, Manowar Hussain, Purushottam Kumar Singh, Alok Kumar Das	2015	A New Method for Modeling of Cathode and Anode Erosion in Micro-EDM Process	International Journal of Applied Engineering Research	Vol. 10	21115-19
4.	Anuj Sharma, Arun K. Tiwari; Amit R. Dixit	2016	Rheological Behaviour of Nanofluids: A Review	Renewable and Sustainable Energy Reviews,	Vol. 53	779-791
5.	Anuj Sharma, Arun K. Tiwari; Amit R. Dixit,	2015	Progress of nanofluids in machining: A review	Materials and Manufacturing Processes	Vol. 30, Issue 7	813-828
6.	Vikram Sharma, Amit Rai Dixit, Mohd. Asim Qadri and sanjay Kumar	2015	An interpretive hierarchical model for lean implementation in machine tool sector	International Journal of Productivity & Quality Management,	Vol 15, No. 3,	381-406
7.	Anuj Kumar Sharma, Arun Kumar Tiwari, Amit Rai Dixit	2015	Improved Machining Performance with Nanoparticle Enriched Cutting Fluids under Minimum Quantity Lubrication (MQL) Technique: A Review	Materials Today: Proceedings	Vol. 2, Issues 4–5	3545-3551
8.	Anuj Kumar Sharma, Arun K. Tiwari, A. R. Dixit	2015	Mechanism of Nanoparticles functioning and Effects in Machining	Materials Today: Proceedings	Vol. 2, Issues 4–5	3539-3544
9.	Rajesh Bajaj, Arun Kumar Tiwari, Amit Rai Dixit	2015	Current trends in electric discharge machining using micro and nano powder materials- A Review"	Materials Today: Proceedings	Vol. 2, Issues 4–5,	3302-3307
10.	K. K. Singh	2015	Damage Tolerance and Microscopy Study of Glass Fibre Reinforced Polymer Laminates	Journal of Materials Science and Engg A & B	Vol. 5, Issue 8 ,	pp 305-310,
11.	Sandeep Agrawal, K. K. Singh & P. K. Sarkar	2015	A comparative study of wear and friction characteristics of glass fibre reinforced epoxy resin, sliding under dry, oil-lubricated and inert gas environments	Journal of Tribology International, Elsevier	Vol. 96,	Pages 217-224
12.	Nishant K. Singh & K. K. Singh	2015	Review on Recent Development in Environmental-friendly EDM Techniques	Acta Mechanica Slovaca.	Vol. 19, Issue 3	Pages 54–66
13.	P. S. Shinde, P. Kumar, K. K. Singh, V. K. Tripathi & P. K. Sarkar	2015	Experimental Study of CFRP patches bonded on a cracked Aluminum alloy panel	Composite Interfaces	Vol. No. 22, and Issue- 4,	Pages 233-248

14.	Nand Kishore Singh & K. K. Singh	2015	Review on impact analysis of FRP composites validated by LS-DYNA	Polymer Composites	Vol. 36, Issue 10,	pp 1786-1798
15.	A.Mallick, S.Ghosal, P. K. Sarkar & R. Ranjan	2015	Homotopy Perturbation Method for Thermal Stresses in an Annular Fin with Variable Thermal Conductivity	J. of Thermal Stresses	38	110-132
16.	P. K. Roy, H. Mondal, A. Mallick	2015	A decomposition method for convective–radiative fin with heat generation	Ain Shams Engineering Journal	6	307-313
17.	P. K. Roy, A. Das, H. Mondal, A. Mallick	2015	Application of homotopy perturbation method for a conductive–radiative fin with temperature dependent thermal conductivity and surface emissivity	Ain Shams Engineering Journal	6	1001-1008
18.	Vates U. K, Singh N. K. and Tripathi B.N	2015	“Surface Finish Analysis of D2 Steel in WEDM using ANN & Regression Modelling with influence of Fractional Factorial Design of Experiment”	International Journal of Engineering Trends and Technology	Vol.19 No.3	159-167
19.	Tripathi BN, Singh NK.	2015	Surface Roughness Influencing Process Parameters & Modeling Techniques for Four Stroke Motor Bike Cylinder Liners during Honing: Review	International Journal of Mechanical & Mechatronics Engineering	Vol 15 No 01	106-112
20.	Danial N A Singh,N K. and Vates U K	2015	Parametric optimization & simulation of mild steel cup in deep-drawing using LS-Dyna	International Journal of Applied Engg. Research	Vol 10 No 9	24479-24489
21.	Tripathi B N and Singh N. K	2015	Experimental investigation of Surface roughness of cylinder liner for HT 100 material using RSM Technique	International Journal of Applied Engineering Research	Vol 10 No 18	39239-39246
22.	Swati and N. K. Singh”	2015	Gas Metal Arc Welding Process: Review of historical and recent development	International Journal of Applied Engg. Research	Vol. 10 No 23	43722-43725
23.	E. Carrera, M. Filippi, P. K. Mahato, A. Pagani	2016	Accurate static response of single- and multi-cell laminated box beams	Composite Structure	Vol. 136	372-383
24.	S. Biswas, P. Jana and A. Chatterjee	2016	Hysteretic damping in an elastic body with frictional microcracks	Int. Journal of Mechanical Sciences	108-109	61–71
25.	Ashish Narayan & Rakesh Kumar	2015	Comparative Numerical Analysis Of Heat Flux Measurement Over An Aerodynamics Vehicle Surface	Int. Journal of Applied Engg Research, ISSN: 0973-4562, Indexed in SCOPUS list	10	30725-30744

26.	M.L. Chandravanshi and A. K. Mukhopadhyay	2015	Experimental modal analysis of the vibratory feeder and its structural	International Journal of Applied Engineering Research	Vol. 10, Number 13 (2015)	pp 33303 - 33310
27.	Ankit Kotia, Subrata Kumar Ghosh	2015	Experimental analysis for rheological properties of aluminium oxide (Al ₂ O ₃)/gear oil (SAE EP-90) nanolubricant used in HEMM	Industrial Lubrication and Tribology	67/6	600-605
28.	Vikas Kumar, Arun Kumar Tiwari, Subrata Kumar Ghosh	2015	Application of nanofluids in plate heat exchanger: a review	Energy Conversion and Management	105	1017-1036
29.	Mayukh Sarkar, Rakesh Kr. Shaw, and Subrata Kr. Ghosh	2015	Numerical Analysis of stresses in Mine Excavator Bucket	Journal of Mining Science	51/2	309-313
30.	Deepak Kumar Mandal, Antonio Criscione, C. Tropea, A. Amirfazli;	2015	Shedding of water drops from a surface under icing conditions;	Langmuir	31	9340–9347.
31.	I. V. Roisman, Antonio Criscione, C. Tropea, Deepak Kumar Mandal, A. Amirfazli;	2015	Dislodging a sessile drop by a high-Reynolds-number shear flow at subfreezing temperatures;	Physical Review E	92	023007 (1-5)
32.	S. Narayanan, P. Chaitanya, S. Haeri, P. Joseph, J. W. Kim, C. Polacsek	2015	Airfoil noise reductions through leading edge serrations	Physics of Fluids	27	025109-1 to 025109-17
33.	Edin Michael, S. Narayanan, Abdul Jaleel. H,	2015	Numerical simulation of jet flow impinging on a shielded Hartmann whistle	Int. Journal of Aeronautical and Space Sciences	16(2)	123-136
34.	Singh S.N and D.K.Singh	2015	Conjugate Free Convection with Surface Radiation in Open Top Cavity	Int. Journal of Heat and Mass Transfer	89	444-453
35.	Singh S.N and D.K.Singh	2015	Study of Combined Free Convection and Surface Radiation in Closed Cavities Partially Heated from Below	IIETA Int. Journal of Heat and Technology	33(2)	1-8
36.	S Sen, S Mittal	2015	Effect of mass ratio on free vibrations of a square cylinder at low Reynolds numbers	Journal of Fluids and Structures	54	661-678
37.	RK Jaiman, S Sen, PS Gurugubelli	2015	A fully implicit combined field scheme for freely vibrating square cylinders with sharp and rounded corners	Computers and Fluids	112	1-18
38.	N. Kumar, K. Dasgupta, S.K. Ghoshal	2015	Dynamic analysis of a closed circuit hydrostatic summation drive using bent axis motors	Proc. of the Institution of Mechanical Engineers, Part	Vol. 229 (8)	761–777

				I: Journal of Systems and Control Engineering.		
39.	Jay Prakash Tripathi, Sanjoy K. Ghoshal and K. Dasgupta	2015	Towards energy savings of a hydraulic lifting system: A bond graph simulation,	Int. Journal of Applied Engineering Research	Vol. 10 No. 24	21096-21101
40.	Mukul Kumar, Randip K Das	2015	Thermodynamic Investigation of Diffusion Absorption Refrigeration Technology With Triple Fluid	Int.Journal of Applied Engineering Research ISSN 0973-4562	Vol. 10, Number 1	451-468
41.	Ramesh P. Sah, Biplab Choudhury, Ranadip .Das	2015	A review on adsorption cooling systems with silica gel and carbon as adsorbents	Renewable and Sustainable Energy Reviews	45	123–134
42.	Anirban Sur and Randip K. Das	2015	Numerical Modeling and Thermal Analysis of an Adsorption Refrigeration System	Int.Journal of Air-Conditioning and Refrigeration	Vol. 23, No. 04	01-11
43.	Ratnesh Kumar, Somnath Chattopadhyaya, Sergej Hloch, Grzegorz Krolczyk, Stanisław Legutko	2016	Wear characteristics and defects analysis of friction stir welded joint of aluminium alloy 6061-T6	EKSPLOATA CJA I NIEZAWODNOSC - maintenance and reliability	vol. 18(1)	128-135

3.15.8.4 Papers presented in International Seminars/Conferences

Sl. No.	Author (s)	Title	Seminar/Conference	Date	Place
1.	Pankaj Kumar, Purushottam Kumar Singh, Manowar Hussain, Nirmal Kumar Singh, Alok Kumar Das	“Investigation of Surface Integrity and Material Transfer of Nickel Sheet Using micro-EDM Process”	International Conference on Precision, Meso, Micro and Nano Engineering	December 10-12, 2015	IIT Bombay
2.	Purushottam Kumar Singh, Pankaj Kumar, Manowar Hussain, Harish Bishwakarma, Nirmal Kumar Singh, Alok Kumar Das	“Synthesis and characterization of Copper nanoparticle by electrochemical discharge process”	International Conference on Precision, Meso, Micro and Nano Engineering	December 10-12, 2015	IIT Bombay
3.	Manowar Hussain, Gulshad Nawaz Ahmad, Mohammad Shahid Raza, Vikash Kumar, Pankaj Kumar, Alok Kumar Das	“Fiber laser welding of thin sheet of Ti6Al4V and its characterization”	International Conference on Precision, Meso, Micro and Nano Engineering	December 10-12, 2015	IIT Bombay
4.	Abhijeet Sethi, Deepak Kumar, Pankaj Kumar and Alok Kumar Das.	“The effect of ultrasonic vibration on the surface integrity of SS304 micro holes drilled by micro EDM”	Advances in Dynamics, Vibration and Control (ICADVC) 2016	25-27th, February, 2016	(NIT) Durgapur,

5.	Purushottam Kumar Singh Pankaj Kumar Manowar Hussain Harish Vishwakarma Alok Kumar Das	Electrochemical discharge synthesis and optical characterization of tungsten nanoparticles	Int. Conference on "Nanoscience, Nanotechnology & Advanced Materials" NANOS-2015	14-17 th Dec, 2015	GITAM University Visakhapatnam
6.	Satyajit Mahato, Amit Rai Dixit, Rajeev Agarwal	Process excellence in IT sector in an emerging economic scenario	3 rd IEEE International conference on Recent Advances in Information Technology	3-5 March 2016	ISM Dhanbad
7.	Avadh Kishor Prasad, A Mandol, A K Das, A R Dixit	Investigation Into Fiber Laser Cutting of Stainless Steel Ss304	Int. Conference on Precision, Meso, Micro, And Nano Engg (Copen-9: 2015)	10 th to 12 th December, 2015	IIT Mumbai , India,
8.	Rajesh Bajaj, Arun Kumar Tiwari, Amit Rai Dixit	Progress of micro/nano powder mixed electric discharge machining: A Review	Recent Advances In Nano-Science And Technology (RAINSAT-2015),	July 8th - 10th, 2015	Sathyabama University, India, in association with CSIR-CLRI
9.	Anuj Kumar Sharma, Rabesh Kumar Singh, Arun Kumar Tiwari, Amit Rai Dixit (2015) “	Characterization of TiO ₂ , Al ₂ O ₃ and SiO ₂ Nanoparticle based Cutting Fluids	Recent Advances In Nano-Science And Technology (RAINSAT-2015),	July 8th - 10th, 2015	Sathyabama University, India, in association with CSIR-CLRI
10.	Anuj Kumar Sharma, Rabesh Kumar Singh, Arun Kumar Tiwari, Amit Rai Dixit (2015) “	Characterization and Experimental Investigation of Al ₂ O ₃ Nanoparticle based Cutting Fluid in Turning of AISI 1040 Steel under Minimum Quantity Lubrication (MQL)	Recent Advances In Nano-Science And Technology (RAINSAT-2015),	July 8th - 10th, 2015	Sathyabama University, India, in association with CSIR-CLRI
11.	Anuj Kumar Sharma, Rabesh Kumar Singh, Arun Kumar Tiwari, Amit Rai Dixit (2015) “	Tribological Investigation of TiO ₂ Nanoparticle based Cutting Fluid in Machining under Minimum Quantity Lubrication (MQL)	Recent Advances In Nano-Science And Technology (RAINSAT-2015),	July 8th - 10th, 2015	Sathyabama University, India, in association with CSIR-CLRI
12.	A. Mallick, R. Ranjan	Thermal stresses in an annular fin with temperature dependent thermal parameters: Use of HPM	1st International ISHMT-ASTFE Heat and Mass Transfer Conference	17-20 Dec., 2015	Thiruvananthapuram , India
13.	Shankar Ganesh, Keshava S. Kumar, Mahato P. K.	Free Vibration Analysis of Delaminated Composite Plates using Finite Element Method	12th International Conference on Vibration Problems, ICOVP 2015	Dec 14-17, 2015	IIT Guwahati
14.	Md. Imran Ali, Subodh Kumar, Vinayak Ranjan, ,	Free Vibration analysis of functionally graded plates with attached point mass under uniform rise of temperature	International Conference on Recent Trends in Engineering and Material Sciences (ICEMS-2016)	17-19 March , 2016	Jaipur National University , Jaipur, India

15.	Md. Imran Ali, Subodh Kumar, Vinayak Ranjan,	Free Vibration analysis of functionally graded plates with attached point masses,	The International Conference on Materials Science & Technology (ICMTech) 2016	1-4 March, 2016	University of Delhi, India
16.	Md. Imran Ali, Subodh Kumar, Vinayak Ranjan, ,	Effect of volume fraction index and mass ratio on natural frequency of clamped functionally graded plate with attached point mass	International Conference on Electrical, Electronics, and Optimization Techniques (ICEEOT)	3-5 March, 2016	DMI College of Engineering, Chennai
17.	V. Ranjan et al.	Static Analysis of Railway Track, India	International Science Festival (IISF 2015)	4-8 December 2016	IIT Delhi, New Delhi.
18.	Ranjan Kumar, Vinayak Ranjan and Nilesh Gupta, ,	Analytical and Finite Element Analysis of Dovetail Joints in Aero engine Disc	5th Nirma University International Conference on Engineering NUiCONE-2015,	26-28 November 2015 a	Nirma University campus, Ahmedabad, Gujarat.
19.	Jay Prakash Srivastava, M V Ravi Kiran , P K Sarkar , V Ranjan,	Numerical investigation on degradation of rail material due to slippage at rail-wheel contact	International Conference on Materials Science & Technology 1-4 March, 2016,	1-4 March, 2016	Conference Center, University of Delhi, India
20.	S Sen, S Mittal	Free vibrations of a square cylinder of varying mass ratios	12th International Conference on Vibration Problems	14th to 17th December, 2015	IIT Guwahati
21.	Deepak Kr. Gope, Shubham Kr. Yadav, Vipin Kumar, S. Chattopadhyaya, S. Mandal, Sergej Hloch	Critical Analysis of TIG Welded Joint of Titanium G-5 Alloy Sheet	7th International Scientific and Expert Conference TEAM 2015	October 15-16, 2015	Faculty of mechanical Engg., Kraljice Belgrade, Serbia , Europe
22.	Uday Kumar, Dr. S. Chattopadhyaya, A K Das, Sergej Hloch	Critical investigation on disintegration of thin sheet Nd-YAG laser welded titanium alloys using Abrasive water jet	q-Pace-2016	January 09-11, 2016	ISM

3.15.8.5 Papers presented in National Seminars/Conferences

Sl. No.	Author (s)	Title	Seminar/Conference	Date	Place
1.	D. Mondal, S. Sarkar, B. Paul,	Feed Optimization of Raw Coal by Developing a Mechanised Receiving and Lump Breaking System	Proceedings of Second National Conference on Mining Equipment: New Technologies, Challenges & Applications (MENTCA 2015)	09-10th October, 2015	ISM Dhanbad

2.	R. Das, V. Kaul, S. Sarkar	Erosion Analysis of Coal Mine Pipeline Valves at Different Opening Conditions	Proceedings of Second National Conference on Mining Equipment: New Technologies, Challenges & Applications (MENTCA 2015)	09-10th October, 2015	ISM Dhanbad
3.	M. K. Das, S. Dewangan, H. Kumar, S. Chattopadhyaya, S. Sarkar, B. S. Choudhary	Wear Analysis of Cable Shovel Tooth	Proceedings of Second National Conference on Mining Equipment: New Technologies, Challenges & Applications (MENTCA 2015)	09-10th October, 2015	ISM Dhanbad
4	P. Singh, P. Das, S. Hembram, A. Mandal, A. K. Das, A. R. Dixit, N. K. Singh	An Approach to Optimize WEDM Process Parameters for Machining SS304 Steel by the hybrid method of RSM and GA	2 nd National Conference on Mining Equipment: New Technologies, Challenges & Applications MENTCA 2015	9-10 October, 2015	Dept. of Mining Machinery, ISM, Dhanbad
5	Pawan K. Singh	Thermophysical Properties of Nanofluids	National Conference on Thermophysical properties	14/12/2015 - 16/12/2016	MNIT Jaipur
6	Madan Lal Chandravanshi	Modal analysis of the vibratory feeder unit and its structural elements through FEA technique	MENTCA	9-10 Oct. 2015	ISM Dhanbad
7	Uday Kumar, Deepak Kumar Gope, Ratnesh Kumar, Somnath Chattopadhyaya, A K Das ³	Investigation of Heat Affected Zone of Nd-YAG Laser Welding Process of thin titanium alloy sheet	MENTCA	9-10 Oct. 2015	ISM Dhanbad

3.15.9 MAJOR ACADEMIC CONTRIBUTIONS

- Railway Board's second prize for the paper on Contact stress analysis of wheels-rail by Herzian method and finite element method published in the journal of Institution of Engineers (India): series C, Vol 95, 2014. (awarded on 18 Dec 2015) Awarded jointly to Jay Prakash Srivastava, P K Sarkar, Vinayak Ranjan.
- Best Researcher Award from Canara Bank was given to Dr.Somnath Chattopadhyaya on the basis of research publications for last three years from the department of Mechanical Engineering in 2015.
- Dr.Somnath Chattopadhyaya had reviewed seven technical papers from April, 2015 to March, 2016 of the International Journal of Measurement (Elsevier Publication, SCI Journal of Impact Factor – 1.424).

3.15.10 SEMINARS, SYMPOSIA, WORKSHOPS, CONFERENCES ORGANIZED BY THE DEPT/CENTRE

ASME-SLDC 2015, ISM Dhanbad.	6-8 November, 2015
International Workshop on Computational Methods in Vibration and Acoustics	16-21 arch, 2015

3.15.11 PARTICIPATION OF FACULTY/ OFFICERS/STAFF IN SEMINARS/ CONFERENCES ETC

Dr S Sarkar	Second National Conference on Mining Equipment: New Technologies, Challenges & Applications (MENTCA 2015)	09-10th October, 2015	ISM Dhanbad
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3.15.12 VISITS OF FACULTY MEMBERS ABROAD

- Dr A.R. Dixit visited Institute of Geonics, Ostrava, Czech Republic from 18.5.2015 to 12.6.2015 for the joint research in the field of Abrasive water jet machining.
- Dr. A. R. Dixit attended International Worth meeting in Prosov, Slovakia to give expert opinion in the EU financed project on 7-9th June 2015.
- Dr. Vinayak Ranjan, visited City University London, UK, Manchester University, UK university of Southampton, UK during 18 June-17 July 2015
- Dr Somnath Chattopadhyaya visited Institute of Geonics, Ostrava, Czech Republic from 18.5.2015 to 12.6.2015 for the joint research in the field of Abrasive water jet machining.
- Dr.Somnath Chattopadhyaya and Dr.Amit Rai Dixit visited Opole University of Poland on 5th June, 2016 and met with Vice Rector of Opole University, Opole, Poland.
- Dr.Somnath Chattopadhyaya and Dr.Amit Rai Dixit visited Masaryk University of Brno, Czech Republic in May,2015 and met with Martin Glogar of the Manager - International Relation Affairs to discuss about joint collaborative PG studies with ISM Dhanbad.
- Dr.Somnath Chattopadhyaya and Dr.Amit Rai Dixit visited Presov of Slovakia as Invited speakers for the second WORTH workshop held during 7th to 9th June,2016.

3.15.13 TESTING SERVICES (LAB FACILITIES AVAILABLE FOR TESTING IN THE DEPARTMENT / CENTRE)

There are the test facilities available in SOM lab at Mechanical Engineering:

- Tension Test
- Compression Test
- Mode-I Test
- Mode-II Test
- Fatigue Test
(As per ASTM standards)

3.16 MINING ENGINEERING

3.16.1 ABOUT THE DEPARTMENT

The Department of Mining Engineering was established in 1926 with the founding of the School in that year by the then Viceroy of India, Lord Irwin. Over the Past 88 years, it has developed and grown to become the largest Department of its kind in the country with excellent facilities for teaching research and widespread activities in both coal & non-coal/metalliferous mining sectors. Its high reputation attracts students from all parts of India as well as from abroad.

The Department has been recognized as a QIP Centre for the faculty members of other Mining Engineering Departments of the country to pursue higher studies. The Department has been accorded the status of “Centre of Advanced Studies” in Mining Engineering by the University Grant Commission, in recognition of its high standards of teaching, research and services to the mining industry.

The Department is currently running one 4-year B.Tech. programme in Mining Engineering, two 5-year Dual Degree programmes, four 2-year M.Tech. programmes and Ph.D. programmes.

The students passing out from this Department have traditionally occupied top positions in the government departments as well as in the mining industry, both in India and abroad. The posts of Director-General of Mines Safety; Chairmen and Managing Directors of most of the mining companies and top executives of many other companies, both in the public and private sectors, have been traditionally occupied by the ex-students of the Department. Over 400 ex-students of Indian School of Mines are working in the USA and other countries, in highly respectable positions.

3.16.1.1 Vision

Strengthening Education, Research and Industry-Interaction in the major fields of Mining Engineering at par with International standards.

3.16.1.2 Mission

Upgradation of Mining Engineering Education, Research and Industry Institute Interaction to meet the challenges of the Indian Mining Industry in terms of increase in production of Minerals from Opencast and Underground mines at competitive costs using newer technologies, keeping in view the Conservation & Environmental Protection and to develop capabilities in:

- Rock Mechanics & Ground Control
- Mining & Excavation Technology
- Mine Ventilation
- Disaster Management & Safety Engineering
- Geomatics & Mine Surveying
- Tunneling & Underground Space Technology.

3.16.2 FIELD VISITS/EXCURSIONS/TRAINING PROGRAMMES UNDERTAKEN BY THE STUDENTS

Particulars	Batch of students	Place of visit	Period of visit
Local Excursion in Monsoon Semester (2015-16)	III Semester B. Tech and Dual Degree (Group A, B &C)	(i) Sendra Bansjora Colliery, BCCL (ii) CIMFR (Explosive and Blasting Division)	3/9/2015 to 5/9/2015 & 7/09/2015
	V Semester B. Tech and Dual Degree (Group A, B &C)	(i) Sonepur Bazari, OCP, ECL (ii) Moonidih Project, BCCL	31/08/2015 to 02/ 09/2015
	VII Semester B. Tech and Dual Degree (Group A, B &C)	Rescue Station Dhansar, BCCL	27/08/2015 to 29/08/2015
	I Semester M. Tech (ME, OCP, TUST & Geomatics)	(i) Sonepur Bazari, OCP, ECL (ii) Sendra Bansjora Colliery, BCCL	1/9/2015 to 2/9/2015
Singhbhum Excursion in Winter Semester (2015-16)	IV Semester B. Tech and Dual degree (Group A & B)	(i) Jaduguda Mines, Narwapahar mines, Jaduguda Mill, HPU Units. of UCIL. (ii) ACC Jhinkpani	14/12/2015 to 20/12/2015
Local Excursion in Winter Semester (2015-16)	VI Semester B. Tech and Dual degree (Group A, B, &C)	(i) Nudhkuri Block –II , OCP, BCCL (ii) Putki Balihari Project, BCCL (iii) Bastacolla Colliery, BCCL	28/12/2015 to 30/12/2015
	VIII Semester B. Tech and Dual degree (Group A, B, & C)	(i) Kankani Open Cast Mine Fire Area BCCL, (ii) Bhela Tand Coal Washery, Tata Steel	14/12/2015 to 16/12/2015

3.16.3 INTRODUCTION OF NEW PROGRAMMES, IF ANY

- M.Tech in Open Cast Mining

3.16.4 BEST PRACTICES OF THE DEPARTMENT

- Most of the teaching in introduction to mining, rock excavation engineering, tunnelling and underground space technology, underground space applications, planning and design of underground space is backed by practical case examples generated from different R&D and Consultancy Projects undertaken.
- Students are involved in live projects for their B.Tech.(Projects), M.Tech.(Dissertation) and Ph.D.(Thesis).

3.16.5 LIST OF ONGOING R & D PROJECTS

I.	Project Title	: Techno-economic Evaluation and Performance Behaviour of Self Advancing (mobile) Goaf Edge Supports (SAGES) (Phase – II)
	Sponsoring Agency	: Ministry of Coal, Govt. of India
	Coordinator (s)	: Prof. U. K. Singh, Dr. Dheeraj Kumar, Mr. N.V.N. Reddy, JBEPL & Mr. K. N. Pal
	Project Value	: ₹ 73.27 lakhs
	Date of Commencement	: 01.02.2016

	Date of Completion	:	Ongoing
	Objective	:	Modifications and Refurbishment of 6 nos. of SAGESs Study of performance behavior of modified SAGESs in an underground coalmine of SCCL and its influence on ground behavior Study of economic feasibility of modified SAGESs over conventional techniques of support systems at goaf edges.
	Status	:	ongoing
	Findings	:	Six numbers of SAGES are being modified and after the modification, these SAGES shall be installed at Singarani Collieries for further field trials.
2.	Project Title	:	FIST project to strengthen teaching facilities in the areas “Geomatics & Underground Space Technology
	Sponsoring Agency	:	FIST, DST
	Coordinator (s)	:	Prof. V.M.S.R.Murthy & Dr. Dheeraj Kumar
	Project Value	:	₹ 257 Lakhs
	Date of Commencement	:	06.06.2012
	Date of Completion	:	Ongoing
	Objective	:	Strengthening PG teaching and research facility in the Department of Mining Engineering
	Status	:	Ongoing (All the procurement work are over)
	Findings	:	In progress
3.	Project Title	:	Assessment and prediction of land surface deformation due to underground metal mining in Northern Aravali Range of Hills using Microwave Remote Sensing data sets and ground based observations
	Sponsoring Agency	:	MoM, GOI
	Coordinator (s)	:	Dr. Dheeraj Kumar & Md. Soyeb Alam
	Project Value	:	₹ 45 Lakhs
	Date of Commencement	:	17.02.16
	Date of Completion	:	Ongoing
	Objective	:	Detection of land surface deformation due to underground metal mining, using satellite microwave remote sensing data sets., Assessment of land surface deformation in mining area using Differential Interferometric Synthetic Aperture Radar (D-InSAR) technique
	Status	:	Ongoing (Field work has been just started)
	Findings	:	In progress
4.	Project Title	:	“Stability Analysis of Stope Pillars in Underground Metal Mines with Depth of Working Using Finite Element Method”
	Sponsoring Agency	:	ISM TEQIP- II
	Coordinator (s)	:	Dr. Hemant Kumar
	Project Value	:	₹ 1.5 Lakhs
	Date of Commencement	:	9.11.15
	Date of Completion	:	Ongoing
	Objective	:	To provide Pillar design guidelines
	Status	:	Work is in progress (Instruments have been purchased, some data are collected, and numerical modelling is going on.)
	Findings	:	In progress
5.	Project Title	:	Development and validation of coupled Thermo-Hydro-Mechanical (THM) models for radioactive waste repositories in fractured rocks
	Sponsoring Agency	:	DST
	Coordinator (s)	:	Dr.A.K.Verma
	Project Value	:	₹ 35 Lakhs

	Date of Commencement :	05.02.2013
	Date of Completion :	05.02.2018
	Objective :	Prediction of thermal, mechanical and hydrological effects on jointed rock mass due to heat released by spent nuclear fuel
	Status :	Ongoing
	Findings :	Equipment procurement
6.	Project Title :	Innovative method for production of methane from coal seams and disposal of greenhouse gases
	Sponsoring Agency :	FRS
	Coordinator (s) :	Dr.A.K.Verma
	Project Value :	₹ 6.5 Lakhs
	Date of Commencement :	01.08.2013
	Date of Completion :	01.08.2016
	Objective :	Characterize Indian coals for adsorption and desorption based on characteristics
	Status :	Ongoing
	Findings :	Experiment going
7.	Project Title :	Stability analysis of roof rock and establishing hard cover for coal exploitation below ground during conversion of opencast mine to underground mine
	Sponsoring Agency :	DST
	Coordinator (s) :	Dr.A.K.Verma
	Project Value :	₹ 9.0 Lakhs
	Date of Commencement :	01.07.2014
	Date of Completion :	01.07.2016
	Objective :	Stability analysis of roof rock and establishing hard cover for coal exploitation below ground during conversion of opencast mine to underground mine
	Status :	Ongoing
	Findings :	Experiment going
8.	Project Title :	Landslide hazard assessment along NH-22 Road Cut Slopes in and around Luhri area, Himachal Pradesh, India
	Sponsoring Agency :	UGC
	Coordinator (s) :	Dr.A.K.Verma
	Project Value :	Rs. 6.0 Lakhs
	Date of Commencement :	01.07.2014
	Date of Completion :	01.07.2016
	Objective :	Landslide hazard assessment along NH-22 Road Cut Slopes in and around Luhri area, Himachal Pradesh, India
	Status :	Ongoing
	Findings :	Experiment going
9.	Project Title :	Landslide risk analysis of road cut hill slopes near Sonapur, Meghalya
	Sponsoring Agency :	DST
	Coordinator (s) :	Co-PI (Dr.A.K.Verma)
	Project Value :	₹ 22.63 Lakhs
	Date of Commencement :	30.09.2014
	Date of Completion :	30.09.2017
	Objective :	Landslide risk analysis of road cut hill slopes near Sonapur, Meghalya
	Status :	Ongoing
	Findings :	Literature review going on

10.	Project Title : Sponsoring Agency : Coordinator (s) : Project Value : Date of Commencement : Date of Completion : Objective : Status : Findings :	Development of design of fill material for extraction of thick coal seam ISM TEQIP- II Kashinath Pal ₹ 1.5 Lakhs 9.11.2015 08.11.2018 Characterisation of waste in backfill mining in India Ongoing In progress
11.	Project Title : Sponsoring Agency : Coordinator (s) : Project Value : Date of Commencement : Date of Completion : Objective : Status : Findings :	Assessment and Prediction of land surface deformation due to underground metal mining in Northern Aravali Range of Hills using Microwave Remote Sensing Data Sets and ground based observations Ministry of Mines, Government of India Dr. Dheeraj Kumar & Md Soyeb Alam ₹ 45 lakhs 02/12/15 02/12/18 Assessment and prediction of land surface deformation due to underground metal mining using DInSAR Technique and validation of result with ground based observations Ongoing In progress
12.	Project Title : Sponsoring Agency : Coordinator (s) : Project Value : Date of Commencement : Date of Completion : Objective : Status : Findings :	Development Of Low Density Emulsion Explosives For Energy Efficient Blasting In Environmentally Sensitive Area Ministry Of Mines, Goi Prof A K Mishra &Dr B S Choudhary ₹ 29.134 Lakhs 01.01.2015 01.01.2018 Development Of Low Density Emulsion Explosives For Energy Efficient Blasting In Environmentally Sensitive Areas On going Indents for equipment procurement has been done and few field trials have been conducted
13.	Project Title : Sponsoring Agency : Coordinator (s) : Project Value : Date of Commencement : Date of Completion : Objective : Status : Findings :	Development of Underground Coal Gasification Technology in India Council of Scientific and Industrial Research (CSIR). Prof. D. C. Panigrahi, Prof. Atul K Varma, Prof. V K Saxena, Prof. S Chaudhuri, Shri P K Behera, Prof. R K Das & Dr. D P Mishra, ₹ 91.60 lakhs 20.03.2013 31.03.2017 1.Geological and petrographical characterization of coal seams and associated rocks. 2.Study of physico-mechanical, elemental and thermal behavior of coal samples and associated rocks for subsidence and environmental monitoring and modelling. Ongoing. In progress

3.16.6 IMPORTANT COLLABORATIVE WORKS

Organisation/Lab	Nature of interaction
<ul style="list-style-type: none"> University of New Castle 	<ul style="list-style-type: none"> Developed linkages with University of New Castle, Australia. Signed MoU.
<ul style="list-style-type: none"> University of New South Wales 	<ul style="list-style-type: none"> Developed linkages with University of New South Wales, Australia. Signed MoU
<ul style="list-style-type: none"> Indo-Australian Collaboration 	<ul style="list-style-type: none"> Centre of excellence in Mining Technology, 675 lakhs, Funded by MHRD, ISM, Dhanbad (in progress-2015-20)
<ul style="list-style-type: none"> Erasmus Mundus India 4euii Project Report, Erasmus Mundus Exchange Programme (EMA Action-2) 	<ul style="list-style-type: none"> <u>Erasmus Mundus India 4euii Project Report, Erasmus Mundus Exchange Programme (EMA Action-2) Project No.: IPEM/ 23</u> mobilities with 194 man-months, 211 lakhs (2012-16)
<ul style="list-style-type: none"> Central Institute of Mining and Fuel Research, Dhanbad 	<ul style="list-style-type: none"> Execution of the research project on “Development of Underground Coal Gasification Technology in India.”

3.16.7 IMPORTANT NEW EQUIPMENT ACQUIRED (ABOVE ₹ 500, 000/-)

Name of Equipment	Purpose	Value(₹ in lakhs)
Blast vibrations seismographs	For undertaking blast induced ground vibration monitoring of structures	10.97 Lakhs

3.16.8 RESEARCH PUBLICATIONS

3.16.8.1 Books Edited

Hemant Kumar Manuscript No. GEGE-D-15-00234 “Laboratory Estimation of Rock Joint Stiffness and Frictional Parameters” Geotechnical and Geological Engineering

Verma A.K., Pradeep Gautam, T. N. Singh, R. K. Bajpai (2015) Numerical Simulation of High Level Radioactive Waste for Disposal in Deep Underground Tunnel, Engineering Geology for Society and Territory - Volume 1 , pp 499-504, Edited by Lollino, Giorgio, Manconi, Andrea, E Clague, John, Shan, Wei, Chiarle, Marta, DOI: 10.1007/978-3-319-09300-0-94, Online ISBN 978-3-319-09300-0, Springer International Publishing

3.16.8.2 Papers published in International Journals

Sl. No.	Author (S)	Year	Title	Journal	Vol.No.	Page No.
1	A K Dash., R. M. Bhattcharjee, P. S. Paul	2015	“Gap Analysis of Accident Investigation Methodology in the Indian Mining Industry - an Application of Swiss Cheese Model and 5-Why Model”	IAMURE International Journal of Ecology and	Vol. 15, No. 1	1-27
2	A K Dash., R. M. Bhattcharjee, P. S. Paul and Malay Tikader	2015	“Study and Analysis of Accidents Due to Wheeled Trackless Transportation Machinery in Indian Coal Mines – Identification of Gap in Current Investigation System”	Procedia Earth and Planetary Science	Vol. 11(1)	539–547.

3	Yadav, P. S. Pal, N. Kumar, D. and Krishna, S. V.	2015	LEDs Lighting Arrangements for Underground Mines	TELKOMNIKA Indonesian Journal of Electrical Engineering	Vol. 15(1)	14 - 19
4	Pandey, J. Kumar, D. and Singh, V. K.	2015	Detection and Monitoring of Coal Mine Fire in Jharia Coal Field (JCF): An Integrated Approach on Old Problem	International Journal of Earth Sciences and Engineering	Vol. 8(5)	256-258
5	Kumar D	2016	Application of Modern Tools and Techniques for Mine Safety & Disaster Management	J. Inst. Eng. India Ser. D (Springer)	Vol. 97(1)	77-85
6	Chatterjee, R.S. Singh, K.B. Thapa Shailaja & Kumar D.	2016	The present status of subsiding land vulnerable to roof collapse in the Jharia Coalfield, India, as obtained from shorter temporal baseline C-band DInSAR by smaller spatial subset unwrapped phase profiling	International Journal of Remote Sensing	Vol. 37(1)	176-190
7	Kumar, D. Kumar, S. and Chaudhary, S.K.	2015	Land Use /Land Cover Change Analysis and Prediction in Jharia Coalfield using Remote Sensing Technique	International Journal of Earth Sciences and Engineering	Vol. 8(6)	2670-2677
8	Srivastava, H.S. Sharma, P.K. Kumar, D. Sivasankar, T. and Patel, P.	2015	Soil moisture variation over parts of Saharanpur and Haridwar districts (India) during Nov.-2006 to June-2007 as observed by multi-polarized (VV/HH & VV/VH) ENVISAT-1temporal ASAR data	International Journal of Advanced Engineering Research and Science (IJAERS)	Vol. 2(1)	31-39
9	Sivasankar, T. Srivastava, H.S. Sharma, P.K. Kumar, D. and Patel, P.	2015	Study of hybrid Polarimetric parameters generated from RISAT-1 SAR data for various land cover targets	International Journal of Advancement in Remote Sensing, GIS and Geography, IJARSGG	Vol. 3(1)	32-42
10	Ranjan, V. Sen, P. Kumar, D. and Sarsawat, A.	2015	A Review on Dump Slope Stabilization by Revegetation with Reference to Indigenous Plant	Ecological Processes (Springer)	Vol. 4(14)	DOI 10.1186/s13717-015-0041-1
11	R K Sinha, M Jawed and S Sengupta	2015	Influence of rock mass rating and in situ stress on stability of roof rock in bord and pillar development panels	International Journal of Mining and Mineral Engineering	Vol. 6 (3)	258-275
12	R K Sinha, M Jawed and S Sengupta	2015	Design of support system in depillaring panel using numerical modelling – a case study	International Journal of Earth Sciences and Engineering	Vol 08, (6)	2678-2686

13	Panigrahi, D.C., Mishra, D.P., Sahu, P.	2015	Evaluation of inhalation exposure contributed by backfill mill tailings in underground uranium mine	Environmental Earth Sciences	Vil. 74	4327-4334
14	Panigrahi, D.C., Mishra, D.P., Sahu, P. and Bhowmik, S. C.	2015	Assessment of radiological parameters and radiation dose received by the miners in Jaduguda uranium mine, India	Annals of Nuclear Energy, Elsevier	Vol. 78	33–39
15	Mishra, D.P. and Das, S.K.	2015	One-Dimensional Consolidation of Sedimented Stowed Pond Ash and Pond Ash-Lime Mixture Deposits—A Comparative Study	Particulate Science and Technology: An International Journal, Taylor & Francis	Vol. 33(2)	172-177
16	Panigrahi, D.C., Mishra, D.P., Sahu, P.	2015	Evaluation of inhalation exposure contributed by backfill mill tailings in underground uranium mine	Environmental Earth Sciences, Springer	Vol. 74(5)	4327-4334
17	Mishra, D.P., Kumar, P. and Panigrahi, D.C.	2016	Dispersion of methane in tailgate of a retreating longwall mine: a computational fluid dynamics study	Environmental Earth Sciences, Springer	Vol 75(6)	1-10
18	Amar Praksah, V.M.S.R.Murthy, K.B.Singh	2015	A new rock cuttability index for predicting key performance indicators of surface miners	International Journal of Rock Mechanics and Mining Science	Vol. 77	339-347
19	Kumar Rakesh, Mishra, A K, Singh Arun K, Singh , Singh Amit K, Ram S., Singh, R,	2015	Underground mining of thick coal seams	International Journal of Mining Science and Technology	Vol 25 (6)	pp 885-896
20	A.K. Raina, V. M. S. R. Murthy	2016	Prediction of Flyrock Distance in Open Pit Blasting Using Surface Response Analysis	Geotechnical and Geological Engineering	Vol. 34(6)	15-28
21	Kumar Rakesh, Mishra, A K, Singh ArunK,Singh , Singh Amit K, Ram S., Singh, R,	2016	Depillaring of total thickness of a thick coal seam in single lift using cable bolts: A case study	International Journal of Mining Science and Technology,	Vol. 26(2)	223-233
22	Sahu, P., Panigrahi, D.C., Mishra, D.P.,	2016	A comprehensive review on sources of radon and factors affecting radon concentration in underground uranium mines	Environmental Earth Sciences, ,	Vol. 75	pp. 1-19. (I.F. 1.765)

23	Mishra, D.P., Kumar, P., Panigrahi, D.C.,	2016	Dispersion of methane in tailgate of a retreating longwall mine: a computational fluid dynamics study.	Environmental Earth Sciences	Vol. 75,	pp. 475. (I.F. 1.765)
24	Banka, H., Ray, S.K., Panigrahi, D.C.,	2016	Standardization of a method for studying susceptibility of Indian coals to self-heating.	Arabian Journal of Geosciences	Vol. 9,	pp. 101. (I.F. 1.224)
25	Ray, S.K., Panigrahi, D.C., Udayabhanu, G., Saxena, V.K.	2016	Assessment of spontaneous heating susceptibility of Indian coals—A new approach.	Energy Sources, Part A: Recovery, Utilization, and Environmental Effects	Vol. 38	pp. 59-68. (I.F. 0.39)

3.16.7.3 Papers published in National Journals

Sl. No.	Author(S)	Year	Title	Journal	Vol. No.	Page No.
1	Kumar, D. and Singh, U.K.	2016	Development of Strain Rosette Block for Stress Measurement,	Journal of Rock Mechanics & Tunneling Technology (JRM TT)	Vol. 21(2)	77-88
2	Kumar, D. Behera, P.K. and Singh, U.K.	2014	A New Approach to Estimate Joint Roughness Coefficient and its Influence on Bond Strength of Steel Fibre Reinforced Shotcrete	Journal of Rock Mechanics & Tunneling Technology (JRM TT)	Vol. 22(1)	37-48
3	Kumar, D.	2015	Mining, Mineral and Sustainable Development	Journal of Mines, Metals & Fuels	Vol. 63(9)	251-259
4	Kumar, D. and Singh, U.K.	2016	Development of Strain Rosette Block for Stress Measurement,	J. of Rock Mechanics & Tunneling Technology (JRM TT)	Vol. 21(2)	77-88
5	Kumar, D. Behera, P.K. and Singh, U.K.	2014	A New Approach to Estimate Joint Roughness Coefficient and its Influence on Bond Strength of Steel Fibre Reinforced Shotcrete	Journal of Rock Mechanics & Tunneling Technology (JRM TT)	Vol. 22(1)	37-48
6	Ram, S. Kumar, D. Koniack, P. Singh, A. K. Kumar, R. Singh, Arun K. and Singh R.	2015	Rock Mechanics Studies during Continuous Miner Based Coal Pillar Extraction in Indian Coalfields	MGMI Transactions	Vol. 111	90-114
7	A K Dash., R. M. Bhattcharjee, P. S. Paul	2015	“Need of an Accident Investigation Model for Indian Mines - An Approach”	The Indian Mineral Industry Journal	Vol. 3(2)	93-98.
8	Choudhary, B.S	--	Paste filling-an overview to improve the quality of filling material	Journal of Mines Metals & Fuels	Vol. 63 (8)	205-213
9	Kumar H, Deb D and Chakravarty D	2015	Performance Analysis of Rock Bolts at the Stope Back to Determine Suitable Reinforcement	Journal of Resources, Energy and Development (ISRM India)	Vol.4 (2)	22-35
10	Md Soyeb Alam (ISM Dhanbad) & Prof. Piyush Rai (IIT BHU)	2016	An Innovative Technique for Improved Production from Depillaring Panel in an Underground Coal Mine	Journal of Mines, Metals and Fuel	Vol.6 4 (2)	3 - 13

11	Raina, A. K., Murthy, V. M. S. R. & Soni, A. K	2015	Flyrock in surface mine blasting: understanding the basics to develop a predictive regime	Current Science	Vol. 108 (4)	660-665
12	Prakash A., Murthy V. M. S. R. and Singh K. B	2015	Chip size characterization for selecting optimum production parameters of surface miner operating in a coal mine	Current Science	Vol. 108	3,10
13	Kumar, R., Mishra, A. K., Singh, A. K., Singh, Arun. K., and Singh, R	2015	Cable bolting based depillaring of a thick coal seam in single lift: a case study	Transactions of The Mining, Geological and Metallurgical Institute of India	Vol 111	66-88
14	Mishra, A. K., and Sinha, M.	2015	Environmental impact analysis of heavy blasting in large opencast mines	Journal of Mines, Metals & Fuels	Vol 63,	7
15	Mishra, A., Patnaik, R. Lokeswar, Jha, V.N., Sharma, S.K., Panigrahi, D.C., Sarangi, A.K.,	2015	²²² Rn distribution pattern in dwellings of copper mineralized area of East Singhbhum region, Jharkhand, India	Current Science,	Vol. 108 (10)	1931-1937. (I.F. 0.833)

3.16.7.4 Papers presented in International Seminars/Conferences

Sl No.	Author(s)	Title	Seminar/Conference	Date	Place
1	Singh, U.K. Reddy, N.V.N and Kumar, D.	2016	Development of Self-Advancing Mobile Goaf Edge Support Systems (SAGES) for Depillaring Operations in Indian Coalmines	Proceedings of 6th Asian Mining Congress February 23-27, 2016	
2	Singh, U K.	2016	A new method of extraction of thick coal seam using compacted dry fill.	Proc. of 6th Asian Mining Congress Feb. 23-27, 2016	
3	Singh, U.K. Reddy, N.V.N and Kumar, D.	2016	Development of Self-Advancing Mobile Goaf Edge Support Systems (SAGES	Proc. of 6th Asian Mining Congress Feb. 23-27, 2016	
4	Sagesh Kumar M R., R M Bhattacharjee, D C Panigrahi and A K Dash	“Health and Safety Issues of Exhaust Gases and Diesel Particulate Matter from Diesel Powered Equipment Operation in Indian Underground Mines”	6 th ASIAN MINING CONGRESS	23 – 26 Feb 2016	Kolkata
5	Yejerla Yohan, S. K Singh, Harshit Agrawal and R M Bhattacharjee	“Thick Coal Seam Extraction Vis-À-Vis Rib Stability”	6 th Asian Mining Congress	23 – 26 Feb 2016	Kolkata
6	A.K. Raina and V. M. S. R. Murthy	Measurement of Blast-induced Pressure in Bench Blasting and Deciphering Explosive Performance through Rock Mass Response Analysis-A Methodology	11th International Symposium on Rock Fragmentation by Blasting	24–26 August	Sydney, Australia

3.16.7.5 Papers presented in National Seminars/Conferences

Sl No.	Author(s)	Title	Seminar/Conference	Date	Place
1	A K Dash., R. M. Bhattcharjee, P. S. Paul	“A New Approach in Accident Investigation Methodology for Indian Coal Mines”	CMMI-2015	July 25-26 2015	Keonjhar
2	D. R. Singh, A. K. Dash, A. K. Mishra, R. M. Bhattcharjee and P. S. Paul	“An overview of slope monitoring radar system for averting slope failures”	MICO’15	11-12 Dec 2015	Dhanbad
3	Choudhary B. S	Optimization of Blast Size for improvement in productivity- A Case Study of a Surface Limestone Mine	National seminar MICO, IMMA,	December 21-22. 2015	Dhanbad
4	Choudhary B. S. and Arora Rajesh	Influence of some of blast design parameters on blasting results in limestone mines, Proc	National Conference on Technology for Sustainable Mining, MEAI	13-14February, 2015	Jodhpur
5	Choudhary B. S	Effect of Firing Patterns on Fragmentation and Muckpile Shape Parameters in Quarry Blasts- Case Study, Proc	National Conferencer on Technology for Sustainable Mining, MEAI	13-14 February, 2015	Jodhpur
6	Choudhary B. S	Safe and Sustainable Mining through Mining Engineering Education, Proc	National Conferencer on Technology for Sustainable Mining, MEAI	13-14 February, 2015	Jodhpur
7	Choudhary, B.S. and Khan, Asfar Mobin	Roadheader Performance during Development of a Coal	2 nd National Conference on Mining Equipment: New Technologies, Challenges and Applications	9-10 October, 2015	ISM, Dhanbad
8	Das, M.K., Dewangan, S., Kumar Hemany, Chattopadhyaya, S., Sarkar, S. & Choudhary, B.S.;	Wear Analysis of Cable Shovel Tooth, Proc	2nd National Conference on Mining Equipment: New Technologies, Challenges and Applications	9-10 October, 2015	ISM, Dhanbad
9	Sahu, P. , Mishra, D.P., Panigrahi, D.C.	Radiation in underground uranium mines and its associated hazards- a review	Challenges in Mining & Mineral Industries (CMMI-2015)	9/2015	Govt.College of Engg, Keonjhar, Odisha
10	Md Soyeb Alam	Method Selection In Varied Geo-Mining Conditions For Underground Metalliferous Mine – Special Reference To Narwapahar Mine, UCIL	National seminar on Survival of non-ferrous industries in present global competition, organised by the Indian Institute of Metals, Khetri nagar chapter, HCL, Rajasthan	January 17 th , 2016	HCL, Rajasthan.

11	Sahu, P., Mishra, D.P. and Panigrahi, D.C.	Radiation in Underground Uranium Mines and Its Associated Hazards -A Review	National Seminar on Challenges in Mining & Mineral Industries (CMMI-2015)	26 September, 2015	Government College of Engineering, Keonjhar, Odisha
12	Amar Prakash, V.M.S.R.Murthy, K.B.Singh, Chandan Kumar and LA Kumaraswamidhas	Development of a Handy Methodology for the Selection of Surface Miner in Varied Rock Mass Conditions for Mass Production of Coal and Limestone(2015)	2 nd National Conference on Mining Equipment: New Technologies, Challenges & Applications(pp36-37)	9-10,October	ISM, Dhanbad
13	Chandan Kumar, V.M.S.R.Murthy, LA Kumaraswamidhas and Amar Praksah	Influence of cutting drum specifications on the performance of surface miner under varied rock strength – Some investigations	2 nd National Conference on Mining Equipment: New Technologies, Challenges & Applications(pp 196-201)	9-10,October	ISM, Dhanbad
14	Singh D.R., and Mishra A.K. ,	A review of blast measurement and instrumentation techniques, Proceedings of National Seminar on safety, security& recent trends n commercial & defense explosives	ExploSafe 2016	3-4 th June 2016	Nagpur
15	Singh D.R., Mishra A.K. , and Agrawal H.,	Performance evaluation of fully grouted rock bolt in an Indian hard rock underground mine	In Pro. INDOROCK, ISRMTT	2016	IIT Bombay
16	Singh D.R., and Mishra A.K. ,	Slope Stabilization techniques in mountainous region – a review	In Pro. Improvements in Road Construction Techniques in Himalayan Regions, GEHU	2016	Dehradun
17	Singh D.R., Mishra A.K. , and Datta A.K.,	Performance evaluation of hydraulic excavator in a lime stone mine: a case study.	6 th Asian Mining Congress, MGMI, 275-282,	2016	Kolkata.
18	Singh D.R., and Mishra A.K. ,	Review of IT Enabled Technologies in Indian Mining Industry for Improved Productivity & Safety.	In Pro. Recent Advances in Information Technology, IEEE explorer, 613-618	2016	Dhanbad
19	Sahu, P., Mishra, D.P., Panigrahi, D.C.,	Radiation in underground uranium mines and its associated hazards- a review.	Challenges in Mining & Mineral Industries (CMMI-2015),	26 September, pp. 35 – 48.	Government College of Engineering, Keonjhar,

3.16.8 MAJOR ACADEMIC CONTRIBUTIONS

- Dr. Dheeraj Kumar coordinated 15th IIRS Outreach Programme on “Basics of RS, GIS & GNSS” during August 10 - November 27, 2015 at ISM Dhanbad. 11 students from Mining Engineering and other branches successfully completed the course and got certificates from Indian Institute of Remote Sensing (IIRS) Dehradun
- Dr. D. P. Mishra received Canara Bank Research Publication Award-2015 for Department of Mining Engineering on the occasion of 90th Foundation Day of Indian School of Mines, Dhanbad.
- Dr. D. P. Mishra nominated as Member of the Program Committee, 4th Annual International Conference on Geological and Earth Sciences (GEOS - 2015) to be held in Singapore during 5-6 October, 2015.
- A K Verma Endeavour Executive Fellowship-2016 award by Australian Government
- Dr. Patitapaban Sahu received Canara Bank Research Publication Award – 2015 during celebration of 90th Foundation Day on 09.12.2015 in Indian School of Mines, Dhanbad.
- Dr. A.K. Mishra nominated as Member of Selection Committee member for engagement of Project Assistant Level I & II at CIMFR on 30.12.2015.
- Dr. A. K. Mishra nominated as Member of Selection Committee member for engagement of Project Assistant Level I & II at CIMFR on 04.08.2015.
- Dr. A.K. Mishra have been the Examiner of M Tech thesis of AcSIR (Academy of Scientific and Innovative Research) held on 25.05.2015.
- For the ninth consecutive year, Prof. D. C. Panigrahi has been elected by the Committee of Mining, the Polish Academy of Sciences as a member of the International Advisory Board for the publication of International Journal on Archives of Mining Sciences, for his significant contribution in field of Mine Ventilation Engineering.
- Conferred an honorary membership (one of the eleven members) of International Mine Ventilation Committee representing eleven leading mineral producing countries of the world in 1997, viz. USA, UK, Canada, Germany, France, Japan, Australia, South Africa, Poland, China and India.
- Prof. D. C. Panigrahi continued as a member of the prestigious Statutory Committee of Govt. of India constituted under Section 12 of Mines Act, 1952. This Committee is chaired by the Secretary /Addl. Secretary to Govt. of India, Ministry of Labour and Employment.
- Prof. D. C. Panigrahi has been invited by the Ministry of Labour and Employment, Govt. of India to be the Chairman of the Sectoral Innovation Council on Occupational Safety and Health under National Innovation Council constituted by the Prime Minister of India.
- Prof D. C. Panigrahi worked and contributed as a member of Governing Body and General Body of National Institute of Rock Mechanics, Kolar Gold Fields, Karnataka.
- Prof D. C. Panigrahi worked and contributed as a member of Governing Council of Association of Indian Universities, New Delhi.
- Prof D. C. Panigrahi worked and contributed as a member of Executive Council of Central University of Jharkhand under Ministry of Human Resource Development, Govt. of India.
- Prof D. C. Panigrahi is nominated as a member of Mentor Council for Mining and Mineral Sector of the country to bridge the burgeoning gap faced by the Indian economy under Ministry of Labour and Employment, Govt. of India.
- Prof. D. C. Panigrahi is nominated as the Honorary Editor for the publication of the Journal of Coal Mining Technology and Management published by Indian Institute of Coal Management, Ranchi.

- Prof. D. C. Panigrahi continued as an expert member of Bureau of Indian Standards, Govt. of India for reviewing the standards related to Mines Safety in the country.
- Prof. D. C. Panigrahi is nominated as an Independent Director in the Board of Directors' of Coal India limited.
- Nominated as a member of PERC (Project Evaluation Review Committee) and SSAG (Standing Scientific Advisory Group) of Ministry of Mines, Govt. of India.
- Nominated as an Honorary Member of State Audit Advisory Board of Jharkhand.

3.16.9 SEMINARS, SYMPOSIA, WORKSHOPS, CONFERENCES ORGANIZED BY THE DEPT/CENTRE

Co-Coordinator for “Advances in rock mechanics and numerical modelling for strata control in underground coal mines” for the executives of SECL	December 07, 2015 to December 25, 2015.
Coordinator for Three days Training Cum Field Workshop for Numerical Simulation of Landslide Studies	15th February to 17th February 2016
Co-Coordinator for “Rock Mechanics for Hydro-Power Projects” for the executives of NHPC held during (Cons/2959/2015-16)	July 27 2015 to July 29, 2015

3.16.10 PARTICIPATION OF FACULTY IN SEMINARS / WORKSHOPS / CONFERENCES

Dr. Dheeraj Kumar	6 th Asian Mining Congress	February 23-27, 2016	Kolkata
	IEEE 3 rd International Conference on Recent Advances in Information Technology (RAIT-2016)	March 03-05, 2016	ISM Dhanbad
	2 nd National conference on Mining Equipment, New Technologies, Challenges, & Applications, MENTCA' 15	October 09-10, 2015	ISM Dhanbad
	II nd International Conference on Microwave and Photonics [ICMAP - 2015]	December 11-13, 2015	ISM Dhanbad
Prof. U K Singh	6 th Asian Mining Congress	February 23-27, 2016	Kolkata
B S Choudhary	National Conference on Mining Equipment: New Technologies, Challenges and Applications	9-10 October, 2015	ISM, Dhanbad
B S Choudhary	Workshop on numerical simulation for landslide	15-17 February, 2016	ISM, Dhanbad
Hemant Kumar	Training Course on Rockfill Material Survey, Testing, Design AND Quality Assurance for Rockfill Dam	14 th to 16 th Oct. 2015	Central Siol and Material Research Station, New Delhi
Hemant Kumar	WORKSHOP ON Numerical simulation of landslidesstudies	15-17 February, 2016	ISM Dhanbad
Dr. R. K.Sinha	Workshop on “Underground Coal Production of CIL – Target 100 MTY”	19 th Sept 2015	CMPDI HQ Ranchi

Dr. R. K.Sinha	Workshop on “ Underground Mining Technology for extraction of Coal Seams of ECL”	19 th Feb 2016	CMPDIL Asansol
Dr. G. Budi	Three days Training Cum Field Workshop for Numerical Simulation of Landslide Studies	15-17 February, 2016	ISM Dhanbad
Kashinath Pal	Training Course on Rockfill Material Survey, Testing, Design and Quality Assurance for Rockfill Dam	14 th to 16 th Oct. 2015	Central Soil and Material Research Station, New Delhi
Kashinath Pal	WORKSHOP ON Numerical simulation of landslides studies	15-17 February, 2016	ISM Dhanbad
Vasant G Kumar Villuri	WORKSHOP ON Numerical simulation of landslides studies	15-17 February, 2016	ISM Dhanbad
Prof.V. K. Singh	Work shop on Underground Mining Technology for Extraction of Coal Seams of ECL	19 th February	CMPDI Asansol
Dr A.K.Mishra	Delivered a talk on “Concepts of stress-strain in mining” at Specialised training programme for Managers, Asst Managers, Safety Officers at Mines Safety and Health Academy (MSHA),	17 th March 2016	VikashBhavan, DGMS, Dhanbad
Dr A.K.Mishra	Delivered a talk on “Geo-technical parameters – use in mining application” at Specialised training programme for Managers, Asst Managers, Safety Officers at Mines Safety and Health Academy (MSHA), VikashBhavan, DGMS, Dhanbad on 18.03.16.	18 th March 2016	VikashBhavan, DGMS, Dhanbad

3.16.11 VISIT OF FACULTY MEMBERS ABROAD

- Prof. R. M. Bhattacharjee visited Australia to attend the "India Australia Joint Working Group Meeting" at Brisbane, Australia from 17 – 19 June, 2015.
- Prof. R. M. Bhattacharjee visited Australia to attend the India Australia Energy Security Dialogue at Brisbane and Sydney, Australia from 8th to 11th February 2016
- Dr. A. K Verma visited TU Clausthal, Germany as visiting faculty for one month duration

3.16.12 TESTING SERVICES

(3) Mine Ventilation Laboratory

Sl. No	Description of Testing Services
1.	Evaluation of performance and behaviour of self contained chemical self rescuers (SCSR) as per EN (European Norms) 401 and IS 15803:2008.
2.	Determination of Crossing Point Temperature, Ignition Point Temperature and Moisture content of one coal sample.
3.	Determination of Thermal Conductivity of coal, coal major rocks and other mineral samples.
4.	Chromatographic analysis of Mine Air Sample and sample collected from sealed off fire areas (For all component gases such as CO, O ₂ , CO ₂ , CH ₄ , H ₂ , C ₂ H ₆ , C ₂ H ₄ , N ₂ and other components), Calculation of different gas ratios, Assessment of combined Explosibility by Coward’s diagram and Ellicott Extension of Coward’s diagram.
5.	Calibration of Methanometer at four standard gas concentrations.
6.	Calibration of Toximeter at four standard gas concentrations.
7.	Calibration of LMD at four standard gas concentrations.

8.	Calibration of Multigas detector at sixteen different standard concentrations.
9.	Calibration of Oxymeter at four standard concentrations.
10.	'Execution of measures for dust control' as per Regulation 123 A (1A)(a)(i) & (ii) of Coal Mine Regulations, 1957.
11.	Calibration of anemometer by low speed wind-tunnel.
12.	Testing of different parameters of quick setting cement capsules as per DGMS Circular No. 5 dated 27.12.2010.

(4) Rock Mechanics

Mine Support

Hydraulic Support

Cyclic and non-cyclic test (Axial load, overload, eccentric load test) of Hydraulic leg used for powered roof supports as per DGMS guidelines. (this is a new facility that has been developed in the Rock Mechanics Laboratory).

Other Supports

- Load - yield characteristics of timber prop, hydraulic prop, friction prop, Steel Cogs etc.
- Anchorage/grouted strength and Cube compressive strength of cement/resin capsules used for rock bolting.
- Testing and Calibration of Anchorage Testing machine.

Rock Properties

- Physico-mechanical properties of coal, coal measure rocks and hard rocks.
- Strength indices determination of rock & coal samples.
- Direct/Residual shear strength determination of rock.
- Crushing strength determination of building materials.
- Abrasivity, hardness, weatherability of rock samples.
- Soil Properties
- Direct/Residual shear strength determination of soil.
- Consistency test & Atterberg's limits tests of soil samples.
- Calibration of load cells, hydraulic jacks & probing rings.

(5) Rock Excavation

- Compressional wave (p-wave) & Shear wave (s-wave) of the rock samples and the dynamic elastic constants.
- Cerchar Hardness Index for rocks (helps in selecting cutting tools, mechanical excavation systems)
- Cerchar Abrasivity Index for rocks (helps in predicting tool consumption in machine cutting)
- Brittleness Index
- Sievers J Value

- Drilling Rate Index
- Fracture toughness of rock samples.
- Vicker hardness for rocks (helps in determining micro-hardness of minerals for selecting dimension stone cutting systems etc.)

**3.16.13 DISTINGUISHED VISITORS TO THE DEPARTMENT/ SCHOOL
(INDICATING OCCASION/PURPOSE)**

1. Visit of NBA Expert to Rock Excavation Laboratory of Department of Mining Engineering on 04.12.2015
2. Visit of Shri S.K.Roongta, Former CMD, SAIL to Department of Mining Engineering on 09.01.2016
3. Visit of Shri Sutirtha Bhattacharya, CMD, CIL to
4. Rock Excavation Laboratory on 06.02.2016
5. Visit of Ms Tripti Gurha, Director (IITs), TS II, MHRD, Govt. of India to Rock Excavation Laboratory, Deptt. of Mining Engg.
6. Visit of Shri Avjit Ghosh, CMD, HEC, Prof. S.B.Srivastava, Former Professor, ISM and Dr. Amalendu Sinha, Former Director, CIMFR on 07.02.2016
7. Visit of Shri Anil Swarup, Secretary, Ministry of Coal, Govt. of India visits Department of Mining Engineering on 09.04.2016.

3.16.14 SPECIAL LECTURES BY DISTINGUISHED GUESTS

Subject Area	Duration of Course	Institution/Organisation joined this programme	Session	No of sessions engaged
Advances in rock mechanics and numerical modelling for strata control in underground coal mines	03 Weeks	SECL Executives	December 14, 2015 to January 01, 2016	05
Advances in drilling, blasting and mechanical cutting of rocks	03 Weeks	SECL Executives	21.09.2015 to 09.10.2015	10
Rock mechanics aspects of excavation system design in Hydel projects	3days	NHPC	26.09.2015 to 28.09.2015	
Surface miner technology for producing less diluted and sized coal for power plants		CIL		02

3.16.15 MISCELLANEOUS

- Prof. R. M. Bhattacharjee Nominated as a member of Sectoral Mentor Council (SMC) on Mining and Mineral Sector under Union Ministry of Labour and Employment
- Prof. R. M. Bhattacharjee Nominated as Risk assessment / safety expert for SEAC of Bihar
- Prof. R. M. Bhattacharjee Dy-Coordinator of CAS – IV for Department of Mining Engineering
- Prof. R. M. Bhattacharjee Faculty In-charge / Coordinator of Centre of Excellence for Safety, Health and Disaster Management
- Prof. R. M. Bhattacharjee Faculty In-charge for Placement
- Prof. R. M. Bhattacharjee Coordinator of the Programme on Clean Coal Technology
- Prof. R. M. Bhattacharjee Co-coordinator of the Centre of Australia India Clean Coal and Energy Technology
- Vasant Govind Kumar Villuri Completed PhD Viva-Voce on 6th February 2016.
- Dr. D. P. Mishra nominated as a Member of the Selection Committee for the appointment of Project Assistant in CIMFR, Dhanbad on 16.06.2015.
- Dr. D. P. Mishra reviewed a paper titled "Predictive analysis of shaft station radon concentrations in underground uranium mine: a case study" for the Journal of Environmental Radioactivity, Elsevier.

- Dr. D. P. Mishra nominated as Expert Member to attend the Selection Committee Meeting for the appointment of Project Assistant at CIMFR, Dhanbad on 04.08.2015.
- Dr. D. P. Mishra nominated as Expert Member to attend the Selection Committee Meeting for the appointment of Project Fellow at CIMFR, Dhanbad on 02.09.2015.
- Dr. D. P. Mishra reviewed a paper titled "Modeling of radon and its daughters concentrations in the chamber stopes of underground uranium mines" for the Journal of Environmental Radioactivity, Elsevier.
- Dr. D. P. Mishra attended a meeting at DGMS, Dhanbad as ISM representative for revision of standards of lighting in coal mines.
- Dr. D. P. Mishra attended a meeting at DGMS, Dhanbad as ISM representative regarding 'Use of Coal Dust Explosibility Meter (CDEM 1000) for conduct of R&D studies in Indian mines'.
- Dr. A.K. Mishra attended a meeting at DGMS, Dhanbad as ISM representative regarding for deliberations on "Formulation of procedure for short encapsulation pull test (SEPT) at DGMS on 15.03.2016.
- Dr. A.K. Mishra represented ISM at Stakeholder Consultation Workshop on Star Rating of Mines and Implementation of SDF organized by Ministry of Mines, IBM, GOI, and FIMI on 19th April 2016.
- Dr. A.K. Mishra participated in Brain storming session on "Mine Hazards – Assessment & management system in mines" at DGMS on 20.06.2016.
- Dr. A.K. Mishra attended Second Explosives Conclave hosted by Indian Oil Corporation Limited at Kolkata on 03.07.2015.
- Dr. A.K. Mishra attended 6th Asian Mining Congress & Exhibition organized by MGMI, Kolkata from 23-27 February 2016.
- Dr. A.K. Mishra attended 3rd IEEE International Conference on Recent Advances in Information Technology held at ISM from 3-5 March 2016.
- Dr. A. K. Mishra reviewed a paper An investigation for rib/snook design in mechanised depillaring for Current Science Journal.
- Dr.A.K. Mishra reviewed a paper Modified Randomization and Outlier detection algorithm for determining the performance of education districts of Tamil Nadu for Academy Proceedings in Engineering Science.

3.17 MINING MACHINERY ENGINEERING

3.17.1 ABOUT THE DEPARTMENT

The Department of Mining Machinery Engineering is the offshoot of the erstwhile Engineering Department that existed since the time of establishment of the institute. The Department offers B.Tech. programmes, M.Tech. programmes and Ph.D. programmes. The Department strives to maintain a high standard of teaching and research at all the levels.

3.17.1.1 Vision

- To serve the state and region by providing quality engineering education that enables students to achieve excellence in their field of study.
- To prepare graduates who would establish themselves as valued practicing engineers in relevant fields.
- To develop the ability to apply principles of engineering, basic sciences and mathematics to analyze, designs, and realize physical systems, components, or processes.

3.17.1.2 Mission

- To provide and sustain a quality, state-of-art education that enables students to develop specialized knowledge and experience required to practice as professional engineers.
- To offer prospective engineering students the opportunity to explore this particular engineering field by providing basic core and advanced engineering subjects to develop knowledge in areas like mechanical, mining, electrical, mining equipment, management, design and computer application.
- To provide excellence in education, preparing leaders for a diverse, highly technological, information-based society; to engage in research and creative activities that generate new knowledge and applications for effective practice that foster interdisciplinary approaches to address challenges

3.17.2 FIELD VISITS/EXCURSIONS/TRAINING PROGRAMMES UNDERTAKEN BY STUDENTS

	Batch of Students	Place of Visits	Period of Visit
1.	B.Tech-5 th Semester Students (3 rd Year)	Putki Balihari, Under-ground Mines (BCCL)	29 th Sept 2015
2.	B.Tech-5 th Semester Students (3 rd Year)	Block-II OCP (BCCL)	03 rd Oct 2015
3.	M.Tech-1 st Semester Students (1 st Year)	Putki Balihari, Under-ground Mines (BCCL)	29 th Sept 2015
4.	M.Tech-1 st Semester Students (1 st Year)	Block-II OCP (BCCL)	03 rd Oct 2015
5.	B.Tech-3 rd Semester Students (2 nd Year)	Putki Balihari, Under-ground Mines (BCCL)	06 th Oct 2015
6.	B.Tech-3 rd Semester Students (2 nd Year)	Block-II OCP (BCCL)	16 th Oct 2015
7..	M.Tech-1 st Semester Students (1 st Year)	(BCCL)	14 th Dec 2015 to 26 Dec 2015
8.	B.Tech-3 th Semester Students (2 nd Year)	1.ECL(Jhanjhara Mines) 2.Hindustan Copper Ltd.	14 th Dec 2015 To

		(Khetri Mines) 3.UCIL(Narwa Pahar) 4.Hinustan Zinc Ltd. (Vedanta) (Agncha Mines) 5. BCCL (Putki Balihari , Moonidih)	01 st Jan 2016
9.	B.Tech-5 th Semester Students (3 rd Year)	Sinidhi Workshop	14 th Dec 2015 To 01 st Jan 2016

3.17.3 INTRODUCTION OF NEW COURSES AND PROGRAMMES.

The department of Mining Machinery Engineering has started a 2-year M.Tech course on “Mine Electrical Engineering” in the academic year of 2015-2016. The objective of M. Tech course is to educate the electrical engineering graduates in the area of mine electrical engineering for working in underground and opencast mines as a successful engineer and to become good researcher in the area of Mine Electrical Engineering. The Mine Electrical course deals with various area of Mine Electrical system such as Mine Electrical Drive, Mine Electrical Safety, Design of Substation, Mine Instrumentation, Mine Power Supply System and its Protection.

3.17.4 BRIEF LIST OF ON-GOING R&D PROJECTS (PROJECT VALUE ₹5,00,000/- AND ABOVE)

1.	Project Title	:	Design and development of series-parallel hydraulic hybrid energy efficient excavator having displacement controlled actuators ”
	Sponsoring Agency	:	Science And Engineering Research Board (SERB)
	Coordinator (s)	:	Dr. Jayanta Das
	Project Value	:	₹ 22.20 Lakhs
	Date of Commencement	:	22.01.16
	Date of Completion	:	22.01.19
	Objective	:	Design and development of series-parallel hydraulic hybrid energy efficient excavator having displacement controlled actuators ”
	Status	:	Ongoing
	Findings	:	In progress
2.	Project Title	:	Experimental investigation on flow induced vibration of elastically mounted bluff bodies
	Sponsoring Agency	:	DST
	Coordinator (s)	:	Dr. L A Kumaraswamidhas
	Project Value	:	₹ 17.40 Lakhs
	Date of Commencement	:	05.08.13
	Date of Completion	:	05.08.16
	Objective	:	Experimental investigation on flow induced vibration of elastically mounted bluff bodies
	Status	:	Ongoing
	Findings	:	Flow charact-eristics

3.17.5 RESEARCH PUBLICATIONS

3.17.5.1 Books Published

Book(s)	Author(s)	Publisher
Engineering Graphics	Dr.L.A.Kumaraswamidhas Dr.J.Bensam Raj	TRI SEA PUBLICATIONS Nagercoil, Kanyakumari Dist, Tamil Nadu - 629 004

3.17.5.2 Paper published in International Journals

Sl. No.	Authors	Year	Title	Journal	Vol. No.	Page No.
1	R.S.Sinha, A.K.Mukhopadhyay	2015	Reliability Centered Maintenance of Cone Crusher: A Case Study	System Assuring Engineering & Management	Vol.6 No.1	32-35
2	Y.S.Dohare T. Maity P.S.Das, P.S. Paul	2015	Wireless Communication & Environment Monitoring in Underground Coal Mines–Review	IETE Technical Review	Vol.32 No.2	140-150
3	R. K. Upadhyay, L. A. Kumaraswamidhas	2015	Investigation of Monolayer–Multilayer PVD Nitride Coating	Surface Engineering	Vol.31 No.2	123-133
4	Kumar, K. Karthik Selva, and L. A. Kumaraswamidhas	2015	Experimental Investigation on Flow Induced Vibration Excitation in the Elastically Mounted Square Cylinders	Journal of Vibro-engineering	Vol.17 No.1	468-477
5	Dipen Kumar Rajak , L.A.Kumaraswamidhas , S. Das	2015	Energy Absorption Capabilities of Aluminium Foam –Filled Square Tube	Advanced Materials Letters	Vol.6, No.1	80-85
6	N.Mathan Kumar , S.SenthilKumaran & Dr. L.A. Kumaraswamidhas	2015	An Investigation of Mechanical Properties and Material Removal Rate ,Tool Wear Rate in EDM Machining Process of Al-2618 Alloy Reinforced With Si ₃ n ₄ , AlN and Zrb ₂ Composites	Journal of Alloys and Compounds	Vol. 650	318-327
7	Dilip Kumar, J.Das, Ajit Kumar	2015	Study on Electro-Hydraulic Actuated Close – Loop Controlled Excavator	International Journal of Applied Engineering Research	Vol10. No.69	103-107
8	Akanksha Sinha, K.C Jena, Ajit Kumar	2015	Implementation of optical fiber technology in power transmission: A step above wireless technology	Int. Journal of Applied Engineering Research	Vol.10 No.79	19-23
9	Santosh Kr. Mishra, J. Das And Dilip Kumar.	2015	A Brief Investigation about the Various Features of Closed Loop Hydrostatic Transmission System	International Journal of Applied Engineering Research	Vol.10. No.69	93-96
10	DilipKumar,Dr. J.Das, N. Kumar	2015	Study on PIDController used in Electro-Hydraulic Actuation System	Int. Journal of Applied Engineering Research	Vol10. No.69	108-112
11	Ramasankar Paswan, J. Das And Dilip Kumar	2015	Performance Studies of Open Loop Hydrostatic System: An Overview	Int. Journal of Applied Engineering Research	Vol.10. No.69o.69	351-355
12	M.L.Chandravanshi And A.K.Mukhopadhyay	2015	Experimental Model Analysis of Vibratory Feeder and its Structural Elements	Int. Journal of Applied Engineering Research	Vol.10 No.13	33303-33310

13	D Muruganandam, D Raguraman, L.A. Kumaraswamidhas	2015	Effect of Post-Welding Heat Treatment on Mechanical Properties of Butt FSW Joints in High Strength Aluminium Alloys	Indian Journal of Applied Engineering & Material Science	Vol.22	381-388
14	S. Pandiaranjan, S.Senthil Kumaran, Dr. L.A. Kumaraswamidhas, R.Saravanan	2016	Interfacial Microstructure and Optimization of Friction Welding by Taguchi and ANOVA Method On SA 213 Tube to SA 387 Tube Plate Without Backing Block Using An External Tool	Journal of Alloys and Compounds	Vol. 654	534-545
15	Hanuman Prasad, Tanmoy Maity	2015	Modelling And Simulation of Trans Quasi Z-Source Inverter as an Automatic Three Phase Power Conditioner	International Journal of Power Electronics (Scopus)	Vol. 07. No.1/2	36-53
16	Hanumoy Prasad, Tanmoy Maity	2015	Z-Source Inverter Based Motor Drives for Industrial Medium Voltage Application,	Periodica Polytechnica Electrical Engineering And Computer Science	Vol. 59, No. 2	30-35
17	P.S.Das, T. Maity	2015	Challenges inside Underground Mines and their Prevention Techniques	Disaster Advances , (Scopus)	Vol. 8 No.9	14-17
18	Ananya Sarkar, P. P. Bhattacharya, Tanmoy Maity	2015	Performance Analysis Of Stable Election Protocol For Clustered WSN	Int. Journal of Applied Engineering Research	Vol.10, No 16	36730-34
19	Dipen Kumar Rajak, L.A.Kumaraswamidhas,S. Das, S.SenthilKumar	2016	CharacterizationAnd Analysis of Compression Load Behaviour of Aluminium Alloy Foam under the Diverse Strain Rate	Journal of Alloys And Compounds	Vol.656	218-225
20	Kundan Bharti, A.K.Mukhopadhyay, Rakesh Kumar	2015	Development of Virtual Simulator Model of Belt Conveyor Installations	Journal of Mines, Metals & Fuels	Vol.63 No.8	214
21	K.Karthik S Sela Kumar, L.A.Kumaraswamidhas	2015	Large Eddy Simulation of Turbulent Fluid Flow over Circular Tube Bundle	Romanian Journal of Acoustics and Vibration	Vol. 12, No 02	116-125
22	N.M.Raj,L.A.Kumaraswamidhas,S.A.Vendan	2015	Investigation on Parametric Effects of Ultrasonic Welded Process on Metallographical Aspects Of Al-Al Alloys Dissimilar Joints	Welding Equipment and Technology	Vol. 26	49-59
23	L.A.Kumaraswamidhas, D .Muruganandam, D Raguraman, B.Senthikumar	2015	Temperature Prediction using Element Modelling on Friction Stir Welding on Friction Stir Welding of Aa6061-Az61	Indian Journal of Science And Technology	Vol. 8, No 31	1-7

24	K.P.Ajit, Abhinav Goutam, P.K. Sarkar	2015	Ductile fracture behaviour of low carbon high strength steel using continuum damage mechanics	Int.J.Mater.Res (formely z. Metallkd.)	Vol.106	1010-1013
25	N. Mathan Kumar, S. Senthil Kumaran & Dr. L.A. Kumaraswamidhas	2016	High Temperature Investigation on EDM Process of Al 2618 Alloy Reinforced with Si3n4 and Zrb2 in-Situ Composites	Journal of Alloys And Compounds	Vol. 663	755-768
26	S. Pandia Ranjan, S.Senthil Kumaran, Dr. L.A. Kumaraswamidhas, S. Muthukumaran	2016	An Investigation on Sa 213-Tube To Sa 387-Tube Plate Using Friction Welding Process	Journal of Mechanical Science And Technology	Vol. 30 No.1	337-344
27	S.Kannan, S.SenthilKumaran, Dr.L.A.Kumaraswamidhas	2016	An Investigation on Compression Strength Analysis of Commercial Aluminium Tube to Aluminium 2025 Tube Plate By Using TIG Welding Process	Journal of Alloys And Compounds	Vol.666	131-143
28	Ananya Sarkar, P. P. Bhattacharya, Tanmoy Maity	2015	Application of clustered routing protocol in a Warship based WSN	Ciencia E Tecnica Vitivinicola (SCI 0.479)	Vol.30 No.10	57-68
29	J. Antony, D. S.Mathuria, T.S. Datta, and Tanmoy Maity	2015	Development of intelligent instruments with embedded HTTP servers for control and data acquisition in a cryogenic setup- The Hardware, Firmware and Software implementation	Review of Scientific Instruments (AIP) 86(2) (SCI 1.618)	Vol.86 No.2	12503
30	N Kumar , K Dasgupta S K Ghoshal	2015	Dynamic analysis of a closed circuit hydrostatic summation drive using bent axis motors	Journal of Mechanical Engineering Science	Vol.229	761-777
31	Ananda Shankar Hati, Prof. Tarun Kumar Chatterjee	2015	Current monitoring Instrumentation system for detecting air-gapeccentricity in mine winder motor	International Journal of Applied Engineering Research	Vol.10	43000-43007
32	Ananda Shankar Hati, Prof. Tarun Kumar Chatterjee	2015	Axial leakage flux based on line condition monitoring instrumentation system for mine-winder motor	Journal of Mines, Metals & Fuels	Vol. 63 No.5&6	132-140
33	Ananda Shankar Hati, Prof. Tarun Kumar Chatterjee	2016	Symmetrical Component filter based on line condition monitoring instrumentation system for mine winder motor.	Measurement (Elsevier)	Vol. 82C	284-300

3.17.5.3 Papers Presented in International Seminars/Conferences

Sl. No	Authors	Title	Seminars/Conference	Date	Place
1.	K. Selva Kumar, V.Srivardhanad & L.A. Kumaraswamidhas	Flow simulation of fracturing shale reservoir rocks using liquid carbon dioxide	77th EAGE Conference And Exhibition 2015	June 01 - 04, 2015	Madrid, Spain
2.	Dipen Kumar Rajak, L. A. Kumaraswamidhas and S. Das	Improved deformation behaviour of groove square mild steel tube under compressive loading	International Conference On Chemical, Metallurgy And Material Science Engineering (CMMSE-2015)	Aug 10-11, 2015	Pattaya, Thailand
3.	Dipen Kumar Rajak, L. A. Kumaraswamidhas and S. Das	Evaluation of microstructure and compression behaviour of aluminium-alloy foams	International Conference On Chemical, Metallurgy And Material Science Engineering (CMMSE-2015)	Aug10-11, 2015	Pattaya, Thailand
4.	J.Das and Gyan Wrat	Simulation and analysis of different parameters in hydraulic circuit due to leakage	International Conference On Applied Mechanics (ICOAM 2015)	Dec 27- 28,2015	Phuket, Thailand
5.	Rahul Sinha, A.K.Mukhopadhyay	Liner wear in roll crushers – microscopic investigations	Advanced Materials, Mechanics And Structural Engineering 2015 (AMMSE 2015)	Sept 18- 20,2015	Jejn Island, South Korea
6.	Tanweer Alam , Urvashi Upadhyay , Sikander Azam and Rakesh Kumar	Optimization of mass of heat pipe for space applications using ant colony optimization	International Conference On Advances In Energy Research (ICAER-2015)	December 15-17, 2015	IIT Bombay , India
7.	K.P. Ajit, Abhinav Gautam , P.K. Sarkar	Continuum Damage mechanics based approach for fatigue life Estimation	International Conference on Trends in Industrial and Mechanical Engineering	Feb 4-6, 2016	NIT, Bhopal
8.	R.R.Das, N.J.Baishya, A.Verma, and A.Choudhury,	Fluid structure interaction based adhesion failure analysis of bonded tubular socket joints	12 th International Conference on Vibration Problems (ICOVP-2015)	Dec 14 th - 17 th 2015	IIT- Guwahati
9.	R.R.Das, A.Singla, and S.Srivastava	Thermo-mechanical interlaminar stress and dynamic stability analysis of composite spherical shells	12 th International Conference on Vibration Problems (ICOVP-2015)	Dec 14 th - 17 th 2015	IIT – Guwahati
10.	R.R.Das, and V.Ranjan	Fracture analysis of bonded composite pipe joints subjected to internal pressure and axial loading	12 th International Conference on Vibration Problems (ICOVP-2015)	Dec 14 th - 17 th 2015	IIT – Guwahati
11.	R.R.Das, A.Singla,	Dynamic stability and interlaminar stress analysis of cylindrical shells subjected to Elevated thermal field	12 th International Conference on Vibration Problems (ICOVP-2015)	Dec 14 th - 17 th	IIT – Guwahati
12.	TanweerAlam , Urvashi Upadhyay , Sikander Azam and Rakesh Kumar	Heat Pipe Mass Optimization for Space Applications	3rd IEEE International Conference on Recent Advances in Information Technology (RAIT-2016)	March 04 th -05 th , 2016	ISM, Dhanbad, India

13.	Tanweer Alam, Birender Kumar, M Nagendra Babu, Mohammad Azam and Rakesh Kumar	Hole Size and Location Optimization in Pressure Vessel	International Conference on Electrical, Electronics and Optimization Techniques (ICEEOT), Sponsored by IEEE Madras Section	March 03 rd -05 th , 2016	DMI Engineering College, Chennai
14.	Rishikesh Goswami, Rakesh Kumar and Tanweer Alam	Two Dimensional Transient Heat Flux Analysis Through Platinum Plate	International Conference on Electrical, Electronics and Optimization Techniques (ICEEOT), Sponsored by IEEE Madras Section	March 03 rd -05 th , 2016	DMI Engineering College, Chennai
15.	Birendra Kumar and Tanweer Alam	Excavator Bucket Tooth Wear Analysis	International Conference on Electrical, Electronics and Optimization Techniques (ICEEOT), Sponsored by IEEE Madras Section	March 03 rd -05 th , 2016	DMI Engineering College, Chennai

3.17.5.4 Papers Presented in National Seminars/ Conferences

Sl. No.	Authors	Title	Seminars/Conference	Date	Place
1.	V.R.Babu, T. Maiti, H. Prasad	Energy saving possibilities for ventilation fans in underground coal mines	National Conference on "Mining Equipments-New Technologies ,Challenges & Applications" (MENTCA '15)	9 th -10 th Oct 2015	Dhanbad, India
2.	R.R Das, N. Baishya, V Ranjan	Bonded tubular single lap joints in composite pipes: effect of internal pressure	National Conference on "Mining Equipments-New Technologies ,Challenges & Applications" (MENTCA '15)	9 th -10 th Oct 2015	Dhanbad, India
3.	Pramod Kr. Patel, Ajit Kumar, Sharmila Patel	Engine selection for dozer, applicable in Indian open-cast mines	National Conference on "Mining Equipments-New Technologies ,Challenges & Applications" (MENTCA '15)	9 th -10 th Oct 2015	Dhanbad, India
4.	R.S Sinha, A.K.Mukhopadhyay	Failure rate analysis of jaw crusher using artificial neural network	National Conference on "Mining Equipments-New Technologies ,Challenges & Applications" (MENTCA '15)	9 th -10 th Oct 2015	Dhanbad, India
5.	Abhinav Gautam, K P Ajit	Vehicle emission diagnosis based on FTA and OBD	National Conference on "Mining Equipments-New Technologies ,Challenges & Applications" (MENTCA '15)	9 th -10 th Oct 2015	Dhanbad, India
6.	Shree Harsha R, Ajit Kumar, Abhishek Kumar	Mathematical modelling of a hydro-pneumatic type gas accumulator	National Conference on "Mining Equipments-New Technologies ,Challenges & Applications" (MENTCA '15)	9 th -10 th Oct 2015	Dhanbad, India
7.	Ananda Shankar Hati	Vibration monitoring instrumentation system for detecting air gap eccentricity in mine winder motor	National Conference on "Mining Equipments-New Technologies ,Challenges & Applications" (MENTCA '15)	9 th -10 th Oct 2015	Dhanbad, India

8.	Ajit Kumar, Srinivas Nandikanti	Analysis of stress distribution on the bucket of a dragline machine	National Conference on “Mining Equipments-New Technologies ,Challenges & Applications” (MENTCA ’15)	th 9 - th 10 Oct 2015	Dhanbad, India
9.	ParthaSarathi Das, Tanmoy Maiti	A novel approach for disaster prevention inside underground mines	National Conference on “Mining Equipments-New Technologies ,Challenges & Applications” (MENTCA ’15)	th 9 - th 10 Oct 2015	Dhanbad, India
10.	Rahul Sinha, A.K.Mukhopadhyay	Understanding the influencing parameter for wear volume loss of roll crusher wear protection material	National Conference on “Mining Equipments-New Technologies ,Challenges & Applications” (MENTCA ’15)	th 9 - th 10 Oct 2015	Dhanbad, India
11.	Santosh Kr. Mishra, J. Das	Study on the application of fuzzy controller in hydrostatic transmission system of heavy earth moving machineries	National Conference on “Mining Equipments-New Technologies ,Challenges & Applications” (MENTCA ’15)	th 9 - th 10 Oct 2015	Dhanbad, India
12.	Ajit Kumar Pandey, Alok Vardhan, N. Kumar, K. Dasgupta	A comparative study on leakage behaviour of fixed and variable displacement bent axis hydro-motors	National Conference on “Mining Equipments-New Technologies, Challenges & Applications” (MENTCA ’15)	th 9 - th 10 Oct 2015	Dhanbad, India
13.	Ajit Kumar, K. Dasgupta, J. Das	Improving efficiency of hydrostatic steering system used in off-road vehicles using accumulator: a review	National Conference on “Mining Equipments-New Technologies, Challenges & Applications” (MENTCA ’15)	th 9 - th 10 Oct 2015	Dhanbad, India
14.	Dilip Kumar, J. Das	Study on fuzzy tune PID controller for electro-hydraulic system	National Conference on “Mining Equipments-New Technologies, Challenges & Applications” (MENTCA ’15)	th 9 - th 10 Oct 2015	Dhanbad, India
15.	Abhishek Kumar, Ajit Kumar, R. Shreeharsha	Operational characteristics of a fixed displacement hydraulic pump: an overview	National Conference on “Mining Equipments-New Technologies, Challenges & Applications” (MENTCA ’15)	th 9 - th 10 Oct 2015	Dhanbad, India
16.	Gyan Wrata, J. Das	A literature review of different parameters in hydraulic circuit due to leakage	National Conference on “Mining Equipments-New Technologies, Challenges & Applications” (MENTCA ’15)	th 9 - th 10 Oct 2015	Dhanbad, India
17.	Alok Vardhan, Ajit Kumar Pandey, K. Dasgupta, N. Kumar	Selection of hydraulic components for body hoist control of dumper	National Conference on “Mining Equipments-New Technologies, Challenges & Applications” (MENTCA ’15)	th 9 - th 10 Oct 2015	Dhanbad, India
18.	K. Karthik Selva Kumar, L. A. Kumaraswamidhas	Investigation on flow induced vibration excitation and stability of mines transportation system: cages in hoist winders	National Conference on “Mining Equipments-New Technologies, Challenges & Applications” (MENTCA ’15)	th 9 - th 10 Oct 2015	Dhanbad, India
19.	Prabhat Ranjan, J. Das	Leakage in a hydraulic system: an overview	National Conference on “Mining Equipments-New Technologies, Challenges & Applications” (MENTCA ’15)	th 9 - th 10 Oct 2015	Dhanbad, India

20.	J. Das, Mahendra Kumar	A case study of bearing fault monitoring techniques for induction motors	National Conference on “Mining Equipments-New Technologies, Challenges & Applications” (MENTCA’15)	th 9 - th 10 Oct 2015	Dhanbad, India
21.	Ashish Kumar Sinha, Sukanta Das, Tarun Kumar Chatterjee	A case study of bearing fault monitoring techniques for induction motors	National Conference on “Mining Equipments-New Technologies, Challenges & Applications” (MENTCA’15)	th 9 - th 10 Oct 2015	Dhanbad, India
22.	Hanuman Prasad, Tanmoy Maity, VanguriRanjithBabu	Study of the suitability of quasi Z-source inverter for mine motor drives	National Conference on “Mining Equipments-New Technologies, Challenges & Applications” (MENTCA’15)	th 9 - th 10 Oct 2015	Dhanbad, India
23.	Pramod Kr. Patel, Ajit Kumar	Intensity analysis and structural optimization on multi-shank dozer ripper: visualization of stress, strain and deformation through FEA	National Conference on “Mining Equipments-New Technologies, Challenges & Applications” (MENTCA’15)	th 9 - th 10 Oct 2015	Dhanbad, India
24.	Yogendra Singh Dohare, Tanmoy Maity, P. S. Paul	Development of miniature sensor board for underground mines monitoring system	National Conference on “Mining Equipments-New Technologies, Challenges & Applications” (MENTCA’15)	th 9 - th 10 Oct 2015	Dhanbad, India
25.	R R Das, N Baishya, V Ranjan	Analysis of bonded tubular single lap joints subjected to varying pressure at constant torsion	National Conference on “Mining Equipments-New Technologies, Challenges & Applications” (MENTCA’15)	th 9 - th 10 Oct 2015	Dhanbad, India
26.	Ajit Kumar, Abhishek Kr. Chaoudhary, Shikhar Shukla, Shrey Kr. Singh	Design analysis of articulated steering system used in off-road vehicles	National Conference on “Mining Equipments-New Technologies, Challenges & Applications” (MENTCA’15)	th 9 - th 10 Oct 2015	Dhanbad, India
27.	A.Prakash, V.M.S.R .Murthy, K.B.Singh, Chandan Kumar, L.A.Kumarswamidias	Development of a handy methodology for the selection of surface miner in varied rock-mass conditions for mass production of coal and limestone	National Conference on “Mining Equipments-New Technologies, Challenges & Applications” (MENTCA’15)	th 9 - th 10 Oct 2015	Dhanbad, India
28.	Ajit Kumar Singh, SrivenkateshSomaskandan, Siva Ramadoss, Mayank Gupta, Luckhmeet Singh Sandhu	Casting cost estimation tool	National Conference on “Mining Equipments-New Technologies, Challenges & Applications” (MENTCA’15)	th 9 - th 10 Oct 2015	Dhanbad, India
29.	A.Prakash, V.M.S.R. Murthy, K.B.Singh, Chandan Kumar, L.A.Kumarsawmidias	Influence of cutting drum specifications on the production performance of surface miner under varied rock strength – some investigations	National Conference on “Mining Equipments-New Technologies, Challenges & Applications” (MENTCA’15)	th 9 - th 10 Oct 2015	Dhanbad, India
30.	K. Priya Ajit, Abhinav Gautam, P. K. Sarkar	Fatigue damage estimation through continuum damage mechanics: an overview	National Conference on “Mining Equipments-New Technologies, Challenges & Applications” (MENTCA’15)	th 9 - th 10 Oct 2015	Dhanbad, India

31.	Alok Vardhan, Ajit Kumar Pandey, N. Kumar And Ajit Kumar	Capacity estimation of a belt conveyor system using conventional approach	All India Seminar on Advances in Mine Transport System	20-21 Jan 2016	The Institution of Engineers (India), Dhanbad
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3.17.6 MAJOR ACADEMIC CONTRIBUTIONS

1. Dr. Jayanta Das was awarded best paper presenter at International Conference on Applied Mechanics (ICOAM 2015) which was organised on December 27-28th, 2015 in Phuket, Thailand.
2. Sh. Tanweer Alam was awarded Best Poster Presentation at International Conference On Advances in Energy Research (ICEAR-2015) which was Organised on December 15-17th 2015 in IIT Bombay.
3. Sh. Ramkrishna Upadhayay obtained Phd. Degree under the esteemed guidance of Dr. L.A. Kumaraswamidhas
4. Sh. Yogendra Singh Dohare obtained his Phd. Degree under the esteemed guidance of Dr. Tanmoy Maity.
5. Sh. Niranjan Kumar obtained his Phd. Degree under the esteemed guidance of Prof. K Dasgupta
6. Dr. Ajit Kumar Acted as Rapporteur for Technical Session II in ALL INDIA SEMINAR ON ADVANCES IN MINE TRANSPORT SYSTEM (20.01.2016-21.01.2016) on 20.01.2016 from 3:50 PM to 5:00 PM organized by The Institution of Engineers (India), Dhanbad Local Centre under the aegis of Mining Engineering Division, IEI in association with DGMS Dhanbad at BCCL Community Hall, Koyla Nagar, Dhanbad.

3.17.7 SEMINARS, SYMPOSIA, WORKSHOPS, CONFERENCES ORGANISED BY THE DEPT/CENTRE

National Conference on Mining Equipment: New Technologies, Challenges & Applications (MENTCA-2015).	October, 9 th -10 th , 2015
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3.17.8 PARTICIPATION OF FACULTY/ OFFICERS/STAFF IN SEMINARS/ CONFERENCES ETC

Sl. No.	Authors	Title	Seminars/conference	Date	place
1.	L.A. Kumaraswami dhas	Improved deformation behaviour of groove square mild steel tube under compressive loading	International Conference on Chemical, Metallurgy and Material Science Engineering (CMMSE-2015)	Aug. 10-11, 2015	Pattaya, Thailand
2.	L.A. Kumaraswami dhas	Evaluation of microstructure and compression behaviour of aluminium-alloy foams	International Conference on Chemical, Metallurgy and Material Science Engineering (CMMSE-2015)	Aug 10-11, 2015	Pattaya, Thailand
3.	J. Das	Simulation and analysis of different parameters in hydraulic circuit due to leakage	International Conference on Applied Mechanics (ICOAM 2015)	Dec 27-28, 2015	Phuket, Thailand

4.	Tanweer Alam	Optimization of mass of heat pipe for space applications using ant colony optimization	International Conference on Advances in Energy Research (ICAER-2015)	Dec. 15-17, 2015	IIT Bombay, India
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3.17.9 VISITS OF FACULTY MEMBERS ABROAD

1. Dr. L.A Kumaraswamidhas visited Pattaya, Thailand to attend “International Conference on Chemical, Metallurgy and Material Science Engineering (CMMSE-2015)” from August 10-11 2015
2. Dr. Jayanta Das visited Phuket, Thailand to attend “International Conference on Applied Mechanics (ICOAM 2015)” from December 27-28 2015

3.17.10 SPECIAL LECTURES BY DISTINGUISHED GUESTS

Guests	Date
Mr. Dimitrov Krishnan, Vice President (Sales & Marketing), Volvo Construction Equipment, delivered a Lecture on “Technological Advancement in Mining Equipment”	03.08.2015
Lt. General R M Mittal, AVSM, SM, VSM, Director General Border Roads, BRO, delivered a Lecture on “Controlled Blasting Management for Road Construction in Mountainous area”	28.09.2015
Prof. Khandidra Pathak, Dept. Of Mining Engineering, IIT Kharagpur delivered expert talk on “Recent Advancements on Mining Equipment”.	21.01.2016
Shri. Rajiv Ranjan, Head of Engine Section, Central Workshop (Excavation), Sinidih, BCCL delivered a Lecture on “IC Engine as Prime Movers for Heavy Mining Machinery: Application and Maintenance”	23.01.2016
Prof. A. Chattopadhyay, Delivered Lecture on Shearer and Plough to B. Tech&M. Tech MME Students.	08.02.2016-09.02.2016
Industrial Guest lecture delivered by Mr. J Parmer, Consultant-AED & Technical Services, Usha Martin on “Design of Steel wire ropes used for Mining Applications”	20.02.2016
Shri. Rajiv Ranjan, Head of Engine Section, Central Workshop (Excavation), Sinidih, BCCL delivered a Lecture on “Transmission Systems used in Heavy Mining Machinery”	07.03.2016

3.17.11 MISCELLANEOUS

1. Shri Ananda Shankar Hati was awarded with the Chartered Engineer [India] on 1st December, 2015.
2. Short Term Course Organized by Department

Sl. No.	Title	Duration	Venue	Coordinator(s)
1.	Intensive Training Program for E & M Executives of SCCL	06 th -24 th April 2015	ISM, Dhanbad	1.Prof. K Dasgupta 2.Prof. T K Chatterjee 3.Prof A K Mukhopadhyay
2.	Measurement, Control & Simulation Through LABVIEW Software	22 nd -26 th June 2015	ISM, Dhanbad	1.Dr. Jayanta Das 2.Mr. Niranajan Kumar
3.	Condition based Maintenance of Mining Equipment	24 th - 26 th August 2015	ISM- Kolkata Centre	1.Tanweer Alam 2.Prof. A. K. Mukhopadhyay

4.	Condition based Maintenance of Mining Equipment for Opencast and Underground Mining	23 rd November to 04 th December 2015	ISM, Dhanbad	1.Prof.A.K.Mukhopadhyay 2.TanweerAlam
5.	Mining Equipment Safety Practices	07 th - 09 th December 2015	ISM, Dhanbad	1.Dr. L.A. Kumaraswamidhas 2.Mr. Ajit Kumar
6.	5 weeks Intensive program for Management Trainees of E&M and Excavation cadre of CIL	29 th Feb to 01 st April 2016	ISM, Dhanbad	1.Prof A.K.Mukhopadhyay

3.18 DEPARTMENT OF PETROLEUM ENGINEERING

3.18.1 ABOUT THE DEPARTMENT:

The Department of Petroleum Engineering was established in the year 1957 to cater and train the Petroleum Engineers of the country. It was the first Institute of its kind in Asia. It still maintains its quality as the best Petroleum Engineering Department of the country with continuing global recognition. The alumni of the Department have occupied top positions of industry of E & P business and academia, in India and abroad.

Department currently offers one 4-years B. Tech. in Petroleum Engineering, one 5-years Dual Degree B. Tech. in Petroleum Engineering and M. Tech. in Petroleum Engineering and one 2-years M. Tech. in Petroleum Engineering. In addition, the Department also offers Doctoral degree (Ph. D) programs.

3.18.1.1 Vision: Strengthening education, research and industry institute interaction in major fields of Petroleum Engineering at par with International standards.

3.18.1.2 Mission: Up-gradation of Petroleum Engineering education, research and industry-institute interaction to meet challenges of the Indian Petroleum Industry in terms of efficient extraction of hydrocarbon resources.

The Department intends to:

- Develop a state-of-the-art curriculum to provide quality education and strong foundations of upstream of Petroleum Engineering, preparing students for careers in industry and research adapting to rapidly changing technology.
- Pursue and excel in identified key research areas addressing the challenges of industry and society in the global context.
- Nurture students for developing critical thought process, innovation and creativity through engineering problems.
- Promote establishment of Centres of Excellence in emerging technology areas.
- Establish interaction with industry and other higher educational institutes of the country for exchange of ideas of technical expertise.
- Inculcate and foster ethical and human values in stakeholders (students, faculty and staff).

3.18.2 FIELD VISITS/EXCURSIONS/TRAINING PROGRAMMES UNDERTAKEN BY STUDENTS

Particulars	Batch of Students	Place of Visit	Period of visit
Summer Training	IV B.Tech PE	ONGC Ahmedabad Asset	11.05.2015 to 12.06.2015
Summer Training	IV B.Tech PE	ONGC Mehsana Asset	11.05.2015 to 12.06.2015
Summer Training	II M.Tech PE	ONGC Ankleshwer Asset	11.05.2015 to 12.06.2015
Summer Training	IV B.Tech PE	ONGC Cambay Asset	11.05.2015 to 12.06.2015

Summer Training	IV B.Tech PE	Uran Processing Plant	11.05.2015 to 12.06.2015
Summer Training	IV B.Tech PE	Hazira Gas Processing Plant	11.05.2015 to 12.06.2015
Industrial Training	VI B. Tech. PE	ONGC, IOGPT Mumbai/Panvel	11.05.2015 to 12.06.2015
Summer Internship	VI B.Tech PE	Baker &Huges, Andheri East, Mumbai	11.05.2015 to 12.06.2015
Summer Internship	VI B.Tech PE	Weatherford	11.05.2015 to 12.06.2015
Summer Internship	VI B.Tech PE	Shell Technology, India	11.05.2015 to 12.06.2015
Summer Internship	VI Dual Degree PE	IRS ONGC Ahmedabad	11.05.2015 to 12.06.2015
Summer Internship	VI B.Tech PE	Halliburton	11.05.2015 to 12.06.2015
Summer Training	VI B.Tech PE	Well Stimulation Services ONGC Chand Kheda Ahmedabad	11.05.2015 to 12.06.2015
Summer Training	VI B.Tech PE	Oil India Limited	11.05.2015 to 12.06.2015
Summer Training	VI B.Tech PE	CBM Bokaro	11.05.2015 to 12.06.2015
Summer Training	IV B.Tech PE	Colombia Oil field	25.06.2015-24.07 2015
Summer Training	VI B.Tech & DD PE	Russian Oil field	25.06.2015-24.07 2015
Summer Training	VI B.Tech PE	Sudan Oil field	25.06.2015-24.07 2015
Winter Training	VI B.Tech PE	ONGC Ahmedabad	14.12.2015-15.01.2016
Winter Training	V B.Tech PE	ONGC Mehsana Asset	14.12.2015 - 15.01.2016
Winter Training	V B.Tech PE	ONGC Ahmedabad Asset	14.12.2015 - 15.01.2016
Winter Training	V B.Tech PE	ONGC Ankleshwer Asset	14.12.2015 - 15.01.2016
Winter Training	V B.Tech PE	ONGC Mehsana Asset	14.12.2015 - 15.01.2016
Winter Training	VII Dual Degree	IRS ONGC Ahmedabad	14.12.2015 - 15.01.2016
Winter Training	VII Dual Degree	WSS Ahmedabad	14.12.2015 - 15.01.2016
Winter Training	V B.Tech PE	ONGC Cambay	14.12.2015 - 15.01.2016
Winter Training	VI B. Tech & I M. Tech	Essar Oil Ltd. , Durgapur	14.12.2015 - 15.01.2016
Educational Excursion	IV sem B.Tech	IOC Bottling Plant, Bokaro	12 Feb 2016

3.18.3 INTRODUCTION OF NEW COURSES AND PROGRAMMES, IF ANY (GIVE COURSE OUTLINE)

- i. Introduction of B.Tech (Hons) Petroleum Engineering course.
- ii. Introduction of New M.Tech PE Course in Petroleum Engineering.
- iii. Introduction of New Elective papers in Undergraduate and Post graduate courses.

S.No.	Course	Semester	Name of subject/ programme
1.	B.Tech (Hons) PE	V	PEH15103:Reservoir Fluid Thermodynamics
2.	B.Tech (Hons) PE	VI	PEH16103: Natural Gas Engineering
3.	M.Tech PE	I	PEC51102: Fluid Flow Through Porous media.
4.	M.Tech PE	II	PEC52103:Integrated Reservoir Management

3.18.4 BEST PRACTICES OF THE DEPARTMENT

- Faculty members keep themselves updated with the emerging trends in upstream industries and disseminate knowledge to students and also apply in their research works.
- Most of the students are involved in live projects for their B. Tech. (Projects), M. Tech (Dissertation) and PhD (thesis).
- International Field Training of 10 Undergraduate students of IV & VI semester B.Tech and Dual Degree PE at Columbia, Sudan and Russian oil field through ONGC Videsh Limited.

3.18.5 BRIEF LIST OF ON - GOING R&D PROJECTS (PROJECT VALUE ₹ 5,00,000/- AND ABOVE)

1.	Project Title : Carbon dioxide sequestration and simultaneous bio-fuel generation using micro algae in a photo bioreactor Sponsoring Agency : DST Coordinator (s) : Dr C Guria and Prof A. K. Pathak Project Value : ₹ 14.48 Lakhs Date of Commencement : 28.01.2013 Date of Completion : 27.01.2016 Objective : Lipid bearing microalgae cultivation using CO ₂ and bio-fuel production Status : Ongoing Findings : Micro algae was cultivated successfully using NPK based fertilizer
2.	Project Title : Selective Catalytic Oxidation of Karanja oil: An Alternative Source of Petrochemical Products Sponsoring Agency : UGC Coordinator (s) : Dr C Guria and & Prof A. K. Pathak Project Value : ₹ 14.55 Lakhs Date of Commencement : 05.03.2013 Date of Completion : 04.03.2016 Objective : To prepare fatty acid methyl ester from karanja/sal oil and subsequent oxidation to mono- and di-carboxylic acid. Status : Ongoing Findings : Biodiesel was prepared using ion-exchange resin and bentonite nanclay solid catalyst

3.	Project Title : Functionalization of Nano Fly Ash for Drilling Fluid Application. Sponsoring Agency : UGC Coordinator (s) : Dr C Guria and Prof A. K. Pathak Project Value : ₹ 13.048 Lakhs Date of Commencement : 05.03.2013 Date of Completion : 04.03.2016 Objective : Preparation of nano fly ash and subsequent functionalization for the use of drilling fluid application Status : Ongoing Findings : Nano fly ash was prepared and analyzed
4.	Project Title : Development of Fracturing Fluid for High Pressure High Temperature (HPHT) Reservoirs with Minimum Formation Damage Sponsoring Agency : CSIR Coordinator (s) : Dr. Keka Ojha Project Value : ₹ 14.00 Lakhs Date of Commencement : 15.04.2013 Date of Completion : 15.04.2016 Objective : To develop clean VES based fracturing fluid for moderate temperature reservoirs. Status : Almost completed Findings : Developed surfactat based fracturing fluid for 120°C.
5.	Project Title : Development of Nanoparticle Induced Chemicals for Consolidating Loose Formation to Improve Oil Production Sponsoring Agency : UGC Coordinator (s) : Dr. Keka Ojha Project Value : ₹ 13.288 Lakhs Date of Commencement : 25/03/2013 Date of Completion : 25/03/2016 Objective : Selection and development of chemicals and nanoparticles suitable for the sand consolidation Status : Almost completed Findings : Two new chemical systems including nanoparticle induced chemical system has been developed and investigated.
6.	Project Title : Development of foam based drilling fluid for CBM wells Sponsoring Agency : DST Coordinator (s) : Dr. Keka Ojha Project Value : ₹ 16.8 Lakhs Date of Commencement : June, 2013 Date of Completion : May, 2016 Objective : Development of foam fluid for underbalanced drilling Developed foam based fluid which is capable of suspending cuttings at various conditions Status : Ongoing Findings : In progress
7.	Project Title : Experimental and modelling studies of flow of paraffinic crude oil through a complex flow loop Sponsoring Agency : UGC Coordinator (s) : Dr. T. K. Naiya, Dr. Ajay Mandal Project Value : ₹ 13.79 lakhs Date of Commencement : September 2013 Date of Completion : September 2016

	Objective :	Flow characteristics, Flow mechanism
	Status :	Ongoing
	Findings :	Improve the efficiency of waxy fluid flow
8.	Project Title :	<i>Experimental and Modeling Studies of Chemically Enhanced Water Alternating Gas (CEWAG) Injection for Enhanced Oil Recovery</i>
	Sponsoring Agency :	CSIR
	Coordinator (s) :	Dr. Ajay Mandal
	Project Value :	₹ 17.97 lakhs
	Date of Commencement :	01.06.2014
	Date of Completion :	01.06.2017
	Objective :	Additional oil recovery by CEWAG flooding New EOR techniques
	Status :	Ongoing
	Findings :	Enhancement of recovery by CEWAG method
9.	Project Title :	Synthesis and extraction of surfactants from natural resources and their characterization for application in enhanced oil recovery
	Sponsoring Agency :	Oil India Ltd
	Coordinator (s) :	Dr. Ajay Mandal, Dr. Keka Ojha
	Project Value :	₹ 22.62 lakhs
	Date of Commencement :	16.09.2015
	Date of Completion :	15.09.2018
	Objective :	Synthesis of new surfactants for EOR Study in process
	Status :	Ongoing
	Findings :	Natural surfactant to be formulated for use in EOR
10.	Project Title :	Study of Organic Solid Deposition in Petroleum Reservoir Rock
	Sponsoring Agency :	Oil India Ltd.
	Coordinator (s) :	Dr. Vikas mahto
	Project Value :	₹ 8.58 Lakhs
	Date of Commencement :	January 2014
	Date of Completion :	January 2017
	Objective :	Study the organic solid deposition in the petroleum formation and its control using chemical treatment method
	Status :	Ongoing
	Findings :	Detail characterization of crude oil samples from OIL ltd were carried out and it was found that these crude oil samples may cause severe solid deposition problems in the reservoir
11.	Project Title :	Development of Advanced Reservoir Engineering Lab
	Sponsoring Agency :	DST (FIST)
	Coordinator (s) :	
	Project Value :	Rs. 160.00 Lakhs
	Date of Commencement :	2013
	Date of Completion :	2018
	Objective :	Upgradation of research facility
	Status :	Ongoing
	Findings :	In progress

3.18.6 IMPORTANT COLLABORATIVE WORKS

Organization / Lab	Nature of interaction
Oil India Ltd.	Two collaborative research project sponsored by Oil India Ltd.
Mercarator Petroleum Ltd.	Characterization of shale from Cambay basin
CSIR-CIMFR Dhanbad/ NIT Durgapur	Joint research on Role of Coal Composition and maturity on the Sorption Behaviour of Indian Coal for Gas Storage Estimation
NIT Durgapur	Joint Research on Experimental Investigation on Transesterification of Non-Edible Oils Employing Heterogeneous Carbon Based Chemical and Biocatalyst in Batch and Packed Bed Reactors
NIT Durgapur	Joint research on Studies on Lubricants used in various Industrial applications

3.18.7 IMPORTANT NEW EQUIPMENT ACQUISITIONED (ABOVE ₹5,00,000/-)

Name of Equipment	Purpose	Date of Purchase	Value (Rs.)
Fabrication of Experimental Setup for the study of organic solid deposition in petroleum reservoir rock	To study the organic solid deposition problems caused by Indian crude oils	30.03.2016	5.2 lakhs

3.18.8 RESEARCH PUBLICATIONS

3.18.8.1 Books published

Objective Questions in Petroleum Engineering (Important Multiple Choice Questions with Answers), Author: Dr Vikas Mahto, Associate Professor, Department of Petroleum Engineering Indian School of Mines Dhanbad. Published by Khanna's Publishers, New Delhi.

3.18.8.2 Papers published in International Journals

Sl. No.	Author (s)	Year	Title	Journal	Vol. No.	Page No.
1.	Vikash Kumar Saw, Ajay Mandal, G. Udayabhanu, and Sukumar Laik	2015	Methane Hydrate Formation and Dissociation in Presence Silica Sand and Bentonite Clay.	Oil & Gas Science and Technology	70 (6)	1087-1099
2.	V. K. Rajak, K. K. Relish, S. Kumar, and A. Mandal	2015	Mechanism and Kinetics of Separation of Oil From Oil-in-Water Emulsion by Air Flotation	Petroleum Science and Technology	33	1861-1868
3.	Tarun Kumar Naiya, Shirsendu Banerjee, Ravindra Kumar, Ajay Mandal	2015	Heavy Crude Oil Rheology Improvement Using Naturally Extracted Surfactant	SPE-178133-MS, 2015	-	1-17
4.	Keshak Babu, Nilanjan Pal, Achinta Bera, V. K. Saxena and Ajay Mandal	2015	Studies on Interfacial Tension and Contact Angle of Synthesized Surfactant and Polymeric surfactant from Castor Oil for Enhanced Oil Recovery	Applied Surface Science	353	1126-1136
5.	Shirsendu Banerjee, Ravindra Kumar, Ajay Mandal, Tarun Kumar Naiya	2015	Effect of Natural and Synthetic Surfactant on the Rheology of Light Crude Oil	Petroleum Science and Technology	33 (15-16)	1516-1525

6.	Himangshu Kakati, Ajay Mandal, Sukumar Laik,	2015	Phase stability & kinetics of CH ₄ +CO ₂ +N ₂ hydrates in synthetic seawater and aqueous electrolyte solutions of NaCl & CaCl ₂	J. Chem. Eng. Data,	60 (6)	1835–1843
7.	Ravindra Kumar, Shirsendu Banerjee, Nawin Kumar, Ajay Mandal, Tarun Kumar Naiya	2015	Comparative Studies on Synthetic and Naturally Extracted Surfactant for Improving Rheology of Heavy Crude Oil	Petroleum Science and Technology	33 (10)	1101-1109
8.	A. Kumar Sinha, A. Bera, V. Raipuria, A. Kumar, A. Mandal, and T. Kumar	2015	Numerical Simulation of Enhanced Oil Recovery by Alkali-surfactant-polymer Floodings	Petroleum Science and Technology	33	1229–1237
9.	Shirsendu Banerjee, Ravindra Kumar, Ajay Mandal, Tarun Kumar Naiya,	2015	Use of Novel Natural Surfactant for Improving Flowability of Indian Heavy Crude Oil	Petroleum Science and Technology	33	819–826
10.	Keshak Babu, Neetish Kumar Maurya, Ajay Mandal, V. K. Saxena	2015	Synthesis and Characterization of Sodium Methyl Ester Sulfonate for Chemical Enhanced Oil Recovery	Brazilian Journal of Chemical Engineering,	32 (3)	795 – 803
11.	Achinta Bera and Ajay Mandal	2015	Microemulsions: A Novel Approach to Enhanced Oil Recovery - A Review	Journal of Petroleum Exploration and Production Technology	5	255–268
12.	Arpita Sahu, Soumyadip choudhury, Achinta Bera, Shranish Kar, Sunil Kumar, and Ajay Mandal	2015	Anionic-Nonionic Mixed Surfactant Systems: Micellar Interaction and Thermodynamic Behavior	Journal of Dispersion Science and Technology	36 (8)	1156-1169
13.	Ajay Mandal and Achinta Bera	2015	Modeling of Flow of Oil-in-Water Emulsions through Porous Media	Pet. Sci.	12	273-281 (0.721)
14.	Ajay Mandal	2015	Chemical Flood Enhanced Oil Recovery: A Review	Int. J. Oil, Gas and Coal Technology	9 (3)	241-64
15.	Sumit Rai, Achinta Bera and Ajay Mandal	2015	Modeling of Surfactant and Surfactant-Polymer Flooding for Enhanced Oil Recovery using STARS (CMG) Software	J Petrol Explor Prod Technol	5	1-11
16.	Achinta Bera, Ajay Mandal, T. Kumar	2015	Effect of Rock-Crude oil-Fluid Interactions on Wettability Alteration of Oil-Wet Sandstone in Presence of Surfactants	Petroleum Science and Technology	33(5)	542-549
17.	Keshak Babu, Achinta Bera, Kamlesh Kumari, Ajay Mandal,* V. K. Saxena	2015	Characterization and Application of Methylcellulose and Potato Starch Blended Films in Controlled Release of Urea,	Journal of Polymer Engineering	35(1)	79–88

18.	Shashikant Kumar, Chandan Guria, Ajay Mandal.	2015	Characterization and Stability analysis of Crude oil in water emulsions	Journal of Petroleum Engineering and Technology	5(3)	1-10
19.	Sunil Kumar and Ajay Mandal	2016	Studies on interfacial behavior and wettability change phenomena by ionic and nonionic surfactants in presence of alkalis and salt for enhanced oil recovery	Journal of Applied Surface Science	372	42–51
20.	Himangshu Kakati, Ajay Mandal, Sukumar Laik	2016	Promoting effect of Al ₂ O ₃ /ZnO-based nanofluids stabilized by SDS surfactant on CH ₄ +C ₂ H ₆ +C ₃ H ₈ hydrate formation	Journal of Industrial and Engineering Chemistry	35	357–368
21.	Ajay Mandal and Shranish Kar	2016	A thermodynamic assessment of micellization for a mixture of sodium dodecyl benzene sulfonate and Tween 80 surfactants for ultralow interfacial tension	Fluid Phase Equilibria	408	212-222
22.	Keshak Babu, Nilanjan Pal, V. K. Saxena and Ajay Mandal,	2016	Synthesis and characterization of new polymeric surfactant for chemical enhanced oil recovery	Korean Journal of Chemical Engineering.	33 (2)	711-719
23.	Singh R., Mahto, Willey,	2016	Study of the polymer concentration and polymer/crosslinker ratio effect on gelation time of a novel grafted polymer gel for water shutoff using a central composite design method	Polymer for Advanced Technologies	27(2)	204-212
24.	Jain, R., Mahto V., and Sharma, V.P.,,,	2015	Evaluation of polyacrylamide-grafted-polyethylene glycol/silica nanocomposite as a potential additive in water based drilling mud for reactive shale formation.	Journal of Natural Gas Science and Engineering	26	526-537
25.	Jain, R., and Mahto, V	2015	Evaluation of polyacrylamide/clay composite as a potential drilling fluid additive in inhibitive water based drilling fluid system	Journal of Petroleum Science &.Engineering	133	612–621
26.	Jain, R., Mahto. T.K., and Mahto, V.	2015	Rheological investigations of water based drilling fluid system developed using synthesized nanocomposite.	Korea-Australia Rheology Journal	28 (1)	55-65

27.	Paswan, B.K., Jain. R., Sharma, S., Mahto, V., and Sharma, V.P.,	2016.	Development of Jatropha oil in-water emulsion drilling mud system.	Journal of Petroleum Sc. & Engineering	144	10-18
28.	Jha, P.K., Mahto, V., and Saxena, V.K.	2015.	Effects of Carboxymethyl Cellulose and Tragacanth Gum on the Properties of Emulsion-Based Drilling Fluids	The Canadian Journal of Chemical Engineering	93 (9)	1577-1587
29.	Jha, P.K., Mahto, V., and Saxena, V.K.	2016	Study the Effects of Xanthan Gum and Aluminium Stearate on the Properties of Oil-in-Water Emulsion Drilling Fluids.	Arabian Journal for Science and Engineering	41 (1)	143-153
30.	M. S. Sisodia, D. K. Rajak, A. K. Pathak, C. Guria	2015	An improved estimation of shear rate for yield stress fluid using rotating coaxial cylinder Fann Viscometer	Journal of Petroleum Science and Engineering	125	247-255
31.	S Kumar, C Guria, A Mandal	2015	Synthesis, characterization and performance studies of polysulfone/bentonite nanoparticles mixed-matrix ultra-filtration membranes using oil field produced water	Separation and Purification Technology	150	145-158
32.	B Hajra, N Sultana, AK Pathak, C Guria	2015	Response surface method and genetic algorithm assisted optimal synthesis of biodiesel from high free fatty acid sal oil (<i>Shorea robusta</i>) using ion-exchange resin at high temperature	Journal of Environmental Chemical Engineering	3	2378-2392
33.	A Kumari, AK Pathak, C Guria	2015	Effect of light emitting diodes on the cultivation of <i>Spirulina platensis</i> using NPK-10: 26: 26 complex fertilizer	Phycological Research	63	274-283
34.	A Kumar, AK Pathak, C Guria	2015	NPK-10: 26: 26 complex fertilizer assisted optimal cultivation of <i>Dunaliella tertiolecta</i> using response surface methodology and genetic algorithm	Bioresource Technology	194	117-129
35.	A Kumari, AK Pathak, C Guria	2015	Cost-Effective Cultivation of <i>Spirulina platensis</i> Using NPK Fertilizer	Agricultural Research	4	261-271
36.	S Kumar, C Guria, A Mandal	2015	Characterization and Stability Analysis of Crude Oil-in-Water Emulsions	Journal of Petroleum Engineering & Technology	5	1-10
37.	B Hajra, M Kumar, AK Pathak, C Guria	2016	Surface tension and rheological behavior of sal oil methyl ester biodiesel and its blend with petrodiesel fuel	Fuel	166	130-142

38.	N Sultana, B Hajra, VK Saxena, C Guria	2016	Optimal synthesis of sal (Shorea robusta) oil biodiesel using recycled bentonite nanoclay at high temperature	Energy & Fuels	30	386–397
39.	Atrayee Baruah, Akhilendra K. Pathak, Keka Ojha	2015	Phase behaviour and thermodynamic properties of lamellar liquid crystal developed for viscoelastic surfactant based fracturing fluid	Chemical Engineering Science	131	146-154
40.	Atrayee Baruah, Akhilendra K. Pathak, and Keka Ojha	2015	Study on the Thermal Stability of Viscoelastic Surfactant-Based Fluids Bearing Lamellar Structures	Industrial & Engineering Chemistry Research	54	7640-7649
41.	Saurabh Mishra, Keka Ojha	2015	Chemical Sand Consolidation: an Overview	Journal of Petroleum Engineering & Technology	5 (92)	21-34
42.	Saurabh Mishra, Keka Ojha	2015	Application of an Improved Inorganic-Organic Chemical Mixture to Consolidate Loose sand Formations in Oil Fields	Journal of Petroleum Science and Engineering	137	1-9
43.	Atrayee Baruah, Akhilendra K. Pathak, and Keka Ojha	2016	Study on Rheology and Thermal Stability of Mixed (Nonionic–Anionic) Surfactant Based Fracturing Fluids	AIChE Journal	62 (6)	2177-2187
44.	Dhawane, S. H., Kumar T. and Halder G. N	May 2015	Central composite design approach towards optimization of flamboyant pods derived steam activated carbon for its use as heterogeneous catalyst in transesterification of Hevea brasiliensis oil	Energy Conversion and Management	100	277-287
45.	Halder, G. N., Dhawane, S. H., Kumar, T. and Halder, Seema	Sept. 2015	Acid catalyzed esterification of Castor (Ricinus Communis) oil: Optimization through central composite design approach	Biofuels	09	NA
46.	Dhawane, S. H., Kumar T. and Halder G. N.	Dec 2015	Biodiesel synthesis from Hevea brasiliensis oil employing carbon supported heterogeneous catalyst: Optimization by Taguchi method	Renewable Energy	89	506-514

3.18.8.3 Papers presented in International Seminars/Conferences

Sl. No.	Author (s)	Title	Seminar/Conference	Date	Place
1.	Nilanjan Pal, Keshak Babu, Ajay Mandal	Predicting the Effectiveness of a Novel Family of Polymeric Surfactants derived from vegetable oil for Enhanced Oil Recovery	ICEMS	March 17-19, 2016	JNU Jaipur.
2.	Rajat Jain and Vikas Mahto	Development of Water Based Drilling Fluid System Using Synthesized Polyacrylamide-Grafted-Xanthan Gum/Silica Nanocomposite For Reactive Indian Shale Formation	6th World Petrocoal Congress (WPCC) – 2016	February 15-17, 2016	New Delhi.
3.	Rituraj Singh, and Vikas Mahto	Novel Eco-friendly Organic Cross-linked Polymer Nanocomposite Gel System for Water Shut-off in Low Temperature Reservoirs	6th World Petrocoal Congress	February 15-17 th 2016	New Delhi
4.	S. Paul, K. Ojha, A.K. Singh and V. Srivardhan	Modeling of Jharia Coalbed for CO ₂ -ECBM Sequestration	77 th EAGE conference and Exhibition	June 1-3, 2015	Madrid, Spain
5.	Atrayee Baruah, Akhilendra K. Pathak, Keka Ojha	Study on thermal stability of Viscoelastic Surfactant (VES) based fracturing fluids	6 th World PetroCoal Congress	February 15-17, 2016	New Delhi
6.	Geetanjali Chauhan, Prathibha Pillai, Keka Ojha	Rheological Studies of Gum Tragacanth as a Prospective Candidate for Hydraulic Fracturing	International Conference on Recent Trends in Engineering and Material Sciences	March 17-19, 2016	Jaipur
7.	Saurabh Mishra, Keka Ojha	Hybrid nanoSiO ₂ -silane System to control the Sand Production in Oil Fields	International conference on Recent Trend in Engineering and Material Sciences	March 17-19, 2016	Jaipur, India
8.	Mohammad Asif, D.C.Panigrahi, Keka Ojha	Study of factors affecting geological storage of CO ₂ in unmineable coal seams: a critical review	International conference on Recent Trend in Engineering and Material Sciences	March 17-19, 2016	Jaipur, India
9.	A Banerjee, C Guria and SK Maiti	Low cost cultivation of Nannochloropsis sp. with fertilizer in optimised culture	Indo-Us Workshop On “Cell Factories”	March 18-20, 2016	IIT-Bombay, Mumbai

3.18.9 MAJOR ACADEMIC CONTRIBUTIONS

- Prof V P Sharma organized the meeting of HODs and representatives of different institutions at RGIPT Noida Extension on to formulate the process of inclusion of Petroleum Engineering subject in GATE Examination.

- Prof V P Sharma attended the selection committees of PDPU Gandhinagar organized at Kolkata for selection of Assistant Professor at PDPU Gandhinagar on 21.01.2016.
- Prof V P Sharma attended the Academic Council Meeting of PDPU Gandhinagar on 16.02.2016.
- Prof. A.K.Pathak attended 14th meeting of Diamond Core and Water Well Drilling Sectional Committee, ME21” organised by BIS, Government of India, New Delhi on 15.05.2015.
- Prof V.P.Sharma attended MOU Signing meeting between ISM and ONGC organized at ONGC Academic Dehradun on 26.05.2015, for renewal of AMN Ghosh Chair Porfessor post in Department of Petroleum Engineering.
- Prof A.K.Pathak attended MOU Signing meeting between ISM and ONGC organized at ONGC Academic Dehradun on 26.05.2015, for renewal of AMN Ghosh Chair Porfessor post in Department of Petroleum Engineering.
- Prof A K Pathak was deputed to supervise the placement process of ONGC for Petroleum Engineering students at ONGC Kolkata on 05.06.2015.
- Prof A K Pathak attended the Proceeding meetings of GATE Examination Committee for subject Petroleum Engineering at IIT Chennai during 4 – 6th Sept 2015.
- Dr. Ajay Mandal received 2015 SPE South Asia Regional Distinguished Achievement Award for Petroleum Engineering Faculty
- Dr. Ajay Mandal received CANADA BANK BEST RESEARCH Award in ISM, 2015.

3.18.10 SEMINARS, SYMPOSIA, WORKSHOPS, CONFERENCES ORGANIZED BY THE DEPT/CENTRE

SPE South Asia Regional paper meet	17-18 March, 2016
Advanced shale gas drilling and production technique	June 1-5, 2015

3.18.11 PARTICIPATION OF FACULTY/OFFICERS/STAFF IN SEMINARS/ CONFERENCES ETC.

Archana	International Shale Gas & Oil Workshop, 2016	28-29 Jan 2016	New Delhi
Dr. Ajay Mandal	OGIC, SPE	24-26 November, 2015	Mumbai
Dr. T.K. Naiya	OGIC, SPE	24-26 November, 2015	Mumbai
Shri N. K. Maurya	Petrotech Annual Convention	March 30, 2016	MIT, Pune

3.18.12 VISITS OF FACULTY MEMBERS ABROAD

- Dr. Ajay Mandal visited Colombia for one month (25th June-24th July, 2015) internship program in the petroleum fields of MANSAROVAR ENERGY COLOMBIA LTD, Colombia.
- Dr. Keka Ojha visited Curtin University, Australia during 8th March to 17th March, 2016 for collaborative research.

3.18.13 TESTING SERVICES (LAB FACILITIES AVAILABLE FOR TESTING IN THE DEPARTMENT / CENTRE)

Petroleum Production and Product Testing Lab: Red Wood Viscosity Saybolt Viscosity, Carbon Residue, Ash Content, Gross Calorific Value, Demulsification Number, Acid Content, Water Content, Copper Strip Corrosion, Fire Point, Flash Point, Cloud Point, Octane Number, Cetane Number, Smoke Point, Refractive Index.

CBM Laboratory: Canistar desorption testing, Adsorption isotherm testing, gas testing in GC, Coal analysis.

Drilling Fluid and Cement Laboratory: Plastic Viscosity, Gel Strength, Filtration Loss, Sand Content, Marsh Funnel Viscosity, Setting Time of Cement, Rheological Properties of Cement Slurry, Consistency Index of Cement Slurry.

Reservoir Engineering Laboratory: Porosity, Gas Permeability, Liquid Permeability, Resistivity of Cores.

LCA Laboratory: Permeability of Long Core samples and EOR studies using chemicals as displacing fluid.

Gas Hydrate Laboratory: Gas Hydrate reactor with photographic attachment for constant visualization, Physica MC1 rheometer for rheological analysis of various fluids with shear and temperature control systems.

EOR Laboratory: Core flooding systems, Brookfield rheometer for rheological analysis, pH meter, Conductivity meter, Interfacial surface tension measuring instruments.

Instrumentation Laboratory: FTIR, UV-VIS spectrophotometer, Physica Rheometer, Easy dyne Tenseometer, Spinning Drop Tensiometer, Cross polarized microscope, Ultrasonic Interferometer, Drop Shape Analyzer, Atomic Absorbance Spectrophotometer.

3.18.14 DISTINGUISHED VISITORS TO THE SCHOOL (INDICATING OCCASION/PURPOSE)

Sl. No.	Name	Date	Purpose
1.	Dr Nathan Meehan, 2016 SPE President.	30 th Nov 2015	Interaction with PE Department and inauguration of Reservoir Simulation lab.
2.	Ashok Kumar Varma, Former Director (On shore) ONGC Ltd.	7 th February, 2016	Institute Industry Interaction, 2016
3.	Khireswae Bora, Chief Operating Officer, Metropolitan, Oil & Gas Private limited	---do---	Institute Industry Interaction, 2016
4.	Lakshi Singha Konwar, Principal Reservoir Engineer, Technical Global, Upstream Malaysia	---do---	Institute Industry Interaction, 2016

5.	P. K. Jain, DGH	---do---	Institute Industry Interaction, 2016
6.	Babu Siva Kumar, Petronas, Malaysia	---do---	Institute Industry Interaction, 2016
7.	Atul Chandra, Head (International E&P), Reliance and former CMD, ONGC Videsh Ltd.	---do---	Institute Industry Interaction, 2016
8.	Shri S. Sarkar, ONGC	---do---	Institute Industry Interaction, 2016
9.	Mihir K Singh, SENIOR ADVISOR & SENIOR BANKER	---do---	Institute Industry Interaction, 2016

3.18.15 SPECIAL LECTURES BY DISTINGUISHED GUESTS

Dr Nathan Meehann, 2016 President SPE	Nov. 30, 2015.
Prof. Ashok Varma, Ex. Director ONGC	March 28-31, 2016
Mr. Rajeev Upadhyay, Senior Reservoir Engineer, Santos oil Company, Australia	15th Sep. 2015
Shri Shyamal Bhattacharya, Ex director (OVL)	12th Oct. 2015

3.18.16 MISCELLANEOUS : ANY OTHER RELEVANT INFORMATION

Other Information about Faculty Members:

Prof. T. Kumar:

- (i) Life Fellow, The Institution of Engineers (India), **FIE**
- (ii) Life Member, Mining Geological & Metallurgical Institute of India, **MMGI**
- (iii) Life Member, Indian Society for Technical Education, **ISTE**
- (iv) Life Member, Indian Institute of Public Administration, **IIPA**
- (v) Life Member, Indian Geological Congress, **IGC**
- (vi) Life Member, Society of Petroleum Geophysicists, **SPG**
- (vii) Member, Society of Petroleum Engineers International (USA), **SPE**

Prof. S. Laik

- Member, Research Advisory Committee for Gas Hydrate Programme constituted by Dept. of Ocean Development under Ministry of Science and Technology, Govt. of India.
- Member, Society of Petroleum Engineers International (USA), **SPE**

Prof. V P Sharma:

- Head, Department of Petroleum Engineering, Indian School of Mines Dhanbad.
- Member, Society of Petroleum Engineers International (USA), **SPE**
- Life Member, Mining Geological & Metallurgical Institute of India, **MMGI**
- Life Member, Indian Society for Technical Education, **ISTE**
- Life Member of Society of Surface Science and Technology.
- Member of Academic Council, Indian School of Mines Dhanbad.
- Member Board of courses & studies for Petroleum Engineering at Rajasthan Technical University, Kota.

- Member Board of courses & studies for Petroleum Engineering at PDPU Gandhinagar.
- Member-Evaluation committee, CIMFR-CSIR, Dhanbad
- Member of Academic Council of PDPU Gandhinagar.

Prof. A. K. Pathak :

- Head, Center of Societal Mission, Indian School of Mines Dhanbad.
- President of Sports and Physical Education Centere, Indian School of Mines Dhanbad.
- Member Academic Council, ISM Dhanbad
- Member, Society of Petroleum Engineers International (USA), **SPE**
- Life Member, Mining Geological & Metallurgical Institute of India, **MMGI**
- Life Member, Indian Society for Technical Education, **ISTE**
- Life Member of Society of Surface Science and Technology.
- Life Member of NAScAllahabad.
- Reviewer of Journal of Scientific Journals Internationals.
- Technical Member of Diamond Core and Water well Drilling Sectorial Committee MED 21, BIS New Delhi.
- Member of “Sectoral Innovation Council for Petroleum and Natural Gas” constituted by Government of India.
- Examiner of Undergraduate course at RTU Kota

Dr. Vikas Mahto:

- Member, Society of Petroleum Engineers International (USA), **SPE**
- Associate Editor of Environmental System: Theory & Applications, Canada.
- Member, Editorial board of International Journal of Petroleum Engineering, Inder-Science.
- Member, Editorial board of Recent Trends in Fluid Mechanics, STM Publication
- Member, Editorial board of Recent Trends in Chemical Engineering, STM Publication
- Member, Editorial board of of International Journal of Oil, Gas and Coal Engineering
- Associate Editor of AMET Maritime Journal.
- Member, Editorial Board of Scientific Journals Internationals
- Member, Editorial Board, IST Press
- Executive Editor of International Journal of Chemical Research
- Reviewer of
 - Journal of Petroleum Science and Engineering
 - Industrial and Engineering Chemistry Research
 - Powder Technology
 - Applied Clay Science
 - Indian Journal of Chemical Technology

- Petroleum Science and Technology
- International Journal of Petroleum Engineering
- Chemical Engineering Journal
- African Journal of Microbiological Research
- Advances in Sustainable Petroleum Engineering Science
- Scientific Journals Internationals (Chemical and Bioengineering)

Dr. Ajay Mandal:

- Faculty Sponsor of SPE-ISM Students Chapter.
- Member, Society of Petroleum Engineers International (USA), **SPE**
- Review and editorial board member of a number of SCI journals.
- Observer of ISM-M. Tech Entrance Examination, New Delhi centre

Dr. Keka Ojha:

- Convener, PETROETCH Society, ISM Students Chapter.
- Reviewer of a number of SCI journals
- Member, Society of Petroleum Engineers International (USA), **SPE**

Dr. C Guria

- Member, ACS, USA
- Member, Society of Petroleum Engineers International (USA), **SPE**
- Member, AICHE

Dr. T K Naiya

- Member Academic Council, ISM
- Member, Society of Petroleum Engineers International (USA), **SPE**
- Member IChE
- Member, AICHE

Shri Vinay Rajak

- Member, Society of Petroleum Engineers International (USA), **SPE**
- Examiner of Undergraduate course at RTU Kota

Ms. Archana

- Member, Society of Petroleum Engineers International (USA), **SPE**
- Member, AICHE

Students' Achievement:

- SPE student Chapter won the “Outstanding student chapter” award for its activity by SPE-USA
- Petrotech Students chapter received the best chapter award in 2015-16.
- Student team received second best presentation award in 2016 at Petrotech Annual convention held in UPES, Dehradun.
- A number of B. Tech and M. Tech students presented papers in national and international conferences and awarded merit certificates.

Conference attended by Petroleum Engineering Strudents

CONFERENCE	DATES	STUDENTS
7 th Annual Convention of Petrotech Chapters 2016, Pune.	28 th -30 th March 2016	4 th year: Sahil Kaushik 3 rd year: Chirag Gupta, Rahul D'cruz, Rahul Gupta, Krishna Joshi, Ritvik Arora, Ashutosh Kujur 2 nd year: Raafius Saleh Choudhury, Vashu Raghav
OTC Asia 2016, Kaula Lumpur, Malaysia	22 nd -25 th March 2016	VK Rajak Sir 4 th year: MD Imtiaz, Sanchita Dei, Abhishek Biswas. 3 rd year: Jatek Chhateja
12 th Middle East Geosciences Conference and Exhibition, Bahrain	7 th -10 th March 2016	MD Imtiaz (4 th year)
SPE/ IADC Middle East Drilling Technology Conference and Exhibition, Abu Dhabi	26 th – 28 th January 2016	4 th year- Sibtain Delhivala, Preyas Srivastava, Abhishek Biswas 3 rd year: Shlok Rai, Chirag Gupta
International Shale gas Conference, New Delhi	28 th February 2016	3 rd year: Uday Singh, Aakash Faujdar

4.0 STUDENTS' ACTIVITIES

4.1 Cultural Scientific & Literary Society (CSLS)

Cultural Scientific Literary Society (CSLS) has been an active student's society of Indian School of Mines, Dhanbad. This society consist of 04 active clubs namely Abhay Dramatics Club, Dance club, Literary Club and Dhruva Club.

To encourage newly admitted students for their active participation in extra co-curricular activities, CSLS organized **Ingenio, 2K15** on 11th October, 2015.

The Dramatics club of society conducted many activities. A English play "**Tughlaq**" was **staged** on 03/04/2015 in GJLT. The historical play explored the character of one of the most fascinating emperors to occupy the throne of Delhi "Mohammed-bin-Tughlaq" Another Comedy English Drama, "**The Importance of Being Earnest**" was performed by Dramatics Club on 10/09/2015 in GJLT by Abhay Dramatic Club and it was appreciated by the ISM crowd. Another satirical Hindi Play "**Muaavaze**" was performed by Dramatics Club on 13/09/2015 in GJLT. Apart from these, two entertaining plays, Abhay Dramatics Club has shown its amazing drafting as well as Artistic skills in a Street Play "**Dekh Tamasha Pyar Kaa**" on 16/02/2016 at Penman Quadrangle.

A series of lectures on "**Leading Meaningful Lives**" were organized by the Dhurva Club of CSLS on 12th and 19th September, 2015. The Literary Club of CSLS organized a "**Quiz competition**" on 10th October, 2015. Along with this the Club also organized a series of events on 11th October, 2015 including "**Moderate Debate**" and "**Just a Minute**".

Dance competition "**Kryptoes**" was organized by Dance club on 07/09/2015 in Penman Auditorium. Dance Club Organized an Induction Programme for the Students of first year. A Workshop was conducted on 20, 21 and 22nd of August, 2015.

Besides, regular meetings were conducted by different clubs of CSLS in the Student Activity Centre (SAC) rooms to motivate the students for achive participation & to enhance their skills.

4.2 MUSIC SOCIETY

Participation in the following programs/events

- On 26th July 2015, a **WORKSHOP ON PERFORMING ARTS** was organized for existing club members to discuss and practice better delivery of performances in forth coming sessions.
- On 29-7-2015 the Members of the club gave cultural performances in the workshop on **HIGH PERFORMANCE COMPUTING** for the department of Applied Mathematics.
- Members of the club gave cultural performance in the programme organized on the occassion of visit of the Vice President of **VOLVO** for department of Mining Machinery. Pandit Salil Bhatt, Inventor of 'Satvik Veena' performed at SPIC MACAY organized by ISM Music Society. Manthan, (the Band of Music Society) had organized a cultural night on Teacher's Day. The club participated in the Cultural night for the opening ceremony of Concetto 2015. The Music Society gave a band performance at the closing ceremony of annual technical fest of ISM, Concetto. & also performed on ISM foundation day. Performance at 'International conference'

organized by Dept. of electronics engineering on 26-01-16 at ISM Oval ground, cultural night at 'Silver jubilee' (1991 batch), Industry Institute Interaction (invocation song) as well as cultural night at evening. "Basant" theme song composition and cultural night, are a few that deserve a proud mention.

4.3 CYBER SOCIETY

The Cyber Society and Robotics Club of Indian School of Mines, Dhanbad was actively involved in creating Cyber and robotic related awareness among the students of the institute through various workshops and events during the academic session 2015-2016. All such workshops and events were selected that benefitted the student of all branches of the school. The society provided students a wonderful platform for mutual learning and discussions led by the senior students. This helped in forming a strongly connected network among the students for knowledge exchange and discussions.

A brief summary of the activities, events and projects held during this period is given below:

Session 1: Cyber Labs Induction (first year) (II September 2015):

- Introduction to vision and ideas of Cyber Society as a means to promote creative application of the learning gained to solve a problem.
- Social media publicity to create an awareness of the Cyber Society.

Session 2: Session Summary (3 October 2015):

- Assigning tasks to the Dustbin Project students (strategy. hardware. social media. software)
- Doubt clearing session for the students learning web development for the Cyber Society portal (By Mohit Chawla and Kriti Singh)
- Project ideas review and distribution.

Session 3: Cyber Labs Tutorial and Demo Session (9 January 2016)

- Duration: hours
- Topics: Bootstrap, understanding computer viruses (introduction)
- Work done: post vacation project demos, membership approval for cards, projects assigned to students evaluated namely- Shanti Bhawan project, Students Login portal, Digi Bin
- Date: 9 January 2016
- Delivered by: Kriti Singh. Mohit Chawla

Session 4: Advanced Android app workshop-Day 1 (31 January 2016)

- Duration: 2 hours
- Topics: Local Databases, HTTP Requests and Networking, Fragment Interactions, Interfaces,
- Recycler Views and View Pagers
- Date: 31 January 2016
- Delivered by: Jibin Mathews, Aanisha Mlishra

Session 5: Advanced Android app workshop-Day 2 (2 February 2016)

- Duration: 2 hours

- Topics: Navigation Drawer, UI styling, Color Filters, Animations (Basic and Advanced)
- Date: 2 February 2016
- Delivered by; Jibin Mathews, Aanisha Mishra

Session 6: Advanced Android app workshop-Day 3 (5 February 2016)

- Duration: 2 hours
- Topics: 9 patch images and Loading Images Efficiently, good practices for app organisation
- Date: 5 February 2016
- Delivered by: Jibin Mathews, Aanisha Mishra

Events

January:

0 [.dotMatrix] event (Quiz + online puzzle)

Event name	Event date	Event type	Number of participants	Winner
[.dotMatrix] online puzzle- 1	17th January 2016	Online, presence Facebook and society website	13 engaged	Shubham Chauhan (CSE)
[.dotMatrix] online puzzle- 2	23 rd January 2016	Online, presence on Facebook and society website	8 engaged	Abdur Rahman Daanish (EE)
[.dotMatrix]	26th January 2016	Quiz, held at Cyber Society Room, SAC	42 (14 teams of three people)	(students(3 teams), enlisted in meeting details below

Projects' Status

Sl. No.	Project Title	Members involved	Status
1.	Smart Dustbin	Manoj Kumar (CSE), Abdur Rahman Daanish (EE)	Completed, Launched. Working on next version
2.	Cyber Labs Android App	Shubham Kumar Soni (Mechanical)	Completed, ready to launch
3.	Park-a-lot	Mohit Chawla (CSE), Kriti Singh(CSE)	Ongoing
4.	Buzz Logs	Mohit Chawla (CSE), Kriti Singh (CSE), Prabodh Tripathi (CSE)	Working version complete, working more features
5.	Home Automation	Abdur Rehmar Danish(EE) +CSE Students	ongoing
6.	Login Portal	1st year student members	completed, working on next updated version
7.	Shanti Bhawan Project	Bharti Lala (EI)	Prototype ready, scaling to each hostel room pending

4.4 चयनिका संघ

एक प्रतिभागी की उद्गार

कार्यक्रम गायन प्रतियोगिता, भाषण प्रतियोगिता, वाद-विवाद प्रतियोगिता, विचार-विमर्श प्रतियोगिता, चित्रकला प्रतियोगिता, दो नाटक, किताब प्रदर्शनी एवं इंटरनेट के माध्यम से प्रचार-प्रसार पर विषय वस्तु सम्मिलित थे। चित्रकला प्रतियोगिता एवं प्रदर्शनी विशेष कार्यक्रम रहे। कार्यक्रम को बड़ी सफलता प्रदान करने हेतु विद्यापीठ की संस्थाएं "कर्त्तव्य" एवं "एफ.एफ.आई." को आमंत्रित किया गया। हिंदी, उर्दू, राजस्थानी, हाड़ोती, मराठी, अंग्रेजी, अवधी एवं बंगाली भाषाओं में कार्यक्रम आयोजित किए गए।

कार्यक्रम का उद्देश्य "मात्र-भाषा की महत्ता, भविष्य में अनेका-एक भाषाओं का रूप एवं वर्तमान स्थिति में इनका मान-सम्मान बढ़ाना था। दोनो नाटक - "एक भाषा की चिता" एवं "मेरी भाषा मेरी पहचान" दर्शकों के दिलों को छूने में कामयाब रहे।

4.5 REPORT OF PHOTOGRAPHIC SOCIETY

Event 1: Photography Walk

It was conducted to have new members of the society about exposure triangle and to render basic knowledge about handling DSLR.

A Basic Photoshop Workshop

Event was conducted by the society to provide knowledge about post editing of images to the interested students.

It was a two-days workshop witnessing active participation of around 50 students.

It also organized Advanced Photography Workshop event by Nikon India along with Shree Balaji Photo Studio. The event saw Mr. Anindo Basu, Nikon India official mentor coming to Dhanbad and sharing certain aspects of the beautiful art of photography with the students. It also marked the official inauguration of the recently introduced ISM photo studio. The event also saw Prof. Shalivahan, president of photographic society, sharing his enthusiasm about photography with the participants.

The students used various facilities of the newly installed studio.

4.6 CONCETTO 2015', ISM ANNUAL TECHNICAL FESTIVAL

The annual Techno-Management Fest, "Concetto 2015" was organized during 29-11 October, 2015. The festival was inaugurated on 29th Oc, 2015, by Shri Chandrashekhar Agarwal Mayor of Dhanbad. Prof. D.C.Panigrahi, Director, ISM Dhanbad presided over the function.

This event was followed by umpteen numbers of activities such as competitions, guest lectures, workshops, quizzes, paper meets and exhibitions. It was an excellent platform for young buzzing technical and management minds to showcase their talents and brilliance. By Concetto, 2015, the organizers aimed to provide best opportunity for brightest students assembled from across the country competing with the best. Concetto'15 was undoubtedly the largest technical Fest organized in Jharkhand, attracting more than 1000 participants.

Concetto '15 came to a successful and eventful end on 11th Oct 2015, with the closing ceremony and prize distribution by Prof. Chandan Bhar, Dean Students' Welfare.

4.7 National Service Scheme: Brief Annual Report

Under the guidance of faculty coordination, NSS, several drives and welfare programme have been organized during the year.

i. Cleanliness drive

Cleanliness drive, was organized by National Service Scheme in association with Student Coordination Group on 5th of April 2015 at 9:00 am. More than 100 members participated and the drive undertook its way from the Penman Quadrangle, through Canteen, to Ruby Hostel teacher's colony, the main building through various other areas in the campus. The students were quite enthusiastic about the event and zeal reflected.

ii. Pahal

PAHAL, an initiative to create awareness and bring acknowledgement to youth, was organized on Ambedkar Jayanti, 14th April, 2015, in association with Bloodline, and Kartavya an NGO run by the students of ISM to "Awaken Indians to India". The event witnessed a large turnout of more than 200 students who participated in Quiz, Debate and Extempore on Social Issues of India. A documentary on "India – The gateway to the world" was also screened on the occasion.

iii. Collection of money for support of the visually challenged students

N.S.S. Volunteers of Indian School of Mines Dhanbad have collected money to support the visually challenged students of Indian Association for Blind.

All students from higher studies (Ph.D., M.Tech, MBA, MSc, MSc.Tech) of department also contributed for the same.

iv. Debate Competition

NSS Dhanbad unit organized a debate competition on 15th Aug. 2015 in Department of Petroleum Engineering. The topic of the debate was "Is righteous living in public life important?"

This event was based on the life and works of famous Tamil poet and philosopher Thiruvalluvar, who provided a guide for human morals and betterment in life.

Altogether 40 members participated in the debate competition in the guidance of NSS secretary (RISHABH KUMAR) as the moderator of the event.

v. Online Essay Writing Competition

An online essay writing competition was organized on the topic of "Thank you god for showering your blessing, enlighten the fire within, teaching as through Thiruvalluvar, the difference between good and evil" under the banner of NSS Dhanbad unit. A period of 3 days was allotted for preparation of the essay from 11th Aug. to 13th Aug. 2015. We got some eloquent and brilliant showcase of writing and thinking.

Nikita Ranjan Sinha (2015JE001078) was declared as the overall winner of the event.

vi. Nepal Earthquake Relief Fund

To support earthquake victims of Nepal and various parts of India, contributions from the students were collected, and sent by our Registrar, INDIAN SCHOOL OF MINES, DHANBAD. Volunteers worked with dedication and motivated students for the contribution.

All students from higher studies (Ph.D., M.Tech, MBA, MSc, MSc.Tech) of department deposited their pie to respective class representative.

vii. Cleanliness Drive

“Yesterday we smoked the green, today we keep it clean. Be green and clean or you are mean”, is the motto of the Cleanliness Drive, to be organized by National Service Scheme in collaboration with Kartavya and FFI. The event took place on 2nd of October 2015, on the occasion of Gandhi jayanti. The drive took place from New lecture hall complex, via Student Activity Center, to “Korangabasti” and Dhainya gate of ISM.

viii. General Body Meeting

One General Body Meeting was arranged on 21 January, 2016 to discuss various issues related to the cleanliness problems of Dhanbad district and students have proposed a few solutions to keep the city clean.

ix. Poster Presentation

One poster presentation event was organized on 21 January, 2016 related to various social issues. Many N.S.S volunteers participated and presented their posters with full enthusiasm. The best posters were on Food Wastage, Terrorism, and Gender Discrimination.

x. Basant Stall:

During Basant, the annual Alumni Reunion, National Service Scheme had put up its stall to promote its objectives and working ethics to the Alumni of ISM. On 7th February, 2016, NSS Stall was setup in the Lower Ground of ISM. A large number of Alumni visited the stalls and asked about the current works and future preparations. They also dropped their cards and gave valuable suggestions for making the society more vibrant.

xi Meeting on Swachhata Abhiyan:

A meeting was arranged on 20th February, 2016 to discuss different steps for “Swachh Bharat Abhiyan” and students took oath to keep ISM and Dhanbad city clean.

4.8 PRATIBIMB 2016

PRATIBIMB’16, the annual inter-departmental cultural fest was successfully and smoothly organized from 22-24 January, 2016. This year’s fest gained a great appreciation from the student fraternity. With the aim to inculcate basic cultural skills and overall development, this festival provides platform to showcase all the cultural art forms including Music, Dance, Literary, Drama and helps in increasing interactions among students (specifically the Clusters) and this year ‘Art’ Tattto Making & DJ Night was also added to the list.

ISM POORVA VIDYARTHI SANGH (ISM PVS)

Indian School of Mines Alumni Association (ISMAA)

The ISM POORVA VIDYARTHI SANGH (ISM PVS) is playing a significant role to make a bridge between alumni and present students of ISM.

Activities under ISM POORVA VIDYARTHI SANGH (ISM PVS) include.

- i.** ISM PVS funded Student International Travel (SIT) Grant - a financial support of Rs. 1 lakh for oral presentation in a technical international conference 3 students availed the grant to visit cranfield (UK) and Bojota (Columbia).

Under Non- Refundable financial support of Rs. 50,000/- 10 students availed the grant and visited places such as Scotland, Singapore, Thailand, China, S. Korea, Mexico, S. Africa and USA.

Rs. 50000/- have been provided by ISM PVS as a financial support to each student on non-refundable basis. Student had submitted tour diary, original bills and expenses report after return from Conference/ Symposium to ISM campus.

Following are the list of students who had availed the grant under non-refundable case during 2015-16 session):

Sl. No.	Name	Admission No.	Venue
1.	Anay Rennie	2012JE1302	Glasgow, Scotland
2.	Anukul K. Thakur	2014DR0032	Singapore
3.	Dipen Kumar Rajak	2013DR0230	Pattaya, Thailand
4.	Rahul Mukherjee	2012DR0145	Singapore
5.	Vikram Palodiya	2013DR0007	Pattaya, Thailand
6.	Bhanu Pratap Singh	2012DR0120	Nanjing, China
7.	Rahul Sinha	2013DR0270	Je-ju Island, South Korea
8.	Rahul Kumar Gangwar	2013DR0125	Tequisquiapan, Mexico
9.	Rakesh Roushan	2012JE1249	Cape Town South Africa
10.	Surendra Singh Barala	2012JE0418	New Orleans, LA, USA

ii. Under its donation sch 8 lakhs to Kartavaya & 3,66,802 to SAE-ICC ISM PVS for the welfare of society:

Sl. No.	Name of the NGOs	Total Amount (in RS.)
1.	KARTAVAYA	8,00,000/-
2.	SAE-ICC	3,66,802/-

iii. Alma Connect (Database):

A MoU has been signed with Alma Connect Solution Pvt. Ltd. which is an Online Alumni Portal Service for preparing and maintaining database of Alumni of ISM, Dhanbad. It will also serve as a platform for interaction among current students, faculty and alumni of ISM. ISM PVS paid Rs. 60,000/- as annual fee for customization & maintenance of Alma Connect (ismdhanbad.almaconnect.com) for the period 10th December 2015 to 9th December 2016.

iv. Official ISMAA website:

ISMAA spent approximately Rs. 15,000/- for hosting its official www.ismaa.in website for two years (2015-17). All societal and other activities of ISM PVS are regularly posted on its official website.

5.0 PLACEMENT OF STUDENTS

The Training & Placement Cell maintains active association and excellent contacts with the industry and corporate sector. The students are properly trained and assisted in securing job through in-campus and off-campus interviews. A Comparative Statement of the students selected during last five years is stated below:

STATEMENT OF LAST FIVE YEARS					
4-Years B.Tech Programme					
Session	2011-12	2012-13	2013-14	2014-15	2015-16*
Total Registered Students	357	501	637	713	754
Campus Placement	321	407	404	537	496
Placement after the course completion	17	7	0	0	0
No information	19	87	233	176	258
% of selected students	94.68	82.63	63.42	75.32	65.78
5-Years Dual Degree Programmes					
Session	2011-12	2012-13	2013-14	2014-15	2015-16*
Total Registered Students	35	43	48	45	28
Campus Placement	34	34	37	29	13
Placement after the course completion	0	3	0	0	0
No information	1	6	11	16	15
% of selected students	97.14	86.05	77.08	64.44	46.43
5-Years Integrated M.Sc. Programmes					
Session	2011-12	2012-13	2013-14	2014-15	2015-16*
Total Registered Students	15	16	17	15	NIL
Campus Placement	11	6	4	7	NIL
Placement after the course completion	3	4	0	0	NIL
No information	1	6	13	8	NIL
% of selected students	93.33	62.50	23.53	46.67	NIL
5-Years Integrated M.Sc. Tech Programmes					
Session	2011-12	2012-13	2013-14	2014-15	2015-16*
Total Registered Students	21	24	21	25	21
Campus Placement	19	11	17	12	8
Placement after the course completion	0	2	0	0	0
No information	2	11	4	13	13
% of selected students	90.48	54.17	80.95	48.00	38.10
5-Years Integrated M.Tech Programme (M&C)					
Session	2011-12	2012-13	2013-14	2014-15	2015-16*
Total Registered Students	NA	10	9	12	7
Campus Placement	NA	6	5	8	6
Placement after the course completion	NA	3	0	0	0
No information	NA	1	4	4	1
% of selected students	NA	90.00	55.56	66.67	85.71

3-Years M.Sc.Tech Programmes (AGL & AGP)					
Session	2011-12	2012-13	2013-14	2014-15	2015-16*
Total Registered Students	82	102	90	100	101
Campus Placement	36	30	25	22	13
Placement after the course completion	38	1	0	0	0
No information	8	71	65	78	88
% of selected students	90.24	30.39	27.78	22.00	12.87
2-Years M.Sc. Programmes					
Session	2011-12	2012-13	2013-14	2014-15	2015-16*
Total Registered Students	81	99	99	98	120
Campus Placement	9	1	6	8	5
Placement after the course completion	42	44	0	0	0
No information	30	54	93	90	115
% of selected students	62.96	45.45	6.06	8.16	4.17
2-Years M.Tech Programmes					
Session	2011-12	2012-13	2013-14	2014-15	2015-16*
Total Registered Students	130	157	226	297	518
Campus Placement	84	29	38	55	76
Placement after the course completion	16	38	0	0	0
No information	30	90	188	242	442
% of selected students	76.92	42.68	16.81	18.52	14.67
2-Years MBA Programme					
Session	2011-12	2012-13	2013-14	2014-15	2015-16*
Total Registered Students	59	55	50	53	55
Campus Placement	40	13	20	16	17
Placement after the course completion	1	10	2	0	0
No information	18	32	28	37	38
% of selected students	69.49	41.82	44.00	30.19	30.91

1-Year M.Phil Programme					
Session	2011-12	2012-13	2013-14	2014-15	2015-16*
Total Registered Students	10	30	42	35	NA
Campus Placement	0	0	0	0	NA
Placement after the course completion	NA	NA	NA	NA	NA
No information	NA	NA	NA	NA	NA
% of selected students	0	0	0	0	NA

Ph.D Programme					
Session	2011-12	2012-13	2013-14	2014-15	2015-16*
Total Registered Students	NA	NA	NA	NA	11
Campus Placement	NA	NA	NA	NA	11
Placement after the course completion	NA	NA	NA	NA	0
No information	NA	NA	NA	NA	0
% of selected students	0	0	0	0	100
GRAND TOTAL					
Session	2011-12	2012-13	2013-14	2014-15	2015-16*
Total Registered Students	790	1037	1239	1393	1604
No. of selected students	671	649	557	694	645
% of selected students	84.94	62.58	44.96	49.82	40.21
Salary (2015-16)					
Maximum	Rs 27 lakhs PA				
Minimum	Rs. 2.9 lakhs PA				
Average	Rs. 9.83 lakhs PA				
*Placement Data 2015-16 till 27.04.2016					

6.0 INSTITUTE-INDUSTRY INTERACTION

With a view to better facilitate Institute Industry interface, ISM started Executive Development Centre, way back in early 1970's of the past millennium and ever since is justifying its role of an Industry mentor leveraging its locational advantage amidst coal mines & Industry.

EDC currently has a full fledged competency that caters to Research, Consultancy and conducts PDPs for Industry professionals. It has 80 double seated rooms and 30 VIP suites that accommodates Industry professional coming as participants/faculty. It has 7 fully functional/e-enabled class rooms with one Lounge room, Senate hall with inhouse sporting and yoga facility.

1. Vision:

To be the shining face of the Institute and render best avenues for Academia Industry Interface through high quality consultancy & research, innovations and its implementation in Industry.

2. Mission:

- Harmonise various departments of the Institute towards the vision
- Encourage and facilitate to conduct relevant Professional Development Programs and synthesise the Industry wisdom generated.
- To introduce App based tutoring/interacting system to engage Industry participants in academic activities and leverage potential of Industry projects.
- Monitor implementation of research/innovation projects in Industry.

6.1 CONSULTANCY SERVICES

The institute offers consultancy services to the industry practically in subject areas of geological and geophysical prospecting engineering geology, petroleum engineering, surface mining, underground mining – its problems, mine surveying, blast vibration and blast design, mine fires, detailed mine planning, mine ventilation and mine environment engineering, design of mine supports, mine transport system, problems of corrosion, mineral beneficiation, and system design for electronic instrumentation & software development etc. Problems of system optimization, industrial engineering and operations research, information system design, relating to pollution control and computer modeling for various operations are developed. Detailed Project Reports of mine projects, coke and mineral beneficiation plants etc. are prepared and assistance in problems of manpower development and training are rendered.

Major clients for the consultancy projects are Furgo Nexterra Geophysics Ptd. Ltd., Kolkata, Chennai Metro Rail Project, Brinckerhoff, Hutti Gold Mines Co. Ltd, Raichur, CIMFR World Bank Project, Ministry of Mines, DVC Bokaro CCL, TISCO, SCCL, BCCL, MCL, WCL, SECL, NCL, ECL, UCIL Jadugoda Mines, West Bengal Mineral Development & Trading Corporation Ltd., SGS India Pvt. Ltd., Kolkata, Essar Oil Ltd., Durgapur, FCI Aravali Gypsum and Minerals India Ltd., Jodhpur, SAIL, IEL, MEKON International, Jharkhand Government, Monnet Ispat. The value of Consultancy projects undertaken during the year amounted to ₹ 8.06 crores.

Sl. No.	Consultancy Number	Title of the Project	Coordinator & Team Members	Client
1	Cons/2841/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of Patherkhera Area, WCL	Prof. D. C. Panigrahi, CI	Pathakera Area, WCL
2	Cons/2842/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of Govindpur Area, BCCL	Prof. D. C. Panigrahi, CI	Govindapur Area, BCCL
3	Cons/2843/2015-16	Testing of Cook Stove Prototype	Prof. V. K. Saxena, CI	National Environmental Engg. Research Institute Nagpur
4	Cons/2844/2015-16	Testing of Coal Sample	Prof. N. R. Mandre, CI Shri Shraavan Kumar, CO-CI	M/s K. C. Sharma & Co, New Delhi-110034
5	Cons/2845/2015-16	Testing of Coal Sample	Shri Shraavan Kumar, CI Prof. N. R. Mandre, CO-CI	AKA Logistics Pvt. Ltd.
6	Cons/2846/2015-16	Learning from Each other Workshop on Reduction of Fines Generation Through Advanced Blasting Techniques in Iron Ore Mines.	Prof. V. M. S. R. Murthy, CI Dr. B. S. Choudhary, CO-CI	SAIL Ranchi
7	Cons/2847/2015-16	DGPS Survey and Preparation of Georeferenced Cadastral Map of Bihar Iron Ore Mines of M/s Nirmal Kumar Pradeep Kumar	Dr. Dheeraj Kumar, CI	M/S Nirmal Kumar Pradeep Kumar Bihar Iron Ore Mines
8	Cons/2748/2015-16	DGPS Survey and Preparation of Georeferenced Cadastral Map of Ghatkuri Iron Ore Mines of M/s Nirmal Kumar Pradeep Kumar	Dr. Dheeraj Kumar, CI	Ghatkuri Iron Ore Mines of M/s Nirmal Kumar Pradeep Kumar
9	Cons/2849/2015-16	Analysis of Water Samples from Skylark Hotel pvt. Ltd.	Dr. Vipin Kumar, CI	Skylark Hotel Pvt. Ltd., Dhanbad
10	Cons/2850/2015-16	Analysis and Interpretation of Mine air Samples of Kunustoria Colliery, ECL	Prof. D. C. Panigrahi, CI	Kunustoria Colliery, ECL
11	Cons/2851/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of Kunustoria Colliery, ECL	Prof. D. C. Panigrahi, CI	Kunustoria Colliery, ECL
12	Cons/2852/2015-16	Analysis and Interpretation of Mine air Samples of Chapapur Colliery, ECL	Prof. D. C. Panigrahi, CI	Chapapur Colliery, ECL
13	Cons/2853/2015-16	Monitoring of Underwater Drilling and Blasting Process for controlling Ground Vibration and Air over pressure During the Deepening of the Entrance Channel	Prof. VMSR Murthy, CI	Vishakhapatnam Port Trust
14	Cons/2854/2015-16	Load Convergence Monitoring of Supports a LW Panel D12 Moonidih Project, BCCL	Prof. U. K. Singh, CI	Moonidih Project, BCCL

15	Cons/2855/2015-16	Delivering Lectures at SECL Bilaspur Workshop on Risk Management 26 - 27 March, 2015	Prof. R. M. Bhattacharjee, CI	Bilashpur, SECL
16	Cons/2856/2015-16	Delivering Lectures at DGMS Workshop on Risk Assessment and Safety Management Plan Development at Bangalore 17 - 19 Dec., 2014	Prof. R. M. Bhattacharjee, CI	DGMS, Bangalore
17	Cons/2857/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of Khotadih Colliery, ECL	Prof. D. C. Panigrahi, CI	Khotadih Colliery, ECL
18	Cons/2858/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of Bahearaband Colliery Hansdeo Area SECL	Prof. D. C. Panigrahi, CI	Bahearaband Colliery Hansdeo Area, SECL
19	Cons/2859/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of Lohapati Colliery, BCCL	Prof. D. C. Panigrahi, CI	Lohapati Colliery, BCCL
20	Cons/2861/2015-16	Determination of Specific gravity of coal sample of Chirimiri area, SECL	Prof. D. C. Panigrahi, CI	Chirimiri Area, SECL
21	Cons/2862/2015-16	Evaluation of Performance and behavior of mine safety instruments of Dhansar Rescue Station, BCCL	Prof. D. C. Panigrahi, CI	Dhansar Rescue Station BCCL
22	Cons/2863/2015-16	DGPS Survey and Preparation of Georeferenced Cadastral Map of Karampada Iron Ore Mines of M/s Singhbhum Mineral Company	Dr. Dheeraj Kumar, CI	M/s Singhbhum Mineral Company
23	Cons/2864/2015-16	DGPS Survey and Preparation of Georeferenced Cadastral Map of Sosopi Iron Ore Mines of M/S Khushal Arjun Rathor	Dr. Dheeraj Kumar, CI	M/s Kuhushal Arjun Rathor
24	Cons/2865/2015-16	Evaluation of performance and behavior of mine safety instruments of Kendra Area, ECL	Prof. D. C. Panigrahi, CI	Kendra Area, ECL
25	Cons/2866/2015-16	Evaluation of performance and behavior of mine safety instruments of saoner sub Area, WCL	Prof. D. C. Panigrahi, CI	Saoner Sub-Area, WCL
26	Cons/2867/15-16	Bond Work Index of Iron Ore	Mr. Anand Anupam, CI Prof. N. R. Mandre, CO-CI	Mcnally Sayaji Engg. Ltd. Dhanbad.
27	Cons/2869/2015-16	Scientific Study for Assessing the Stability of the U/G Workings Developed under the low Cover and Beneath the Surface Structures at Mahakali Colliery with A Recommendation for Method of Stabilization.	Shri P. K. Behera, CI Prof. U. K. Singh, CO-CI Dr. B. S. Choudhuri, CO-CI	WCL, Nagpur

28	Cons/2872/2015-16	Conducting Scientific study to Establish Safe Maximum charges/Delay and Blasting Pattern vis a vis within 100 of Building in Respect of Hired OC Patch A of Katras Choitodih Colliery Katras Area, BCCL.	Prof. VMSR Murthy, CI Dr. B.S. Choudhuri, CO-CI	Katras Chotodih Colliery, BCCL
29	Cons/2873/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of Kanhan Area WCL	Prof. D. C. Panigrahi, CI	Kanhan Area WCL
30	Cons/2874/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of Phularitand Colliery, BCCL	Prof. D. C. Panigrahi, CI	Phularitand Colliery, BCCL
31	Cons/2875/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of Murpar U/G Mine WCL	Prof. D. C. Panigrahi, CI	Murpar U/G Mine WCL
32	Cons/2876/2015-16	Analysis and Interpretation of Mine air Samples of Haripur Coliery, ECL	Prof. D. C. Panigrahi, CI	Haripur Colliery, ECL
33	Cons/2877/2015-16	Earthquake Structural Stability Tests of Buildings of RBI at Patna	Prof. S. C. Dutta, CI Dr. S. K. Panda, CO-CI Dr. Sanket Nayak, CO-CI Dr. L. Nainegai, CO-CI	Reserve bank of India, Patna
34	Cons/2878/2015-16	Proximate and Utimate Analysis of Coal Samples	Prof. V. K. Saxena, CI	DVC Chandrapura
35	Cons/2879/2015-16	Evaluation of performance and Behavior of Mine Safety Instruments of Roy Bachra Colliery, CCL.	Prof. D. C. Panigrahi, CI	Roy Bachra Colliery, ECL
36	Cons/2880/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of K.B. Colliery, BCCL.	Prof. D. C. Panigrahi, CI	K.B. Colliery, BCCL
37	Cons/2881/2015-16	Analysis and Interpretation of Mine air Samples of Haripur Calliery, ECL	Prof. D. C. Panigrahi, CI	Haripur Colliery, ECL
38	Cons/2882/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of Parbolis and SSI Collieries, ECL	Prof. D. C. Panigrahi, CI	Parbelia and SSI Collieries, ECL
39	Cons/2883/2015-16	Investigation into degree of Gassiness of RVIII (Bottom) of Moira Colliery, Bankola Area, ECL	Prof. D. C. Panigrahi, CI	Moira Colliery Bankola Area, ECL
40	Cons/2884/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of Lakhimata Colliery, ECL	Prof. D. C. Panigrahi, CI	Lakhimata Colliery, ECL
41	Cons/2885/2015-16	Analysis and Interpretation of Mine air Samples of Lakhimata Colliery, ECL	Prof. D. C. Panigrahi, CI	Lakhimata Colliery, ECL

42	Cons/2886/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of Silwara Sub-Area, WCL	Prof. D. C. Panigrahi, CI	Silwara Sub-Area, WCL
43	Cons/2887/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of Sayal-D Colliery, CCL	Prof. D. C. Panigrahi, CI	Sayal-D Colliery, CCL
44	Cons/2888/2015-16	Assessment of Talabira-1 Working as per Mine Plan and Mine Closure Plan	Dr. Biswajit Paul, CI Prof. S. K. Maiti, CO-CI	HindalcolIndustries Ltd., Sambalpur.
45	Cons/2889/2015-16	Testing of Coal Samples	Dr. B. K. Nandi, CI Shri S. Soren, CO-CI	Coal Controller Org., Asansol
46	Cons/2890/2015-16	Proximate and Ultimate Analysis of Coal Samples	Prof. V. K. Saxena, CI	Mejia Thermal Power Station, Bankura
47	Cons/2891/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of Katras Chotudih Colliery, BCCL	Prof. D. C. Panigrahi, CI	Katras Chotodih Colliery, BCCL
48	Cons/2892/2015-16	Determination of Some Physical and Chemical Properties of quick Setting Cement Capsule of Lueky Fuel & Binder Enterprises	Prof. D. C. Panigrahi, CI	Lucky Fuel & Binders Enterprises, Dhanbad
49	Cons/2893/2015-16	Determination of Comprissive and Anchorage Strength of quick Setting Cement Capsules of Lucky Fuel & Binder Enterprises	Prof. A. K. Mishra, CI	Lucky Fuel & Binders Enterprises, Dhanbad
50	Cons/2894/2015-16	DGPS Survey of Demarked Boundary Pillars of Banam Guttuu Quartzite Mine	Dr. Dheeraj Kumar, CI	Banam Guttuu Quartzite Mine, Jamshedpur
51	Cons/2895/2015-16	Certification by ISM, Dhanbad for Work done Under Mine Closure Plan of Dharmasthal Coal Project of M/s BLA Industries (P) Ltd.	Prof. Phalguni Sen, CI Dr. Dheeraj Kumar, CO-CI Dr. Biswajit Paul, CO-CI	M/s BLA Industries (P) Ltd. M.P.
52	Cons/2896/2015-16	Testing of Coal Samples	Sri Shravan Kumar, CI Prof. N. R. Mandre, CO-CI	BCCL Dugda Coal Washery
53	Cons/2897/2015-16	Analysis of Coal Samples Provided by BGR Mining	Dr. Shalini Goutam, CI	BGR Mining, Hyderabad.
54	Cons/2899/2015-16	Preparation of Technical Content for EB and SC in Respect of Shivani OCP EIA	Dr. Anshumali, CI	CMPDI, Ranchi
55	Cons/2900/2015-16	Sampling and Analysis of coal heap stock of Parbatpur Coal block	Prof. V. K. Saxena, CI Mr. Anand Anupam, CO_CI	BCCL EJ Area
56	Cons/2901/2015-16	Sampling and Analysis.	Shri S. Soren, CI Shri Shravan Kumar, CO-CI Dr. N. R. Mandre, CO-CI	BCCL Koyla Nagar, Dhanbad
57	Cons/2902/2015-16	Determination of Specific gravity of Coal Seam I, II and III of Amalgamated NT-ST Colliery Patch E	Dr. Salini Gautam, CI Shri Anand Anupam, CO-CI	amal NT-ST Colliery, BCCL Dhanbad

58	Cons/2903/2015-16	Analysis and Interpretation of Mine air Samples and Detremination of Crossing and Ignition Point Temperature of Coal Samples.	Prof. D. C. Panigrahi, CI	Dhori Colliery, CCL
59	Cons/2904/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of Ghusic (R) Colliery ECL.	Prof. D. C. Panigrahi, CI	Ghusic (R) Colliery ECL
60	Cons/2905/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of Rajnagar RO Colliery, SECL	Prof. D. C. Panigrahi, CI	Rajnagar RO Colliery,SECL
61	Cons/2906/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of Jhiria UG Mine SECL	Prof. D. C. Panigrahi, CI	Jhiria UG Mine SECL
62	Cons/2907/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments and analysis and Interpretation of air Samples of Bhurkunda (B) Colliery CCL	Prof. D. C. Panigrahi, CI	Bhurkunda (B) Colliery, CCL
63	Cons/2908/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of Sodepur ® Colliery, ECL.	Prof. D. C. Panigrahi, CI	Sodepur ® Colliery, ECL
64	Cons/2909/2015-16	Determination of Crossing and Ignition Point Temperature of Coal Samples Jhanjra Area, ECL	Prof. D. C. Panigrahi, CI	Jhanjra Area, ECL
65	Cons/2910/2015-16	Environmental Statement of DVC Bermo Mines.	Dr. Biswajit Paul, CI	DVC Bokaro, DVC Bermo Mines.
66	Cons/2911/2015-16	Analysis and Interpretation of Mine air Samples of Khoodia Colliery, ECL	Prof. D. C. Panigrahi, CI	Khoodia Coliery, ECL
67	Cons/2912/2015-16	Analysis and Interpretation of Mine air Samples of Haripur Colliery, ECL	Prof. D. C. Panigrahi, CI	Haripur Coliery, ECL
68	Cons/2913/2015-16	Analysis and Interpretation of Mine air Samples of CIMFR, Dhanbad	Prof. D. C. Panigrahi, CI	CIMFR, Dhanbad
69	Cons/2915/2015-16	Third party Quality Assurance of Different Works at NIT, Jamshedpur.	Prof. S. C. Dutta, CI Dr. S. K. Panda, CO-CI Dr. Sanket Nayak, CO-CI Dr. L. Nainegai, CO-CI	NIT, Jamshedpur
70	Cons/2916/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments MECON International, Dhanbad.	Prof. D. C. Panigrahi, CI	MECON International Dhanbad
71	Cons/2917/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments Govindpur Area, BCCL	Prof. D. C. Panigrahi, CI	Govindpur Area, BCCL
72	Cons/2918/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments Dhori (K) Colliery, CCL	Prof. D. C. Panigrahi, CI	Dhori (K) Colliery, CCL

73	Cons/2919/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments Bijuri Colliery, SECL	Prof. D. C. Panigrahi, CI	Bijuri Colliery, SECL
74	Cons/2920/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments Salanpur Colliery, BCCL	Prof. D. C. Panigrahi, CI	Salanpur Colliery, BCCL
75	Cons/2922/2015-16	Proximate and Ultimate Analysis of Coal samples.	Prof. V. K. Saxena, CI	DVC
76	Cons/2923/2015-16	Analysis and Interpretation of Mine air samples of Orient Colliery, MCL	Prof. D. C. Panigrahi, CI	Orient Colliery, MCL
77	Cons/2924/2015-16	Evaluation of performance and behavior of safety instruments and monitoring of noise and airborne respirable dust, and analysis and interpretation of gas samples of chasnala colliery, SAIL	Prof. D. C. Panigrahi, CI	Chasnala Colliery, SAIL
78	Cons/2925/2015-16	Evaluation of performance and behavior of mine safety instruments MRS Ramgarh, CCL	Prof. D. C. Panigrahi, CI	MRS-Ramgarh, CCL
79	Cons/2926/2015-16	Analysis of Slurry lying at Heap No-15 of Sudamdih Coal Washery	Mr. Anand Anupam, CI Prof. N. R. Mandre, CO-CI	BCCL Koyla Bhawan, Dhanbad
80	Cons/2927/2015-16	Geo-Enviro Study of Abandoned Mines for 2 x 525 MW Maithon Power Plant.	Dr. B. K. Mishra, CI Dr. Alok Sinha, CO-CI	Maithon Power Ltd. Maiothon Dhanbad
81	Cons/2928/2015-16	Testing of Coal Samples.	Prof. N.R. Mandre, CI Shri S. Kumar, CO-CI	Lodna Colliery, BCCL
82	Cons/2929/2015-16	Evaluation of Furnace Oil Sample.	Dr. Vikash Mahato, CI Prof. V. P. Sharma, CO-CI	M/s Shridham Industries Industrial Area, Birkoni, Mahasamund. C. G.
83	Cons/2932/2015-16	Technical Study of Iron Ore Slimes of NMDC Mines.	Prof. V. P. Sinha, CI Prof. N. Suresh, CO-CI	NMDC Ltd. Hyderabad
84	Cons/2935/2015-16	Detailed Mineral Characterization and Implication for liberation studies of Chromite Ores from Tata Steel.	Prof. A.S. Venkatesh, CI Dr. P. R. Sahoo, CO-CI	Tata Steel Ltd., Jamshedpur
85	Cons/2936/2015-16	Analysis and Interpretation of Mine air Samples of SSI Colliery, ECL	Prof. D. C. Panigrahi, CI	SSI Colliery, ECL
86	Cons/2937/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments Godhar Colliery, BCCL	Prof. D. C. Panigrahi, CI	Godhar Colliery, BCCL
87	Cons/2938/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments Sawang Colliery, CCL	Prof. D. C. Panigrahi, CI	Sawang Colliery, CCL

88	Cons/2939/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments Parbelia Colliery, ECL	Prof. D. C. Panigrahi, CI	Parbelia Colliery, ECL
89	Cons/2940/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments Chinakuri Mine No.II, ECL	Prof. D. C. Panigrahi, CI	Chinakuri Mine No. II, ECL
90	Cons/2941/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments Palkimara Incline Hasdeo Area, SECL	Prof. D. C. Panigrahi, CI	Hasdeo Area, SECL
91	Cons/2942/2015-16	Analysis and Interpretation of Mine air Samples of Haripur Colliery, ECL	Prof. D. C. Panigrahi, CI	Haripur Colliery, ECL
92	Cons/2943/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments PB Project Colliery, BCCL	Prof. D. C. Panigrahi, CI	PB Project Colliery, BCCL
93	Cons/2944/2015-16	Bond Work Index of Phosphate Rock	Mr. Anand Anupam, CI Prof. N. R. Mandre, CO-CI	Paradeep Phosphates Ltd.
94	Cons/2946/2015-16	Analysis of Ambient air sample & Water sample from Main Mine discharge of Bararee Colliery.	Dr. B. K. Mishra, CI Dr. S. K. Gupta, CO-CI	Bararee Colliery, BCCL
95	Cons/2948/2015-16	Testing of Coal Samples.	Shri S. Soren, CI Dr. B. K. Nandi, CO-CI	Coal Controller Organisation, Asansol.
96	Cons/2949/2015-16	Study of Leaching of Heavy Metals.	Dr. S. K. Gupta, CI Mr. B. Mishra, CO-CI	Tata Steel Ltd. West Bokaro
97	Cons/2950/2015-16	Sampling and Analysis of Slurry lying in Heap No-4DZ(B) of Dugda Coal Washery	Prof. S. Bhattacharya, CI Prof. V. K. Saxena, CO-CI Mr. Anand Anupam, CO-CI	BCCL Koyla Bhawan, Dhanbad
98	Cons/2951/2015-16	LOI of fly ash samples.	Prof. V. K. Saxena, CI Mr. Suresh Yatirajula, CO-CI Dr. S. Sengupta, CO-CI	DVC, Bokaro.
99	Cons/2953/2015-16	Audit and Evaluation of Blast design for Road Constructin at Dharchula	Prof. A. K. Mishra, CI Dr. B. S. Choudhury, CO-CI	Border Road Organization New Delhi.
100	Cons/2954/2015-16	Proof Checking of a footing of size 1.1 m x 2.2 m	Dr. S. K. Panda, CI	P. Arora & Associates Pvt. Ltd. New Delhi.
101	Cons/2958/2015-16	Technical Consultancy for Waste Water Management and Control of Water Pollution from Plant and Mines of BIOM< Bachel Complex.	Dr. Anshumali, CI	NMDC, Ltd., Hyderabad.
102	Cons/2960/2015-16	Analysis and Interpretation of Mine air Samples of Mandaman Colliery, ECL	Prof. D. C. Panigrahi, CI	Maudaman Colliery, ECL
103	Cons/2961/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of Basantimata Dahibari Colliery.	Prof. D. C. Panigrahi, CI	Basantimata Dahibari Coliery, BCCL

104	Cons/2962/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments and Analysis and Interpretation of Mine air Samples of Khoodia Colliery, ECL	Prof. D. C. Panigrahi, CI	Khoodia Colliery, ECL
105	Cons/2963/2015-16	Analysis and Interpretation of Mine air Samples of Shampur B. Incline, ECL	Prof. D. C. Panigrahi, CI	Shampur B Incline ECL
106	Cons/2964/2015-16	Analysis of Interpretation of Mine air Samples of Badjna Colliery	Prof. D. C. Panigrahi, CI	Badjna Colliery, ECL
107	Cons/2965/2015-16	Evaluation of Performance and Behavior of Mine Safety Instrumentation Saner Colliery, WCL	Prof. D. C. Panigrahi, CI	Saner Colliery, WCL
108	Cons/2966/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments and Analysis and Interpretation of Mine air samples of Sawang Colliery, CCL	Prof. D. C. Panigrahi, CI	Sawang Colliery, CCL
109	Cons/2967/2015-16	Calibration of force measuring device (1000 kN & 2000 kN Capacity) as per IS 4169:1988 in compression.	Prof. A. K. Mishram, CI	Pre-Stressed Udyog (I) (P) Ltd. Dhanbad.
110	Cons/2968/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of Silwara Colliery, WCL	Prof. D. C. Panigrahi, CI	Silwara Colliery, WCL
111	Cons/2969/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of Mines Rescue Station, Dhansar, BCCL	Prof. D. C. Panigrahi, CI	MRS, Dhansar, BCCL
112	Cons/2970/2015-16	A Study into Present Atmospheric Conditions Including the Conditions of fire areas for Improving Safety in Sijua Colliery Tata Steel Ltd.	Prof. D. C. Panigrahi, CI	Sijua Colliery, Tata Steel Ltd.
113	Cons/2972/15-16	Testing of Coal Samples.	Dr. B. K. Nandi, CI	Coal Controllers Organisation, Asansol
114	Cons/2973/2015-16	Scientific study to Establish Safe Maximum Charge per delay and Blasting Pattern vis-à-vis safety within 100M of Occupied Buildings at Amalgamated Angarpathra Ramkanali Colliery Katras Area, BCCL	Dr. B. S. Choudhary, CI Prof. VMSR Murthy, CO-CI	BCCL AARC, Dhanbad
115	Cons/2974/2015-16	Evaluation of Performance and Behavior of mine safety Instruments of Baheraband Colliery, SECL	Prof. D. C. Panigrahi, CI	Baheraband Colliery, SECL
116	Cons/2975/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of Badjna Colliery, ECL	Prof. D. C. Panigrahi, CI	Badjna Colliery, ECL

117	Cons/29756/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of Jhiria UG Mine SECL	Prof. D. C. Panigrahi, CI	Jhiria UG Mine SECL
118	Cons/2977/2015-16	Mineral Characterization and Liberation Studies of Iron Ores and Lead (Pb Ore) from SGS India (P) Ltd.	Dr. P. R. Sahoo, CI Prof. A. S. Venkatesh, CO-CI	SGS India (P) Ltd., Kolkata
119	Cons/2979/2015-16	Field Investigations Modelling and Design of Ventilation System of Sindesar Khurd Mine HZL (2nd year Period: their Order No.2014.0029/ 510015891 dt.25.9.15)	Prof. D. C. Panigrahi, CI	Hindustan Zinc Ltd. Udaipur
120	Cons/2980/2015-16	Determination of Compressive Strength and Grushing Strength for Coal samples of SSI Golliery Sripur Area,ECL	Prof. A. K. Mishra, CI	SSI Colliery, Sripur Area, ECL
121	Cons/2981/2015-16	Determination of Some Physical and Chemical Properties of quick Setting Cement Capsules of Durgapur youth Technology.	Prof. D. C. Panigrahi, CI	Durgapur youth Technology, Durgapur
122	Cons/2982/2015-16	Determination of Some Physical and Chemical Properties of Quick Setting Cement Capsules of M/S Durgapur Youth Technology.	Prof. A. K. Mishra, CI	Durgapur youth Technology, Durgapur
123	Cons/2983/2015-16	Calibration of force measuring device (100 kN , 500 kN & 2000 kN Capacity) of Pre-stressed Udyog (I) Pvt. Ltd.	Prof. A. K. Mishra, CI	Pre-Stressed Udyog (I) (P) Ltd. Dhanbad.
124	Cons/2984/2015-16	Determination of Compressive Strength and Cerchar Hardness of Coal & Shale Samples of Tetulmari Colliery, BCCL Supplied by MMD Heavy Machinery India Pvt. Ltd., Kolkata	Prof. A. K. Mishra, CI Prof. VMSR Murthy, CO-CI	Tetulmari Colliery, BCCL
125	Cons/2985/2015-16	Preparation of Impacts of proposed Patherdih Coal Washery	Dr. Anshumali, CI	CMPDI, Ranchi
126	Cons/2986/2015-16	Evaluation of performance and behavior of mine Safety Instruments of Ray Bachhara Colliery, CCL	Prof. D. C. Panigrahi, CI	Ray Bachhara Colliery, CCL
127	Cons/2987/2015-16	Evaluation of performance and behavior of Mine Safety Instruments of Mandaman Colliery, ECL	Prof. D. C. Panigrahi, CI	Mandaman Colliery, ECL
128	Cons/2988/2015-16	Scientific Study of stability of the barrier Pillars between longwall Panels in Seam XV, Moonidih Project, BCCL	Prof. U. K. Singh, CI	Moonidih Project, BCCL
129	Cons/2990/2015-16	Evaluation of Performance and behavior of Safety Instruments of Mudidih Colliery, BCCL	Prof. D. C. Panigrahi, CI	Mudidih Colliery, BCCL

130	Cons/2991/2015-16	Evaluation of Performance and behavior of Safety Instruments of Rescue Room-Balgi, SECL	Prof. D. C. Panigrahi, CI	Rescue Room-Balgi, SECL
131	Cons/2992/2015-16	Evaluation of Performance and behavior of Safety Instruments of Shyamsundarpur Colliery, ECL	Prof. D. C. Panigrahi, CI	Shyamsundarpur Colliery, ECL
132	Cons/2993/2015-16	Field Investigations, Modelling and Simulation Studies for designing Ventilation System of UCIL Mines, Jaduguda	Prof. D. C. Panigrahi, CI	UCIL Mines Jaduguda
133	Cons/2995/2015-16	Scientific Study to design Controlled Blasting Pattern for Gere Stone Mine, Gaya District.	Prof. VMSR Murthy, CI Dr. B.S. Choudhuri, CO-CI	IL&FS Engineering and Construction Co.Lt.
134	Cons/2998/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments and Analysis and Interpretation of Mine air Samples of Barmodia Colliery, ECL	Prof. D. C. Panigrahi, CI	Barmodia, Colliery, ECL
135	Cons/2999/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of Parbelia Colliery, ECL	Prof. D. C. Panigrahi, CI	Parbelia Colliery, ECL
136	Cons/3000/2015-16	Evaluation of Performance and Behavior of Mine Safety Instruments of MRS - Ramgarh, CCL	Prof. D. C. Panigrahi, CI	MRS Ramgarh, CCL
137	Cons/3001/2015-16	Testing of Coal Samples.	Shri Shravan Kumar, CI Prof. N. R. Mandre, CO-CI	BCCL, Mugma Area
138	Cons/3002/2015-16	Testing for Coal Samples.	Shri Shravan Kumar, CI Prof. N. R. Mandre, CO-CI	Bankola Area, ECL
139	Cons/3003/2015-16	Evaluation of performance and Behavior of Safety Instruments of Harijam and Kapildhara Collieries, ECL & SECL	Prof. D. C. Panigrahi, CI	Harijam and Kapildhara Collieries, ECL & SECL
140	Cons/3004/2015-16	Evaluation of performance and Behavior of SCSRs of KB10-12 Pits Colliery, BCCL	Prof. D. C. Panigrahi, CI	SCSRs of KB10-12 Pits Colliery, BCCL
141	Cons/3005/2015-16	analysis and Interpretation of air Samples of Haripur Colliery, ECL	Prof. D. C. Panigrahi, CI	Haripur Colliery, ECL
142	Cons/3006/2015-16	Evaluation of Performance and Behavior of Safety Instruments of Simlabahal Colliery, BCCL	Prof. D. C. Panigrahi, CI	Simlabahal Colliery, BCCL
143	Cons/3007/2015-16	Profiling of Heat Values Along the Coal flow Chain in Vindhychal STPP on NTPC	Prof. S. Bhattacharya, CI Prof. N. R. Mandre, CO-CI Prof. V. K. Saxena, CO-CI Shri Anand Anupam, CO-CI	NTPC, Ltd.

144	Cons/3008/2015-16	Field Investigations Modelling and design of Ventilation System to Improve for Rampur Agucha Lead - Zinc Mine, Hindustan Zinc Ltd. (Part - VI)	Prof. D. C. Panigrahi, CI	Hindustan Zinc Ltd.
145	Cons/3009/2015-16	Evaluation of Performance and Behavior of Safety Instruments of Shyampur B Incline, ECL	Prof. D. C. Panigrahi, CI	Shyampur B Incline ECL
146	Cons/3010/2015-16	Blast design for safe blasting and determination of safe Maximum charge at Muraidih Colliery (OCP) of Barora Area, BCCL	Prof. A. K. Mishra, CI	Muraidih Colliery of Barora Area, BCCL
147	Cons/3011/2015-16	Testing of Arsenic in 05 Nos. of Water Samples.	Dr. S. R. Samaddar, CI Prof. S. K. Maiti, CO-CI	NCL Bina Project Sonebhadra.
148	Cons/3012/2015-16	Determination of degree of gassiness of IV-A seam of Haldibari UG Mines, SECL.	Prof. D. C. Panigrahi, CI	Haldibari UG Mines, SECL
149	Cons/3013/2015-16	Determination of incubation period of one seam of Dhori (K) Colliery, CCL	Prof. D. C. Panigrahi, CI	Dhori (K) Colliery, CCL
150	Cons/3014/2015-16	Evaluation of performances and behavior of Safety Instruments of Jhanjra Project Colliery, ECL	Prof. D. C. Panigrahi, CI	Jhanjra Colliery, ECL
151	Cons/3015/2015-16	Evaluation of performance and Behavior of Mine Safety Instruments of Bera Colliery, BCCL	Prof. D. C. Panigrahi, CI	Bera Colliery, BCCL
152	Cons/3016/2015-16	Evaluation of performance and Behavior of Mine Safety Instruments of Methani Colliery, ECL	Prof. D. C. Panigrahi, CI	Methani Colliery, ECL
153	Cons/30167/2015-16	Characterisation and Benefication Studies on SMIORE Manganese Samples.	Prof. Nikkam Suresh, CI	Sandur Manganese and Iron Ores Ltd., Bellary
154	Cons/3020/2015-16	Scientific study of Geo-Mining Parameters and determination of RMR of XI Seam SB 5/7 Pit of PBP Colliery.	Prof. A. K. Mishra, CI	PBP Colliery, BCCL
155	Cons/3021/2015-16	Testing of Water Sample near Rajrappa Area	Dr. B. K. Mishra, CI	Hindalco Industries Ltd. Muri, Ranchi
156	Cons/3023/2015-16	Scientific Study of Geo-Mining Parameters and determination of RMR of B.P. Seam (Bottom Section) Badjna Colliery, ECL	Prof. A. K. Mishra, CI	Badjna Colliery, ECL
157	Cons/3024/2015-16	Evaluation of performance and behavior of Mine Ventilation and Safety instruments of Bhatgaon Mine, SECL	Prof. D. C. Panigrahi, CI	Bhatgaon Mine, SECL

158	Cons/3025/2015-16	Evaluation of performance and behavior of Mine Ventilation and Safety instruments of Kahan Area, WCL	Prof. D. C. Panigrahi, CI	Kanhan Area, WCL
159	Cons/3026/2015-16	Evaluation of performance and behavior of Mine Ventilation and Safety instruments of Gaurangdi Bequnia Colliery, ECL	Prof. D. C. Panigrahi, CI	Gaurangdi Begunia Colliery, ECL
160	Cons/3027/2015-16	A Study into airborne respirable dust concentration in AMAL-NTST Jeenagora Open Cast Mine, BCCL	Prof. D. C. Panigrahi, CI	Jeenagora Open Cast Mine, BCCL
161	Cons/3028/2015-16	Estimation of Support Requirement KTK-5 Incline	Prof. U. K. Singh, CI	Khammam, SCCL
162	Cons/3029/2015-16	DGPS Survey of Demarked Boundary Pillars of lease hold area and the forest area within the existing lease hold area of Jitpur Coal Block of M/s Adani Enterprise Ltd.	Dr. Dheeraj Kumar, CI	M/s Anani Enterprises Ltd., Godda
163	Cons/3030/2015-16	Preparation of DPR to setup Afghan Institute of Mining at Kabul, Afghanistan (Part-I)	Prof. A. K. Mishra, CI Prof. D. C. Panigrahi, CO-CI	Afghan Institute of Mining at Kabul. (Part-I)
164	Cons/3031/2015-16	Determination of compressive strength and Cerchar Hardness of NCL Coal samples.	Prof. A. K. Mishra, CI Prof. VMSR Murthy, CO-CI	MMD Heavy Mechinary (India) Pvt. Ltd. Kolkata
165	Cons/3032/2015-16	Suitability test of Water.	Dr. B. K. Mishra, CI Dr. Alok Sinha, CO-CI	CCL Sawang Govindpur
166	Cons/3034/2015-16	Obsaervation on the Reports of Wreke Site of River Princes of Sinquerim Condolim Goa.	Dr. Sanjit Kr. Paul, CI Dr. U. K. Singh, CO-CI Prof. Shalivahan, CO-CI Prof. P. R. Mohanty, CO-CI	Govt. of Goa, Porvorim Goa
167	Cons/3035/2015-16	Evaluation of performance and Behavior of Mine Ventilation and Safety Instruments of Topa OCP, CCL	Prof. D. C. Panigrahi, CI	Topa OCP, CCL
168	Cons/3036/2015-16	Evaluation of performance and Behavior of Mine Ventilation and Safety instruments of MRS Dhanbad	Prof. D. C. Panigrahi, CI	Mines Rescue Station Dhanbad
169	Cons/3037/2015-16	Evaluation of performance and Behavior of Mine Ventilation and Safety Instruments of Saoner Sub Area, WCL	Prof. D. C. Panigrahi, CI	Saoner Sub Area, WCL
170	Cons/3038/2015-16	Environmantal Suitability and Feasibility of Mining of Flyash in the OB of Kusmunda OC Mines of SECL.	Dr. Biswajit Paul, CI Prof. A. K. Singh, CO-CI	SECL
171	Cons/3040/2015-16	Learn from Earch other (LEO) Workshop, SAIL Ranchi	Dr. Shravan Kumar, CI Prof. R. Venugopal, CO-CI	SAIL
172	Cons/3041/2015-16	Testing of Coal Samples of ECL	Dr. Shravan Kumar, CI Prof. N. R. Mandre, CO-CI	Kalipahari, ECL

173	Cons/3042/2015-16	Prifiling of heat values along the coal flow chain in Singrauli STPP of NTPC	Prof. S. Bhattacharya, CI Prof. N. R. Mandre, CO-CI Prof. V. K. Saxena, CO-CI Shri S. Soren, CO-CI Shri S. Kumar, CO-CI Shri Anand Anupam, CO-CI	NTPC, Ltd.
174	Cons/3043/2015-16	Proof Checking of Steel Shed of 1250 Sq. ft.	Dr. S. K. Panda, CI Prof. S. C. Dutta, CO-CI Dr. S. Nayak, CO-CI	NTPC, Anantpur Drawings..
175	Cons/3044/2015-16	Evaluation of performance and Behavior of Mine Ventilation and Safety Instruments of Baheraband Mine, Hasdeo Area, SECL	Prof. D. C. Panigrahi, CI	Baheraband Mine, Hasdeo Area, SECL
176	Cons/3045/2015-16	Evaluation of performance and Behavior of Mine Ventilation and Safety Instruments of Dharam Incline, Chhal Sub Area, SECL	Prof. D. C. Panigrahi, CI	Dharam Incline, Chhal Sub Area, SECL
177	Cons/3046/2015-16	Evaluation of performance and Behavior of Mine Safety Instruments and Analysis and Interpretation of Mine air Samples of Govindpur Project Kathara Area, CCL	Prof. D. C. Panigrahi, CI	Govindpur Project Kathara Area CCL
178	Cons/3047/2015-16	Analysis and Interpretation of Mine air Samples of Haripur Colliery, ECL	Prof. D. C. Panigrahi, CI	Haripur Colliery, ECL
179	Cons/3048/2015-16	Analysis and Interpretation of Mine air Samples of Jarangdih Colliery, CCL	Prof. D. C. Panigrahi, CI	Jarangdih Coliery, CCL
180	Cons/3049/2015-16	Technical consultancy for Wastewater Management	Dr. Alok Singh, CI Dr. B. K. Mishra, CO-CI	Bailadila Iron Ore Mine Krاندul Complex
181	Cons/3053/2015-16	Analysis of Water samples from BCCL	Dr. M. K. Jain, CI Dr. Vipin Kumar, CO-CI	BCCL
182	Cons/3055/2015-16	Physical, Chemical and Combustion Properties of LVC Coal of Jaria Coalfield	Prof. S. Bhattacharya, CI Dr. B. K. Nandi, CO-CI	BCCL, Koyla Bhawan, Chanbad
183	Cons/3056/2015-16	Profiling of Heat Values along the coal flow chain in Rihand STPS of NTPC	Prof. S. Bhattachaya, CI Prof. N. R. Mandre, CO-CI Prof. V. K. Saxena, CO-CI	NTPC Rihandnagar
184	Cons/3058/2015-16	Physico Mechanical test of Core Samples of Haldibari Undergraund Mine, SECL Supplied by M/s JMS Mining services (P) Ltd.	Prof. A. K. Mishra, CI	JMS Mining Services (P) Ltd. Kolkata
185	Cons/3059/2015-16	Determination of Compressive strength and Crushing Strength for coal samples of SSI Colliery, Sripur Area ECL.	Prof. A. K. Mishra, CI	SSI Colliery, Sripur Area ECL
186	Cons/3060/2015-16	Testing of Coal Samples.	Dr. B. K. Nandi, CI Prof. N. R. Mandre, CO-CI	CCL , Ranchi
187	Cons/3061/2015-16	Determination of Coking and Swelling Index of Coal Sample of NTPC-Tanda-Region.	Dr. Shalini Gautam, CI Prof. N. R. Mandre, CO-CI	NTPC

188	Cons/3064/2015-16	Determination of GCV and Proximate Analysis of Coal Sample of ATPS Sonebhadra	Dr. Shalini Gautam, CI Dr. Shravan Kumar, CO-CI	Anpara B. Thermal Power Station Sonebhadra
189	Cons/3065/2015-16	Air-borne respirable dust Survey of Amalgamated NT-ST Jeenagora Colliery Lodna Area, BCCL	Prof. D. C. Panigrahi, CI	Lodna Area BCCL
190	Cons/3066/2015-16	Evaluation of Performance and Behavior of Mine Ventilation and Safety Instruments of Patherkhera Area, WCL	Prof. D. C. Panigrahi, CI	Patherkhera Area, WCL
191	Cons/3067/2015-16	Evaluation of Performance and Behavior of Mine Ventilation and Safety Instruments of Silwara Sub Area, WCL	Prof. D. C. Panigrahi, CI	Silwara Sub Area, WCL
192	Cons/3068/2015-16	Evaluation of Performance and Behavior of Mine Ventilation and Safety Instruments of Patherkhera Area, WCL	Prof. D. C. Panigrahi, CI	Patherkhera Area, WCL
193	Cons/3069/2015-16	Analysis and Interpretation of Mine Air Samples of KSP Phase-II, CCL	Prof. D. C. Panigrahi, CI	KSP Phase-II, CCL
194	Cons/3070/2015-16	Detail Mineralogical Characterization Studies of Chromite ore and host rocks with Implications for Beneficiation for M/S Tata Steel.	Prof. A. S. Venkatesh, CI Dr. P. R. Sahoo, CO-CI	FAM Research Group R&D Division, TSL, Jamshedpur
195	Cons/3071/2015-16	Determination of Physico-Mechanical Properties of Coal of different Mines of WCL (Tensile and Compressive Strength Part B	Prof. A. K. Mishra, CI Prof. D. C. Panigrahi, Co-CI	WCL, Nagpur
196	Cons/3072/2015-16	Determination of Quality/Grade of Various coal seams and their Physico-Mechanical Properties (Tensile & Compressive Strength) of various coal seams of different Mines of WCL Part-A	Prof. N. Suresh, CI	WCL, Nagpur
197	Cons/3074/2015-16	Evaluation of Performance and Behavior of Mine Ventilation and Safety Instruments of Narsamunda Colliery, ECL	Prof. D. C. Panigrahi, CI	Narsamunda Colliery, ECL
198	Cons/3075/2015-16	Evaluation of Performance and Behavior of Mine Ventilation and Safety Instruments of Churi Colliery, CCL	Prof. D. C. Panigrahi, CI	Churi Colliery, CCL
199	Cons/3076/2015-16	Evaluation of performance and Behavior of Mine Ventilation and Safety Instruments of MRs Ramgarh, CCL	Prof. D. C. Panigrahi, CI	MRS Ramgarh, CCL
200	Cons/3077/2015-16	Investigation into of gassiness of one seam of Muraidih Colliery Borora Area BCCL	Prof. D. C. Panigrahi, CI	Muraidih Colliery, BCCL

201	Cons/3078/2015-16	Evaluation of performance and Behavior of Mine Ventilation and Safety Instruments of Phuyaritand Colliery, BCCL	Prof. D. C. Panigrahi, CI	Phularitand Colliery, BCCL
202	Cons/3081/2015-16	Designing Detailed Blasting Scheme for underwater Controlled Rock Blasting at Panchet, DVC West Bengal	Dr. B. S. Choudhary, CI	GPT Infra Projects Ltd. Kolkata.
203	Cons/3082/2015-16	Evaluation of Performance and Behavior of Self Contained Chemical Self rescuers of Eastern Coalfields Ltd. through Functional ability tests. Intech Safety Pvt. Ltd.	Prof. D. C. Panigrahi, CI	Intech Safety Pvt. Ltd.
204	Cons/3083/2015-16	Evaluation of Ecology and Biology Soil Conservation component of Nilyai Expn.	Dr. Anshumali, CI	CMPDIL, Nagpur
205	Cons/3084/2015-16	Evaluation of performance and behavior of safety instruments, and analysis and interpretation of Chinkuri Mine No. 1, ECL	Prof. D. C. Panigrahi, CI	Chinakuri Mine No.1, ECL
206	Cons/3085/2015-16	Evaluation of performance and behavior of safety instruments of Ghusick @ Colliery, ECL	Prof. D. C. Panigrahi, CI	Ghusick R Colliery, ECL
207	Cons/3086/2015-16	Evaluation of performance and behavior of safety instruments of Kenda Area, ECL	Prof. D. C. Panigrahi, CI	Kenda Area, ECL
208	Cons/3087/2015-16	Evaluation of performane and behavior of safety instruments of Balajee Udyog, Dhanbad.	Prof. D. C. Panigrahi, CI	Balajee Udyog, Dhanbad
209	Cons/3088/2015-16	Analysis and interpretation of air samples at Dubeswari Colliry, ECL	Prof. D. C. Panigrahi, CI	Dubeswari Colliery, ECL
210	Cons/3089/2015-16	Analysis and interpretation at air samples at Mahujore Colliery, ECL	Prof. D. C. Panigrahi, CI	Madhujore Colliery, ECL
211	Cons/3090/2015-16	Testing of water samples of Joyarampur Pressure filter under lodhna area.	Dr. Brijesh Mishra, CI	Lodhna Area
212	Cons/3091/2015-16	Analysis of ambient air sample & Waters sample from main mine discharge of Bararee Colliery.	Dr. Rijesh Mishra, CI	Bararee Colliery, BCCL
213	Cons/3092/2015-16	Certification by ISM Dhanbad for work done under Mine Closure Plan of Ardhagram OCP of M/s Sova Ispat Ltd. Kolkata	Prof. P. Sen, CI Dr. Dheeraj Kumar, CO-CI	Sova Ispat Ltd., Kolkata-91
214	Cons/3093/2015-16	Testing of Shale Samples from Cambay basin	Dr. Keka Ojha, CI	Mercator Petroleum Ltd., Mumbai.
215	Cons/3094/2015-16	Determination of some physical and Chemical Properties of quick setting Cement Capsules of Katras Area, BCCL	Prof. D. C. Panigrahi, CI	Katras Area, BCCL

216	Cons/3095/2015-16	Determination of Physical properties of Cement Capsule Supplied by Katras Area, BCCL	Prof. A. K. Mishra, CI	Katras Area, BCCL
217	Cons/3096/2015-16	Testing of Coal Samples	Dr. Shravan Kumar, CI Prof. N. R. Mandre, CO-CI	M/s Kanha Construction
218	Cons/3098/2015-16	Analysis and interpretation of mine air samples of Haripur Colliery, ECL	Prof. D. C. Panigrahi, CI	Haripur Colliery, ECL
219	Cons/3099/2015-16	Evaluation of performance and behavior of mine ventilation and safety instruments of patmohna Colliery, ECL	Prof. D. C. Panigrahi, CI	Patmohan Colliery, ECL
220	Cons/3100/2015-16	Analysis and instrumentation of mine air samples of wastren Jharia Area, BCCL	Prof. D. C. Panigrahi, CI	Westren Jharia Area, BCCL
221	Cons/3101/2015-16	Evaluation of performance and behavior of mine safety instruments, and analysis and interpretation of mine air samples of gare plma IV/4 Block, Hindalco Industries Ltd.	Prof. D. C. Panigrahi, CI	Hindalco Industries Ltd.
222	Cons/3102/2015-16	Calibration of force Measuring device (500 kN capacity) of M/c Muva Industries Ltd.	Prof. A. K. Mishra, CI	Ms Muva Industries Ltd.
223	Cons/3103/2015-16	Determination of Compressive Strength and Weatherability for Coal Samples of Bastacola Colliery, BCCL	Prof. A. K. Mishra, CI	Bastacola Colliery, BCCL
224	Cons/3104/2015-16	ERT Study for Ground Water near Govindpur road, Dhanbad	Dr. S. K. Pal, CI Dr. U. K. Singh, CO-CI Prof. Shalivahan, CO-CI Prof. P. R. Mohanty, CO-CI	Castron Technologies Ltd., Dhanbad.
225	Cons.3110/2015-16	Determination of Specific gravity of coal sample of JK Nagar Group of Mines, ECL	Prof. D. C. Panigrahi, CI	J. K. Nagar Group of Mines, ECL
226	Cons/3111/2015-16	Functional Ability test of Self rescuers of Megherita, NECL	Prof. D. C. Panigrahi, CI	NECL Megherita
227	Cons/3112/2015-16	Evaluation of Performance and Behavior of Mine Ventilation and Safety Instruments of Somna Colliery, SECL	Prof. D. C. Panigrahi, CI	Somna Colliery, SECL
228	Cons/3113/2015-16	Evaluation of Performance and Behavior of Mine Ventilation and Safety Instruments of Sodepur (R) Colliery and Chhatrapur Colliery, WCL	Prof. D. C. Panigrahi, CI	Chhatrapur Colliery, WCL
229	Cons/3114/2015-16	Effect of Blasting in Opencast into Below ground Working of Kuya Colliery, BCCL (Part - A)	Prof. A. K. Mishra, CI Dr. B. S. Choudhury, CO-CI	Kuya Colliery, BCCL

230	Cons/3115/2015-16	Caving Behaviour of the Strata in Depillaring above the zero coal seam and Stability of Pillars (Part - B)	Prof. U. K. Singh, CI Mr. Kashinath Pal, CO-CI	Kuya Colliery, BCCL
231	Cons/3116/2015-16	Designing of Rhombus Coal Pillar and Support With Roadway Stability of Swang"C" seam of Govindpur Project (U/G) Kathara Area, CCL	Prof. M. Jawed, CI Dr. R. K. Sinha, CO-CI	Kathara Area, CCL
232	Cons/3117/2015-16	Determination of compressive strength and Cerchar Hardness of ECL Coal/Shale Samples Supplied by MMD Heavy Machinery (India) Pvt. Ltd. Kolkata - 17	Prof. A. K. Mishra, CI Prof. VMSR Murthy, CO-CI	MMD Heavy Machinery (India) Pvt. Ltd. Kolkata-17
233	Cons/3119/2015-16	Determination of GCV and Proximate Analysis of Coal Sample of ATPS	Dr. Shalini Goutam, CI	Anpara B Thermal Power Station, Sonebhadra
234	Cons/3120/2015-16	Evaluation of performance and behavior of safety instruments of Jhiria UG Mine, SECL	Prof. D. C. Panigrahi, CI	Jhiria UG Mine SECL
235	Cons/3121/2015-16	Analysis and Interpretation of air Samples of Haripur Colliery, ECL	Prof. D. C. Panigrahi, CI	Haripur Colliery, ECL
236	Cons/3122/2015-16	Evaluation of Performance and Behavior of Safety Instruments of Kapildhara UG Project Hasdeo Area, SECL	Prof. D. C. Panigrahi, CI	Kapildhara UG Project Hasdeo Area, SECL
237	Cons/3123/2015-16	Evaluation of Performance and Behavior of Safety Instruments and Analysis and Interpretation of Dhemomain Pit Colliery, ECL	Prof. D. C. Panigrahi, CI	Dhemomain Pit Colliery, ECL
238	Cons/3124/2015-16	Evaluation of Performance and Behavior of Dust Ioniser Brand name Pulver Bond of PVR Inshield Bituminous Pvt. Ltd. Dishergarh	Prof. D. C. Panigrahi, CI	PVR Inshield Bituminous Pvt. Ltd. Dishergarh.
239	Cons/3125/2015-16	Evaluation of performance and Behavior of Dust Ioniser Brand name dust bond of Calcutta Mining Sealants Pvt. Ltd.	Prof. D. C. Panigrahi, CI	Calcutta Mining Sealants Pvt. Ltd. Dishergarh
240	Cons/3126/2015-16	Analysis and Interpretation of air samples of Mandaman Colliery, ECL	Prof. D. C. Panigrahi, CI	Mandaman Colliery, ECL
241	Cons/3127/2015-16	Evaluation of Performance and Behavior of Safety Instruments of Rajur Incline Colliery, WCL	Prof. D. C. Panigrahi, CI	Rajur Incline Colliery, WCL
242	Cons/3118/2015-16	Cavability Index Analysis of Seam III of Pandavara Mine, Baikunthapur Area and Design of a Suitable Method of Depillaring a panel by Caving Method., SCCL	Prof. U. K. Singh, CI	Jhilimili Sub Area, SCCL

243	Cons/3128/2015-16	Scientific Study of Geo-Mining Parameters and determination of RMR of R VII A Seam near the pit bottom of No.3 Pit at SSP(O) unit of Tilaboni Colliery.	Prof. A. K. Mishra, CI	Tilaboni Colliery, ECL
244	Cons/3130/2015-16	Tool Creation for Ore dressing for KPMG	Mr. S. Kumar, CI Prof. R. Venugopal, CO-CI	KPMG Advisory Services (P) Ltd. Gurgaon.
245	Cons/3132/2015-16	Off campus course on Executives of Sandvik at Bangaluru.	Prof. P. Sen, CI Prof. V. K. Singh, CO-CI Dr. R. K. Sinha, CO-CI	Sandvik Asia Pvt. Ltd., Bangalore.
246	Cons/3134/2015-16	Evaluation of performance and behavior of Safety instruments of Silwara sub Area WCL	Prof. D. C. Panigrahi, CI	Silwara Sub Area WCL
247	Cons/3135/2015-16	Air borne Respirable dust Survey by gravimetric dust sampler in bired OCP Patch A at Katras Colliery BCCL	Prof. D. C. Panigrahi, CI	OCP Patch A at Katras Colliery, BCCL
248	Cons/3136.2015-16	Evaluation of performance and behavior of SCRSs of Ranipura Agucha Mine HZL.	Prof. D. C. Panigrahi, CI	SCRSs of Rampura Agucha Mine HZL
249	Cons/3137/2015-16	Evaluation of performance and behavior of Safety instruments of MRS - Ramgarh,CCL	Prof. D. C. Panigrahi, CI	MRS-Ramgarh, CCL
250	Cons/3138/2015-16	Evaluation of performance and behavior of Safety instruments of Tumalapalle Mine, UCIL.	Prof. D. C. Panigrahi, CI	Tumalapalle Mine UCIL
251	Cons/3139/2015-16	Evaluation of performance and behavior of Safety instruments of Saoner Sub-Area WCL	Prof. D. C. Panigrahi, CI	Saoner Sub Area, WCL
252	Cons/3140/2015-16	Evaluation of performance and behavior of Safety instruments of Bejdih Colliery, Sodepur Area, ECL	Prof. D. C. Panigrahi, CI	Bejdih Colliery Sodepur Area, ECL
253	Cons/3141/2015-16	Analysis and Interpretation of air Samples of Hariajam Colliery, ECL	Prof. D. C. Panigrahi, CI	Hariajam Colliery, ECL
254	Cons/3142/2015-16	Analysis and Interpretation of air Samples of Haripur Colliery, ECL	Prof. D. C. Panigrahi, CI	Haripur Colliery, ECL
255	Cons/3143/2015-16	Analysis and Interpretation of air Samples of Sodepur R Colliery, ECL	Prof. D. C. Panigrahi, CI	Sodepur 'R' Colliery, ECL
256	Cons/3144/2015-16	Analysis and Interpretation of air Samples of SSI Colliery Sripur Area, ECL	Prof. D. C. Panigrahi, CI	SSI Colliery Sripur Area ECL
257	Cons/3145/2015-16	Calibration of force measuring device (500 KN-Capacity) of Pre-Stressed Udyog (India) Pvt. Ltd. as per IS:4169:1988 in compression.	Prof. A. K. Mishra, CI	Pre-Stressed Udyog (I) (P) Ltd. Dhanbad.
258	Cons/3146/2015-16	Compliance of condition No.13 of stage 1 cleavence of Rohini OC for 74.83 ha, CCL	Prof. S. K. Maiti, CI	CCL Darbhanga House, Ranchi

259	Cons/3147/2015-16	Feviewing the HSE Documents of Adani Enterprises Ltd. (AEL) Mining Business.	Prof. R. M. Bhattacharjee, CI	Adani Enterprises Ltd.
260	Cons/3148/2015-16	Blast design for conducting controlled blasting with regard to blast Induced Vibration Control of flying fragments and blasting in the Vicinity of inhibited area at COCP patch in Amalgamaled Sudamdih Patherdih Colliery (ASP Colliery)	Prof. A. K. Mishra, CI Prof. P. Sen, CO-CI	Amal S. P. Colliery BCCL
261	Cons/3149/2015-16	Design of Controlled Blasting with Regard to Blast Induced Vibration air over Pressure Control of flying Fragments and Blasting in the Vicinity of Inhibited area at Hired HEMM X-Patch in Amlgamatted Sudamdih-Patherdih Colliery (ASP Colliery)	Prof. A. K. Mishra, CI Prof. P. Sen, CO-CI	Amal S.P. Colliery BCCL
262	Cons/3151/2015-16	Analysis of Mercury in 25 Soil Samples.	Prof. S. K. Maiti, CI Dr. S. R. Samaddar, CO-CI	NCL Singrauli
263	Cons/3152/2015-16	Carbon sequestration study of Ecorestoration sites of BCCL 2 Sites at Damoda ad Tatulmari.	Prof. S. K. Maiti, CI	BCCL Koyla Nagar
264	Cons/3153/2015-16	Physical Chemical and Combustion properties of Jhama Coal of Jharia Coalfields.	Prof. S. Bhattacharya, CI Dr. B. K. Nandi, CO-CI	BCCL Koyla Bhawan, Dhanbad
265	Cons/3154/2015-16	Subsidence Monitoring at Forest Area above the underground Working within Mining lease of UCIL Jaduguda	Dr. Dheeraj Kumar, CI	UCIL Jaduguda
266	Cons/3156/2015-16	Stack Monitoring at MPL Dhanbad	Dr. Suresh Pandian E, CI Dr. B. K. Mishra, CO-CI	MPL Dhanbad
267	Cons/3158/2015-16	Evaluation of performance and behavior of Mine Ventilation and Saety Instruments of Hariajam Colliery, ECL	Prof. D. C. Panigrahi, CI	Hariajam Colliery, ECL
268	Cons/3159/2015-16	Evaluation of performance and behavior of Mine Ventilation and Safety Instruments of Burragarh Colliery, BCCL	Prof. D. C. Panigrahi, CI	Burragarh Colliery, BCCL
269	Cons/3160/2015-16	Analysis and Interpretation of Mine air Samples of Kunustoria Colliery, ECL	Prof. D. C. Panigrahi, CI	Knustoria Colliery, ECL
270	Cons/3161/2015-16	Analysis and Interpretation of Mine Air Samples of Parbolia Colliery, ECL	Prof. D. C. Panigrahi, CI	Parbelia Colliery, ECL
271	Cons/3162/2015-16	Determination of density of two Coal Samples of ASP Colliery, BCCL	Prof. D. C. Panigrahi, CI	ASP Colliery, BCCL

272	Cons/3163/2015-16	Determination of some Physical and Chemical properties of quick setting cement capsule of Durgapur youth Technology, Durgapur	Prod. D. C. Panigrahi, CI	Durgapur youth Technology, Durgapur
273	Cons/3164/2015-16	Determination of Physical Properties of Cement Capsule Supplied by Durgapur youth Technology Durgapur.	Prof. A. K. Mishra, CI	Durgapur youth Technology, Durgapur
274	Cons/3165/2015-16	Airborne respirable dust survey by gravimetric dust sampler in hired OCP Patch II at Gasitand Colliery, BCCL	Prof. D. C. Panigrahi, CI	Bharat Coking Coal Ltd., Koyla Nagar, Dhanbad

6.2 PROFESSIONAL DEVELOPMENT PROGRAMME HELD DURING APRIL 2015 TO MARCH 2016

The Continuing Education Wing of Executive Development Centre organized a wide range of activities for meeting the specific objectives of continuing education. During the year 2015-16 Professional Development Programmes have been conducted for executives of various Government, Public Sector and Private Sector companies. Number of Executives trained was 1495 (2253 participant-weeks) and the value of these training programmes was about Rs. 403.56 Lakhs. (as per the revised Consultancy Rules, Professional Development Programmes are also treated as consultancy projects.)

Sl. No.	Course Number	Programme	Coordinator(s)	No. of Participants	Weeks	Participants Weeks
1	Cons/2832/15-16	Three weeks Training Programme on Mining Equipment for the E&M Engineers of SCCL. From 6- 24 April, 2015	Prof. K. Dasgupta, CI Prof. T. K. Chatterjee, CO-CI Prof. A. K. Mukhopadhyaya, CO-CI	25	3	75
2	Cons/2860/15-16	Three weeks Training Program on Mining Equipment for E & M Engineers of SCCL. From 27-4-2015 to 15.5.2015	Prof. A. K. Mukhopadhyaya, CI Prof. K. Dasgupta, CO-CI Prof. T. K. Chatterjee, CO-CI	25	3	75
3	Cons/2868/15-16	Wireless Network Protocols & Algorithms their MATLAB Simulations. From 8 - 12 June, 2015	Mr. Tarachand Amgoth, CI Prof. P. K. Jana, CO-CI	25	1	25
4	Cons/2871/15-16	Matlab and Simulink for Engineering Applications. From 22 - 27 June, 2015	Dr. Kalyan Chatterjee, CI Dr. S. Das, CO-CI	14	1	14

5	Cons/2870/15-16	Modem Antenna Technology (MAT) from Theory to Practice. From 29 June to 03 July, 2015	Dr. Sushrut Das, CI Dr. Santanu Dwari, CI	23	1	23
6	Cons/2840/15-16	Advance Power Electronics and Power Quality. From 5 - 10 July, 2015	Dr. Nitai Pal, CI Prof. P.K. Sadhu, CO - CI	44	1	44
7	Cons/2996/15-16	Fifty hours Interactive Executive Program on "Development of Risk based Safety. From 6.7.2015 to 15.7.2015	Prof. R. M. Bhattacharjee, CI	22	2	44
8	Cons/2839/15-16	Advanced Electrical Power Technology. From 12 to 17 July, 2015.	Prof. P.K. Sadhu, CI Dr. Nitai Pal, CO-CI	113	1	113
9	Cons/2898/15-16	3 days PDP on Mine Electrical Safety. From 13 - 15 July, 2015	Prof. T. K. Chatterjee, CO-CI Dr. Tanmoy Maity, CI	19	1	19
10	Cons/2914/15-16	Dealers Development Program for Indian Oil Dealers. From 24 - 25 July, 2015	Dr. Mrinalini Panday, CI Dr. Saumya Singh, CO-CI	20	1	20
11	Cons/2921/15-16	Advanced Analog Circuits using Current Mode Building Blocks. From 27 - 31, July, 2015	Prof. S. K. Paul, CI Dr. R. K. Ranjan, CO-CI	10	1	10
12	Cons/2959/15-16	Rock Mechanics for Hydro-Power Projects for NHPC. From 27 - 29 July, 2015	Prof. VMSR Murthy, CI Dr. G. Budi, CO_CI	14	1	14
13	Cons/2933/15-16	Technological and Managerial Aspects of Open Cast Mining from 3 - 5 August, 2015	Dr. Ajit Kumar, CI Prof. A.K. Mukhopadhyaya, CO-CI	26	1	26
14	Cons/3019/15-16	Fifty hours Interactive Executive Programme on "Development of Risk based Safety. From 4.8.2015 to 13.8.2015	Prof. R. M. Bhattacharjee, CI	13	2	26
15	Cons/2945/15-16	Safety Engineering and Management in Coal Mines. From 17 - 21, August, 2015	Prof. S. Choudhuri, CI Dr. P. S. Paul, CO-CI	22	1	22

16	Cons/2971/15-16	Special soft Skills Training Programme. From 17 - 23 August, 2015	Prof. Pramod Pathak, CI Dr. Saumya Singh, CO-CI	50	1	50
17	Cons/2934/15-16	Network Protocols and their Simulation using NS-2/NS-3. from 19-23 August, 2015	Dr. Chiranjeev Kumar, CI Dr. Haider Banka, CO-CI	35	1	35
18	Cons/2947/15-16	Power Hydraulics in HEMM. From 24 - 28 Aug., 2015	Prof. K. Dasgupta, CI Dr. A. R. Dixit, CO-CI	17	1	17
19	Cons/2930/15-16	Condition Based Maintenance of Mining Equipment 24 - 26 August 2015 at Kolkata Centre	Dr. Tanweer Alam CI Prof. A. K. Mukhopaxhya, CO- CI	43	1	43
20	Cons/3018/15-16	Three weeks Underground Coal Mining Technology and Safety. From 17.8.2015 to 04.09.2015	Prof. R. M.Bhattacharjee, CI Prof. A. K. Mishra, CO-CI Prof. D.C. Panigrahi, CO-CI	24	3	72
21	Cons/2955/15-16	Environment Aspect of Mining Industry. From 3 - 5 September, 2015 at Kolkata	Dr. Biswajit Paul, CI Prof. A. K. Siingh, CO-CI	31	1	31
22	Cons/2956/15-16	Fundamentals of Soft Computing and Its Applications. From 9 - 13 September., 2015	Dr. Haider Banka, CI Dr. Chiranjeev Kumar, CO-CI	49	1	49
23	Cons/2978/15-16	Total Station, GPS and Preparation of Computer Aided Plans and Sections. From 14-18 Sep5.2015	Dr. Dheeraj Kumar, CI Shri Vasant G.K. Villuri, CO-CI	19	1	19
24	Cons/2931/15-16	3 days Air Quality Assessment Prediction and Control for Industrial Areas from 17 -19, Sept., 2015	Dr. M. K. Jain, CI Prof. A. K. Pal, CO-CI Dr. Suresh Pandian, CO-CI	22	1	22
25	Cons/2989/15-16	Sustainability Enhancing Practices in Mining Industry of India. From 17-18 Sept., 2015	Dr. Bibhas Chandra, CI Dr. Saumya Singh, CO-CI	14	1	14
26	Cons/2997/15-16	Composite Materials: Research & Development. From 21 - 25 Sept., 2015	Dr. K. K. Singh, CI	38	1	38

27	Cons/3022/15-16	Advances in Drilling, Blasting and Mechanical Excavation Techniques for Improved Safety and Productivity in Coal Mines. From 21.09.2015 to 09.10.2015.	Prof. VMSR Murthy, CI Dr. B. S. Choudhary, CO-CI	24	3	72
28	Cons/2994/15-16	Advanced Data Structures with Their Applications. From 1 - 5 Sept., 2015	Dr. Sachin Tripathi, CI	39	1	39
29	Cons/2952/15-16	2 weeks PDP on Controlled Blasting Management for Road Construction in Mountainous Area for Executives of BRO, GOI. From 28.9.15 to 9.10.15	Prof. A. K. Mishra, CI Dr. B. S. Choudhary, CO-CI	15	2	30
30	Cons/3033/15-16	Formulation of Corporate Plan for National Hydroelectric Power Corporation (NHPC) Executives. From 2 - 4, Nov. 2015	Dr. Niladri Das, CI	13	1	13
31	Cons/3039/15-16	Six Weeks Course on Advances in Mine Surveying Technology. From 26.10.2015 to 4.12.2015	Dr. Dheeraj Kumar, CI Shri S. Alam, CO-CI	8	6	48
32	Cons/3079/15-16	Two Weeks Course on Condition Based of Mining Equipment. From 23.11.2015 to 04.12.2015.	Prof. A. K. Mukhopadhyay, CI Dr. Tanweer Alam, CO-CI	25	2	50
33	Cons/3052/25-16	3 days on EIA/EMP preparation of EB & SC. At Kolkata. From 2 - 4, Dec., 2015	Dr. Anshumali, CI	16	1	16
34	Cons/2957/15-16	Application on Advanced Geophysical Methods for Rock Physics Modeling and Monitoring Seismicity in Mines Safety . From 7 - 11, Dec., 2015 at Kolkata	Dr.Rima Chatterjee, CI	23	1	23

35	Cons/3063/15-16	Project Management with MS Project. From 7 - 11 Dec., 2015	Dr. Sandeep Mondal CI Prof. Chandan Bhar, CO-CI	24	1	24
36	Cons/3073/15-16	Mining Equipment Safety Practices. From 7 - 9 Dec., 2015	Dr. L A Kumaraswamidhas, CI Shri Ajit kumar, CO-CI	13	1	13
37	Cons/3133/15-16	Advance in Rock Mechanics and Numerical Modelling for Strata Control in Underground Coal Mining for Improved Safety and Productivity. From 14.12.2015 to 01.01.2016	Prof. VMSR Murthy, CI Dr. A. K. Verma, CO-CI Prof. D. C. Panigrahi, CO-CI	30	4	120
38	Cons/3062/15-16	Optical Communication Network and Photonic Devices. From 18 - 20 Dec., 2015	Prof. Vishnu Priye, CI Dr. Amitesh Kumar, CO-CI	12	1	12
39	Cons/3131/15-16	Surface Mining. From 18 - 22, Dec., 2015	Prof. P. Sen, CI Dr. R. K. Sinha, CO-CI	13	1	13
40	Cons/3057/15-16	Recent Advances in Water Resources and Environmental Engineering Computation. From 22 - 26 Dec., 2015 at Kolkata.	Dr. S. K. Gupta, CI Dr. S. Pasupuleti, CO-CI Dr. Alok Sinha, CO-CI	21	1	21
41	Cons/3051/15-16	3 days PDP on Availability and Management of Water Resources near Mining & Industrial Areas. From 28 - 30, Dec., 2015 at Kolkata.	Dr. P. K. Singh, CI	39	1	39
42	Cons/3054/15-16	Occupational Health Safety & Environment. From 7 - 9 Jan, 2016 at Kolkata.	Prof. A. K. Pal, CI Dr. B. Paul, CO-CI	26	1	26
43	Cons/3050/15-16	Sustainable Infrastructure. From 8 - 10 Jan., 2016	Prof. S. C. Dutta, CI Dr S. K. Panda, CO-CI Dr. S. Nayak, CO-CI	61	1	61
44	Cons/3108/15-16	Practical Mine Surveying for Mine Surveyors and Apprentice in Mine Surveying. From 14.12.2015 to 08.01.2016	Dr. Dheeraj Kumar, CI Dr VGK Villuri, CO-CI	11	6	66

45	Cons/3080/15-16	Water Quality & Treatment. From 28 - 30 Jan., 2016	Dr. Alok Sinha, CI Dr. B. K. Mishra, CO-CI	15	1	15
46	Cons/3157/15-16	Project Management with Application Software for SECL Executives. From 11 – 21, Jan., 2016	Prof. J. K. Pattanayak, CI Prof. Chandan Bhar, CO-CI	26	2	52
47	Cons/3150/15-16	Ventilation and Safety in Underground Coal Mines - Management & Technology. From 25th Jan., 2016 to 5th Feb., 2016	Dr. D. P. Mishram, CI	24	2	48
48	Cons/3105/15-16	Corrosion and Corrosion Control in Industries. From 2 - 5 Feb., 2016	Dr. Mahendra Yadav, CI	26	1	26
49	Cons/3107/15-16	Project Management with MS Project at Kolkata. From 18 - 22, Jan., 2016	Prof. Chandan Bhar, CI Dr. Sandeep Mondal, CO-CI	23	1	23
50	Cons/3106/15-16	Nature Inspired Algorithms and its Applications at Kolkata. From 8 - 12, Feb. 2016	Dr. Haider Banka, CI Dr. Chiranjeep Kumar, CO-CI	53	1	53
51	Cons/3109/15-16	Application of Statistical Tools in Research & Data Analysis. From 8 - 10, Feb., 2016	Prof. G. N. Singh, CI Dr. S. Chatterjee, CO-CI Dr. G. V. Vishwakarma, CO-CI	33	1	33
52	Cons/3097/15-16	Sustainable Waste Management Practices at Kolkata. From 17 - 19 Feb. 2016	Dr. Vipin Kumar, CI Dr. M. K. Jain, CO-CI	25	1	25
53	Cons/3155/15-16	Management Executive Stress. From 10 - 11 Feb., 2016 at Kolkata	Dr. Saumya Singh, CI Prof. Pramod Pathak, CO-CI	12	1	12
54	Cons/3129/15-16	Network Protocols and their Simulation using NS-2. From 3 - 5 March, 2016.	Dr. Chiranjeep Kumar, Dr. Haider Banka, CO-CI	25	1	25
55	Cons/3342/16-17	Coal Beneficiation Principles and Plant Practices. From 22.2.2016 to 26.3.2016	Prof. N. Suresh, CI Prof. S. Bhattacharya, CO-CI	23	5	115
56	Cons/3331/16-17	Intensive Training Programme for Management Trainees	Prof. K. Dasgupta, CI Prof. A. K. Mukhopadhyay, CO-CI	21	5	105

		(Excavation) of CIL Executives. From 29.02.2016 to 01.04.2016				
57	Cons/3332/16-17	Intensive Training Programme for Management Trainees (E & M) of CIL Executives. From 29.02.2016 to 01.04.2016	Prof. A. K. Mukhopadhyay, CI, Prof. K. Dasgupta, CO-CI	19	5	95

CERTIFICATE COURSES CONDUCTED IN 2015-16

The Continuing Education Wing of Executive Development Centre organized a wide range of activities for meeting the specific objectives of continuing education. During the year 2015-16, three Certificate Courses have been conducted for executives of various Government, Public Sector and Private Sector companies, with of Executives trained was 143 (143 participant weeks) The Centre has generated Rs.12.78 crores to Institute's Coffor by conducting 61 differnt programme (PDP), 274 Consultancy for 63 client organisations.

Sl. No	PROGRAMME	COORDINATOR(S)	No. of Participants	Weeks
1	Advanced Shale Gas Drilling & Production Techniques. From June 1 – 5, 2015.	Dr. Vikash Mahato	62	1
2	Measurement, Control and Simulation through Lab VIEW Software. From 22 – 26 June, 2015	Dr. Niranjana Kumar, CI Dr. Jayanto Das, CO-CI	17	1
3	Numerical Computing with Matlab. From 17 – 21, August, 2015	Shri Dipankar Roy, CI	64	1

FOUR SPECIAL IN-CAMPUS COURSES WERE CONDUCTED. RS.15.18 LAKHS WERE RECEIVED AGAINST DST COURSE. THE DETAILS IS GIVEN BELOW

Sl. No.	Course Number	Programme	Coordinator Name	Number of Participant	Week
1.	DST/14/MATH/2015-16	Short Term Advanced Training Programme on "Integral Transformations, Distributions and Wavelet Analysis. From 14 – 18 Dec., 2015	Dr. Akhilesh Prasad, CI	33	1 week
2.	DST/15/MS/2015-16	FDP for Entrepreneurship Awareness and Development under DST-NIMAT. From 22 – 26 Feb., 2016	Dr. Niladri Das, CI Prof. J. K. Pattanayak, CO-CI	15	1
3.	DST/16/AGL/2015-16	Advance in Geological and Geotechnical Engineering Geoltech, 2016. 1 – 5, Feb., 2016	Dr. R. K. Dubey, CI	16	1 week
4.	MOEF/17/AGL/2015-16	Geological Mapping of Jharia Coal Field. From 7 – 17 March, 2016.	Dr. Sahendra Singh, CI	23	2 week

7.0 INFRASTRUCTURE FACILITIES

7.1 CENTRAL LIBRARY

The Central Library, is a significant body of [as once propounded by Dr. Sarvepalli Radhakrishnan about the importance of library, is the heart of] Indian School of Mines providing direct academic supports to all departments. Concerned with the needs of library users and readers and surrounded with greenery the library Scene provide a environment for study. Equipped with wifi connections the library served the library users for reference services, semester exam preparations, project writing and research. The different sections of the library are aligned with its different goals and activities:

- Circulation Desk cum Central Reading Area
- Reference cum SRB Section
- Newspaper - magazine Section
- Journal Section
- Book Acquisition Section
- Technical Processing Section
- Photocopy Section
- Open Reading Hall
- Research Documentation Cell (RDC)
- Institutional Digital Repository

During the academic year 2015-16 the library served about 500 users a day. Generally, the library opens for seven days a week except for closed holidays. The library remains open from Monday to Saturday during the summer vacation. The library followed a convenient working hours from 9 am to 9 pm on weekdays, and 9 am to 8 pm on Saturdays and Sundays. The Open Reading Hall was kept open from 9 am to 10 pm except in summer vacation. Due to continuous pressures of the students, the library is planning to keep it open 24 X 7 that would be implemented soon.

The Central Library is an automated library in terms of records management, information retrieval and service delivery. Over the years the library has developed several databases. It has about 1,24,093 books, 39,480 bound volumes of journals, 291 current journals, 10,642 theses dissertations and about 50 magazines for the period. During this academic period 5,656 books were added to the library holding. The library continued to paste bar-code labels on new and old documents. In addition, Central Library continued attaching magnetic tapes and RFID tags to library books. This is put in place enhanced document security, faster circulation of books and records management.

Within the library all records of library collection are accessible online through Online Public Access Catalogue (OPAC) touch-screen kiosks connected to the library's Local Area Network (LAN). 'Browse', 'Search', and many more facilities in the OPAC module of LIBSYS Library Management Software enabled the users to find out records on their own, thereby saving their time. The library maintained its electronic databases of its printed sources -- books, reference books, journal loose issues cum bound volumes, theses, dissertations, conference proceedings, standards and journal articles. The speed of searching

enhanced reference service delivery. The library has its own official website that facilitates information search from the library's bibliographic and book transactions records of the library users of the Central Library through web based online public access catalogue (WEBOPAC) on campus wide LAN.

All processes at Book Acquisition Section – ordering, bill processing, etc. were done through Libsys Library Management Software. At Technical Processing Section books, dissertations, PhD theses, etc. were labelled with system-generated barcodes, spine slips and book cards. The library enrolled new members -- students as well as faculty-- handing out new bar-coded membership cards. The Central Library ensured error-free barcode based circulation system, quick posting of library dues and fast settlement of no-dues to out-going students.

All documentation jobs including data entry of old journal bound volumes through 'Accessioning' and processes of journal subscription at the Journal Section proceeded also through Libsys Library Management Software. The section rendered reference services out of current and old print journals and online journals. The library provided online access to online journals with full text-image articles to the faculty members, students and research scholars.

Under e-Shodh Sindhu Consortium the Central Library has got the following e-resources: ACM Digital Library, ASCE, ASME, Oxford University Press, JSTOR, Nature, EPW, Annual Reviews, Project Muse, SIAM, ASTM Standards, ISID, Jgate + JCCC, and MatheSciNet. In addition, the library procured IEL Online, Science Direct, One Petro, Emerald Management e-journals, Scopus Springer e-books and Turnitin antiplagiarism web tool to facilitate academic and research activities. In addition, under TEQIP II program the library also subscribed to 5,582 e-Books, on perpetual access basis, from Springer, Taylor & Francis net Bases e-books and McGraw-Hill Express Library in the fields of Science, Technology, Chemistry & Materials Science, Computer Science, Earth & Environment Sciences, Mathematics, Statistics, Physics, Astronomy, Engineering, Business and Management.

Reference helps from Journal Desk and Circulation Desk facilitated the study and academic activities of the school. The Central Library also continued book circulation services on Saturday and Sunday for two hours (5 PM-7 PM) for the Executive MBA students.

Several important developments in the Central Library have taken place in this period. ISM Central Library has been chosen as a nodal centre at Dhanbad to cooperate with the National Digital Library (NDL) project headquartered at IIT Kharagpur. For this project the Central Library has launched its Institutional Digital Repository (IDR) for preserving and sharing the digital contents of ISM's PhD theses, dissertations, and faculty publications, particularly the papers published in journals and conferences. To boost the efficacy of IDR the library initiated the standardisation of PhD submission process at ISM at par with other IITs of India. PhD submission has now become uniform subject to structured procedures and clearance from the Central Library. A new Research Documentation Cell (RDC) has also been launched in the library. It aims to check and update scholarly articles for faculty promotions, recruitment, evaluation of publications in SCI, SSCI & Scopus databases. On account of continuously good impactful performance for library users, faculty members and ISM administration the Central Library has been conferred with the "State Bank of India Best Non-Teaching Group of Employees Award 2015" for this academic year.

As the library allowed its readers open access to the documents it regularly organized its printed resources on racks and shelves for better access. Five new library staff have joined in this period. The library staff secured the library documents from theft and pilferage. Finally, the library tried to maintain a clean and convenient study and work environment despite space and seating capacity crunch. To meet the challenges of increasing number of students, research scholars and faculty members a G+7 centrally air-conditioned state-of-the-art library building is being readied to provide world class library facilities.

7.2 COMPUTER CENTRE

The Computer Centre was established in the year 1987. The Centre is a central facility and caters to the computing needs of the ISM community. It provides mainly two types of services namely network services and lab services. The centre provides intranet and internet services 24 hours a day, 365 days a year. It supports campus wide fiber optic LAN comprising of 5000 nodes that connects all the academic Departments and Centres, Central Library, Senior Academic Hostel (SAH), Executive Development Centre (EDC), Administrative Sections, Hostels, Residence of Faculty Members and Officers. The centre is equipped with UTM, Managed Gigabit Switches and number of state of the art blade servers and rack mount servers. Various network services like DHCP, HTTP, DNS, SNMP (for NMS) are being run and monitored by the Centre. Departments and hostels are connected to Computer Centre through Gigabit switches, whereas residential connectivity is provided through ADSL. Internet access is provided to all the users through links provided by BSNL under the project NMEICT of Govt. of India and a dedicated 500 Mbps (1:1) internet bandwidth provided by Bharti Airtel Ltd. Two video-conferencing units one each at conference hall of Admin. Block and new EDC were installed and being supported by Computer Centre. The Centre has Linux and Windows labs. Computer practical classes of undergraduates and postgraduates are being conducted here. The Centre conducts computer training programmes for ISM staff members from time to time. Online tests for placement of students are also arranged here. Institutional jobs like semester examination result processing, ISM Website maintenance, Student Feedback System, Attendance Monitoring, ISM Campus Network maintenance and monitoring are done here.

7.3 CENTRAL WORKSHOP

The workshop of the School has a wide range of manufacturing facilities catering to the needs of undergraduate and postgraduate students as well as research scholars. It provides good facilities for Forging, Carpentry, Fitting and Sheet Metal working. It also provides excellent facilities for Welding, Casting and Machining, Induction melting furnace, Gear hobbing and Gear shaping machines, Surface Planer machine, Tool & Cutter grinding machine, Band Saw (Wood cutting machine), TIG,MIG,SAW welding machines, Template based gas cutting machine CNC Profile cutting machine and Power Press machine are important facilities. There are CNC programming laboratory and sophisticated Computer Aided Manufacturing (CAM) laboratory consisting of latest CAM Software, CNC turning (trainer) and CNC milling (trainer) machines. There is Flexible Manufacturing System facility {CNC Lathe machine fitted with AGV (Automatic Guided Vehicle) and Automatic Storage and Retrieval System (ASRS)}. There is also a Dimensional Metrology laboratory in which variety of linear, angular, surface flatness (Auto Collimator)/ surface roughness (Surface Roughness Tester) measuring instruments, gear tooth thickness (Gear Tooth Vernier Calipers) /circular pitch (Flange Micrometer) measuring instruments, Variable Microscope and Metallurgical microscope are important measuring instruments. There is Die Sinking EDM for nontraditional machining. There is a high precision 400 Watt Fibre Laser welding

machine in Laser machining laboratory. HMT high precision Sliding Surface & Screw Cutting lathe with Piezoelectric 3 Dimensional Force Sensor, Polishing Machine and Hot Mounting Press as well as Compact RIO Controller hardware are in full operation. Abrasive Cut-off machine is under installation and commissioning. All these laboratories/facilities are housed in new workshop building. There are Wire-EDM and Electrochemical Machine (ECM) for nontraditional/advanced machining in Nontraditional machining laboratory.

Every year around 960 first year undergraduate students are imparted hands-on training on basic manufacturing facilities, around 130 students of pre-final year Mechanical Engg and 40 students of M Tech(Specialization: Manufacturing) first year are imparted hands-on training on advanced manufacturing and dimensional measuring facilities. Each year a large number of students also carry out B. Tech and M. Tech projects related to the manufacturing in the workshop. Research scholars of the different departments also fabricate equipments and components for their research work.

Many students fabricate various equipments e.g. vehicles, robots, air tunnels etc. for national level competitions. Sometimes short-term training courses related to manufacturing process/workshop technology for engineers/ officers/ executives are also conducted on demand. The consultancy is also provided by the faculty to industries according to their needs.

Various types of furniture, fixtures and components (of machines and equipment) of different departments of the School are also repaired and manufactured in the workshop on demand.

The procurement for various manufacturing facilities like Coordinate Measuring Machine (CMM), Rapid prototyping machine (3-D Printer), CNC Turn-Mill Centre, Non-contact type Profilometer, Extrusion Die casting machine etc. has been started.

7.4 ISM HEALTH CENTRE

ISM Health Centre provides medical care to students, teachers, officers and staff including their dependant family members. From 2000 onwards, retired employees with their spouses have also been included for medical treatment. In addition to the SMO and LMO following Specialists visit the ISM Health Centre periodically: two Homoeopaths, a Dental Surgeon, an Eye Specialist, a Gynaecologist, an Orthopaedic Surgeon, an ENT Specialist, a Cardiologist, a Psychiatrist, two Pathologists, a Physiotherapist and Dr. J. Kumar for both morning & evening shifts. From this year Health Centre, ISM is also taking care of 50 nos. of Afghan Students residing in the Campus.

• Inclusion of Local Hospitals at Dhanbad

1. Jalan Hospital, Dhanbad.
2. JIMS Hospital, Dhanbad.
3. Pragati Hospital, Dhanbad.
4. Asarfi Hospital, Dhanbad.
5. Geeta Shri Eye Clinic, Dhanbad
6. PrudenceEye Clinic, Dhanbad
7. Om Dental Clinic, Dhanbad
8. ASG Eye Hospital, Dhanbad
9. Patliputra Nursing Home, Dhanbad time to time patients are being referred for their treatment in above hospitals.

- **Inclusion of other Hospitals at Ranchi**

1. Dr. Alam Hospital & Research Centre, Ranchi (for General Treatment)
2. Apollo Hospital, Ranchi (for General Treatment)
3. Kashyap Eye Hospital, Ranchi – for Ophthalmological treatment

- **Inclusion of other Hospital at New Delhi**

1. Centre of Sight (for Ophthalmological treatment)
2. Delhi Heart & Lung Institute (for Cardiological/Pulmonary treatment.
3. Max Devki Devi & other Hospital chain in Max Hospital at Delhi – for treatment of Cardiological Problems and other general diseases.
4. Mohinder Hospital – for General treatment.
5. Sukhmani Hospital, New Delhi - for specialized treatment.
6. Sir Ganga Ram Hospital, New Delhi – for specialized treatment.

- **Inclusion of Hospitals at Kolkata**

1. Peerless Hospital, Kolkata – for general purpose.
2. Disha Eye Hospital, Barrackpore, Kolkata – for Eye treatment only.
3. Ruby General Hospital, Kolkata – for general purpose.
4. CMRI, Kolkata - for general purpose.
5. RTIICS Hospital, Kolkata – for general purpose.

- **Inclusion of Hospital at Durgapur**

1. The Mission Hospital, Durgapur.

On an average 150–250 patients (including Afghanistan students) visit ISM Health Centre daily. Medicines are dispensed from the Health Centre. For medicines, that are not available in the Health Centre, reimbursement is made to Teachers, Officer & Staffs. Reimbursement of students is made in DSW Office through Insurance scheme. Investigations required for the patients are carried out at reputed centres from the list of approved panel. During the year patients were referred to the different Centre's for specialized treatment as mentioned above.

In situations where a second opinion is necessary, cases are referred either to Central Hospital (BCCL) or PMCH, Dhanbad for Indoor/Outdoor treatment. For patients who prefer Ayurvedic treatment, they are referred to Ayurvedic dispensary (BCCL), Dhanbad. Complicated cases are referred to CMCH, Vellore, Sankara Netralaya, Chennai, AIIMS, New Delhi, SGPGIMS, Lucknow. BGH Bokaro, govt. Hospital Kolkata Viz. Bangur Institute of Neurology & SSKM, Kolkata, RMCH Ranchi, IGIMS, Patna and CIP Ranchi PGI Chandigarh etc. On advice of CHD/Specialists and as per decision of the Medical Board. This is also applicable to all retired employees and their spouse. Retired Employees are also entitled to avail the same medical facility as availed by working employee. Narayana Hirudayala, Bangaluru is included in our panel.

7.5 SPORTS AND PHYSICAL EDUCATION CENTRE

As usual Sports and Physical Education Centre organised all its internal tournaments like Inter Year Football Tournament, Inter year Volleyball Tournaments, Basketball Tournaments, Badminton Tournaments, Tennis Tournaments, Handball Tournaments, Annual Gym Competition, ISM Open Boxing Championship, ISM Open & Inter year Table Tennis Championship and ISM Open Chess Tournament.

PHYSICAL EFFICIENCY TEST

We had successfully conducted Physical Efficiency Test for 1st year B. Tech, 1st Yr. M.Sc & M.Sc Tech for awarding CCA marks w.e.f. 03.11.2015 to 04.12.2016. Near about **1000 students** were tested, tabulated and awarded marks for CCA. The 2nd year B. Tech, 2nd Yr. M.Sc & M.Sc Tech have been scheduled to be held from 1st March to 12th March 2016.

87TH ANNUAL SPORTS MEET

87th Annual Sports Meet was held on 15th January 2016 and inaugurated by Hon'ble Member of Parliament Shri P. N. Singh in presence of Hon'ble Director Prof. D. C. Panigrahi, Col (Retd.) M. K. Singh, Registrar, Prof. A. K. Pathak, President SPEC and many other distinguished Faculty members and Officers and Staff. The whole programme was witnessed by around five thousand students and other spectators.

The two-day sports meet witnessed 19 Olympic and 06 number Non-Olympic events.

Dr. Harsh Gupta, the eminent scientist as a chief guest in presence of Hon'ble Director Prof. D. C. Panigrahi, Col (Retd.) M. K. Singh, Registrar, Prof. A. K. Pathak, President SPEC and many other distinguished Faculty members and Officers and Staff graced the occasion during the closing ceremony.

ORGANISING OF SPORTS FESTIVAL - PARAKRAM 2016

Parakram, the All India Inter College Sports Fest was organised at ISM Dhanbad on 12-14 February 2016. This year the fest witnessed participation of 600 students from 21 different institutes including ISM.

The event started on 12th February 2016 Morning. Three days of continuous games (indoor and outdoor) in which a total of 16 events – Cricket, Tennis, Boxing, Squash, Gym, Football, Basketball, Volleyball, Badminton, Table Tennis, Athletics, Carom, Chess, Squash, Snooker, Karate for men and women were held in Lower Ground, Upper Ground, Sports Complex, Student Activity Centre (SAC) and Squash Complex. The closing of the event finally concluded in Sports Complex of the Campus on 14th February 2016.

In the closing ceremony, Prof. Chandan Bhar, Dean Students Welfare, Prof. Prof. G.N.Singh, Dr. Vikash Mahto, Shri D N Acharya, Sports Officer and Shri N.K.Sadhukhan, Senior Coach gave away the prizes to the winners. The overall championship was achieved by Team ISM.

SPECIAL SESSIONS

➡ **Celebration of 1st International Day of Yoga** : The first International Day of Yoga was celebrated on 21st June 2015 in presence of Hon'ble Director Prof. D. C. Panigrahi, Prof. A. K. Pathak, President SPEC and many other distinguished faculty members, officers and staff. The programme included e-Essay competition, poster & audiovisual exhibition and a mass yoga session where more than five hundred participants took part.

To mark the international day of yoga celebration, a seven days pre yoga session was also organized by experts of Patanjali Yoga Trust and experts from ISM.

➡ **Independence Day Run**: On the eve of Independence Day, the 15th August, Sports and Physical Education Centre had organised Independence Day Run for the Students, Teachers, Officers, Staff members and Children of ISM. Prof. D. C. Panigrahi, Director had given away the prizes to the participants and winners.

- ➡ Regular **YOGA** classes are organized at Student Activity Centre. The classes are conducted by Yoga expert. Special Assessment cum year wise and open competition separately for boys and girls was also organized at Student Activity Centre in the evening where service of part time Yoga expert Shri Ajay Kumar had been sought.
Regular Yoga classes were also being organized in the morning for the senior citizens of greater Dhanbad including ISM employees by Shri Ajay Narayan Singh at SAC.
- ➡ A special **NSO** programme was organised round the year in morning and evening session where our regular Coach Shri N. K. Sadhukhan along with experts from outside teach different skills of Sports and Games like Basketball, Volleyball, Football, Badminton, Cricket, Athletics, Table Tennis, Tennis, Judo/Karate etc. apart from physical conditioning.
- ➡ **Swimming Classes** for students (boys & girls), employees and their dependents from 01.04.2015 regularly in the morning and evening. Near by 300 members are learning swimming under the supervision of swimming experts.
- ➡ Regular **Basketball** practices were organized under an honorary coach Shri Kallol Samanta.
- ➡ **Boxing/Wushu** classes were organised regularly by an honorary Coach Shri Sashi Kant Pandey.
- ➡ Regular **Squash** practices were organized under an honorary coach Shri Abhisekh Pandey.
- ➡ Regular **Athletics** practices were organized under our regular Coach Shri N. K. Sadhukhan along with honorary coach Ms. Sujapa Thakur.
- ➡ Regular **Cricket** practices were organized under an honorary coach Shri Kishor Kumar.
- ➡ **Judo/Karate** classes were organized regularly by an honorary Coach Shri Ranjit Kesri.

Teams Participation in Extramural Competitions

- ➡ ISM contingent comprising of 89 participants (only male) and 03 nos. officials in the game of Cricket, Football, Basketball, Volleyball, Athletics, Handball, Table Tennis, Badminton, Squash & Chess participated in **Spardha Sports Festival, IIT BHU** held during 30th Oct. to 1st Nov. 2015.
- ➡ Our **Basketball Team (M)** comprising of students (13 nos.) and officials (2 nos.) took part in East Zone Inter University Basketball (M) tournament 2015-16 organised by KIIT University, Bhubaneswar from 25-28 Dec. 2015.
- ➡ ISM **Cricket Team** comprising of students (16 nos.) players and officials (02 nos.) took part in East-Zone Inter-University Cricket (M) Tournament 2015-16, organised by L. N. Mithila University, Darbhanga, Bihar from 17-30 Dec. 2015.
- ➡ **Shri Khemchand Joya**, B. Tech. 3rd Year of Electronic & Instrumentation Engineering took the opportunity to participate in **MR. INDIA 2016** held at Bengaluru (Manglore) on 12th & 13th Feb. 2016. Our student Shri Khemchand Joya, had secured the 6th position. He also participated in **East India Body Building**

Championship and won Gold Medal and also participated in **Jr. Mr. India Championship and secured 8th position.**

➡ **Shri Pawan Kumar**, B. Tech 3rd Year student of Computer Science Engineering, won **Silver medal** in 9th **Jharkhand State Boxing Championship** held at Deoghar, Jharkhand.

7.6 HINDI CELLHindi Cell has been playing significant role in the implementation of Official Language Policy of the Union Government in day to day official business of the Institute.

Hindi Cell of the Indian School of Mines, Dhanbad deals with the following:

- (i) Implementation of Official Language Policy, and compliance of provisions of Official Language, Act 1963 and Rule 1976 in the Institute.
- (ii) Organisation of quarterly meeting of Official language committee to discuss various aspects of implementation so that target prescribed in annual programme can be achieved.
- (iii) Organising Hindi Fortnight in the month of September every year in the form of grand celebration involving Faculties, Officer, Students and Staff of the Institute. Various types of Hindi Competition were held during the period from 01 Sep. 2015 to 15 Sep 2015.
- (iv) Hindi workshop for the staff who have working knowledge of Hindi to inculcate interests among the staff and remove their hesitation regarding working in Hindi.
- (v) Publication of Institute's Hindi Magazine "ANKUR" in collaboration of Chayanika Sangh. Magazine for the year 2015 is under publication.
- (vi) Submission of online quarterly/annual report to Rajbhasha Vibhag and reports are being submitted in time.
- (vii) Participation in TOLIC meeting and its activity being organized under the aegis of BCCL, Dhanbad.
- (viii) Translation Work of Annual Report and all other circulars, orders and official correspondences as and when required.

8. ACTIVITIES UNDER INTERNATIONAL RELATIONS AND ALUMNI AFFAIRS (IRAA)

Principal activities undertaken are as follows:

A) INTERNATIONAL RELATIONS

1. Prime Minister mandated Indo-Australian Joint Research Initiative

A joint statement was made on 18.11.2014 by Honourable Prime Ministers of India and Australia to explore opportunities for partnership between Australian Institutions and Indian School of Mines, Dhanbad in the area of Clean Coal and Energy Technologies. The statement has been reproduced below:

“Energy is a central pillar of the economic relationship. Prime Minister Abbott and Prime Minister Modi agreed to expedite approvals for key mining investment projects. They agreed to cooperate on clean coal technologies and welcomed the intention to explore opportunities for partnership between Australian institutions and the Indian School of Mines in Dhanbad.”

Accordingly, ISM has taken initiative and established Australia-India Joint Research Centre for Clean Coal and Energy Technology (AICCET) in collaboration with three Australian Universities / Organizations, viz. Curtin University of Technology, University of New Castle, and CSIRO. Fourteen projects have been prepared in the areas of Mines Safety, Clean Coal and Energy Technologies and are submitted to external funding agencies. One of the projects of Rs. 8.34 crores has already been funded and other projects are in different stages of funding. All the projects have the consent of Australian Collaborating University/Institute.

A Virtual Reality Simulator (VRS) for improved safety training in coal mines has been approved in principle by the external funding agency and ISM is working with SIMTARS, Australia for training need analysis and establishment of the simulator at ISM. This will be a unique facility and one of its kind in India for simulating the hazardous mine environment and impart necessary training to executives and operational people for reducing the accident potential in coal mines.

Faculty and research scholar exchange is in progress with Curtin University of Technology under the AICCET.

2. Memorandum of Understanding for Academic and Research Collaborations

Strengthening the academic and research frontiers in tune with the advances that are taking place globally is the key for developing into a world-class institution. To open up the doors for facilitating cutting edge research, ISM has signed 21 MoUs with some world class Universities/Institutions and some of the institutions in developing countries in consonance with vision of Government of India.

The following is the list of Universities/Institutions with whom MOUs have been signed and linkages have been established as of now:

America

- Texas Tech University, USA
- University of South Florida-St Petersburg, USA
- Arkansas State University, USA

- University of Windsor, Canada
- Politecnica De Universidade De Sao Palo, Brazil

Australia

- Curtin University of Technology
- University of New Castle
- CSIRO
- University of Wollongong
- University of New South Wales
- Safety in Mines, Testing & Research Station (SIMTARS)

Europe

- Clausthal University of Technology, Germany
- Politecnico Di Torino, Italy
- Technical University of Kosice, Slovakia
- University of Osijek, Croatia; and
- Institute of Geonics, Czech Republic

Asia and Africa

- National United University, Taiwan
- University of the Free State, South Africa
- Botho University, Botswana
- University of Tunis and National High Engineering School of Tunis, Tunisia
- All Nations University, Ghana

3. International Student/Faculty Exchange Projects

With full financial support from European Commission, reciprocal mobility of students of ISM and foreign universities and transfer of credits earned have been introduced to provide the young and brilliant minds and international exposure along with an opportunity to work on some advanced equipment. The following are the major projects accomplished in the last three years.

- Erasmus Mundus AREAS+ Project: 15 mobilities; 117 man-months
- Erasmus Mundus EMINTE Project: 1 mobility; 6 man-months
- Erasmus + with UPM, Madrid, Spain
- Mobile+ with UOP, Porto, Portugal

4. International Research Projects

INNO INDIGO, EU MS/ AC and India Joint Call on Clean Water and Health, Treatment of contaminated drinking water using a hybrid low-cost process, by Dr. B. K.Nandi, Deptt. of Fuel & Mineral Engg., ISM Dhanbad.

5. Admission of Foreign Students

Even though the institute is situated in a remote located city like Dhanbad, the number of International students in the campus has increased substantially from 5 in 2010-11 to 68 in 2015-16, which includes students from USA, Italy, Spain, Venezuela, Ghana, Tanzania, Nigeria, Uganda and Afghanistan. These students mainly pursue their Masters and Doctoral studies apart from some short term - study abroad programmes.

Preparation of Detailed Project Report to establish Afghan Institute of Mining at Kabul assigned by Ministry of External Affairs, Government of India to augment bilateral diplomacy between Government of India and Islamic Republic of Afghanistan.

6. New Agreements Signed

Collaborative Ph.D.Programme with Curtin University has been initiated.

B) ALUMNI AFFAIRS

- BASANT was organised on 7th February, 2016 with the same fervor. BASANT Samman for the year 2016 were conferred on Mr. P.R. Tripathi, Former CMD, NMDC, Prof. S.B. Srivastava, Department of Mining Engineering., Prof. A. Chattopadhyay, Department of Mining Machinery Engineering, Mr. S. Bhattacharya, CMD, CIL. Distinguished Alumnus Awards were conferred on Mr. N.K. Verma, MD & CEO, ONGC Videsh Ltd. and Dr. G.C. Thakur, Former Vice-President & Global Adviser, Chevron Energy Technology Co.
- Establishment of Alumni Fund to centralise the contributions of Alumni for various academic and research related awards assignments.
- ISMAANA Awards sponsored by ISM Alumni Association North American Chapter was announced for the second consecutive year.
- New ISM Alumni Web site, Almaconnect registers about 8000 students across the globe and picking up as a common communication portal. This is funded by ISMAA.
- About 13 students were funded by ISMAA under SIT grant to present technical papers in various international conferences.

9. PERSONNEL

9.0 ACADEMIC ADMINISTRATION

Director	: Prof. D. C. Panigrahi,
Dean (Students' Welfare)	: Prof. Chandan Bhar
Dean (Academic)	: Prof. S. Mohanty
Dean (Research & Development)	: Prof. Vishnu Priye
Dean (Faculty & Planning)	: Prof. K. Dasgupta
Associate Dean (Students' Welfare)	: Prof. J. Manam
Associate Dean (International Relation & Alumni Affairs)	: Prof. VMSR Murthy
Associate Dean (Academic & Research)	: Prof. G. Udayabhanu
Associate Dean (Projects & Infrastructure Development)	: Prof. J.K. Pattanayak

9.1 ACADEMIC

List of Faculty Members from 1.04.2015 to 31.03.2016

Sl. No.	Name of Faculty	Designation	Department
1	Prof. D C Panigrahi	Professor (HAG)	M E
2	Prof. Gurdeep Singh (on deputation)	Professor (HAG)	ESE
3	Prof. R Venugopal	Professor (HAG)	FME
4	Prof. U K Singh	Professor (HAG)	M E
5	Prof. T Kumar	Professor (HAG)	P E
6	Prof. S Laik	Professor (HAG)	P E
7	Prof. R K Singh	Professor (HAG)	H S S
8	Prof. M Jawed	Professor	M E
9	Prof. Phalguni Sen	Professor	ME
10	Prof. P K Sarkar	Professor	Mech. Engg.
11	Prof. S K Paul	Professor	Electronics Engg.
12	Prof. G S Seth	Professor	A Maths
13	Prof. S Mohanty	Professor	AGL
14	Prof. B C Sarkar	Professor	AGL
15	Prof. A Sarkar	Professor	A Chem
16	Prof. A K Pathak	Professor	Pet. Engg
17	Prof. P Pathak	Professor	M S
18	Prof. Chandan Bhar	Professor	M S
19	Prof. T K Chatterjee	Professor	MME
20	Prof. J Manam	Professor	A Phy
21	Prof. N Suresh	Professor	FME
22	Prof. K Dasgupta	Professor	MME

23	Prof. A K Mukhopadhyay	Professor	MME
24	Prof. V M S R Murthy	Professor	M E
25	Prof. P C Pal	Professor	A Maths
26	Prof. Sumantra Bhattacharya	Professor	FME
27	Prof. J K Pattanayak	Professor	M S
28	Prof. P R Mohanty	Professor	AGP
29	Prof. A K Varma	Professor	AGL
30	Prof. D Asthana	Professor	AGL
31	Prof. Vishnu Priye	Professor	Electronics Engg
32	Prof. V K Saxena	Professor	Chem Engg
33	Prof. N R Mandre	Professor	FME
34	Prof. G P Biswas	Professor	CSE
35	Prof. Subrata Bhattacharya	Professor	Electronics Engg
36	Prof. G Udayabhanu	Professor	A Chem
37	Prof. A K Pal	Professor	ESE
38	Prof. S Gupta	Professor	A Maths
39	Prof. G N Singh	Professor	A Maths
40	Prof. Somnath Pan	Professor	E E
41	Prof. D D Pathak	Professor	A Chem.
42	Prof. A S Venkatesh	Professor	AGL
43	Prof. P K Jana	Professor	CSE
44	Prof. Shalivahan	Professor	AGP
45	Prof. (Ms) D Mitra	Professor	Electronics Engg
46	Prof. P K Sadhu	Professor	E E
47	Prof. R K Das	Professor	Mech.Engg.
48	Prof. (Ms) B Mukherjee	Professor	A Maths
49	Prof. S K Maiti	Professor	ESE
50	Prof. G S Pathak	Professor	M S
51	Prof. R K Upadhyay	Professor	A Maths
52	Prof. A K Nirala	Professor	A Phy
53	Prof. Vineet Kumar	Professor	Chemical Engg.
54	Prof. Sekhar Chandra Dutta	Professor	Civil Engg.
55	Prof. (Ms.) Rima Chatterjee	Professor	AGP
56	Prof. A K Mishra	Professor	ME
57	Prof. S K Gupta	Professor	ESE
58	Prof. P K Khan	Professor	AGP
59	Prof. Satish Kumar Sinha	Professor	PCE
60	Prof. S Choudhary	Professor (CIL, Chair)	Mining Engg.
61	Prof. V K Singh	Professor (Sandvik, Chair)	Mining Engg.
62	Prof. R M Bhattacharya	Professor (MoL & E Chair)	Mining Engg.
63	Prof. R P Bhagat	Professor (SAIL, NMDC, Chair)	FME
64	Prof. A K Singh	Professor (Rajiv Gandhi Chair)	ESE
65	Prof. Om Prakash	Professor (NMDC, Chair)	Mining Engg.

1	Shri P K Behera	Associate Professor	M E
2	Dr. Kailash Jha	Associate Professor	Mech. Engg.
3	Dr. Biswajit Paul	Associate Professor	ESE
4	Dr. S Chattopadhyay	Associate Professor	Mech. Engg.
5	Dr. S N Singh	Associate Professor	Mech. Engg.
6	Dr. Chiranjeev Kumar	Associate Professor	CSE
7	Dr. Vinayak Ranjan	Associate Professor	Mech. Engg.
8	Dr. (Mrs.) Saumya Singh	Associate Professor	M S
9	Dr. M K Singh	Associate Professor	A Maths
10	Dr. S Chatterjee	Associate Professor	A Maths
11	Dr. Vikas Mahto	Associate Professor	P E
12	Dr.(Mrs.) Keka Ojha	Associate Professor	P E
13	Dr. K Chatterjee	Associate Professor	Electrical Engg.
14	Dr. Ajay Mandal	Associate Professor	P E
15	Dr. P K Singh	Associate Professor	ESE
16	Dr. Dhiraj Kumar	Associate Professor	M E
17	Dr. A K Behura	Associate Professor	HSS
18	Dr. Md. Mojibur Rahman	Associate Professor	HSS
19	Dr. R K Dubey	Associate Professor	AGL
20	Dr. S K Sharma	Associate Professor	A Physics
21	Dr.(Mrs.) Rajni Singh	Associate Professor	HSS
22	Dr. M K Jain	Associate Professor	ESE
23	Dr. P N Singha Roy	Associate Professor	AGP
24	Dr. Mahendra Yadav	Associate Professor	A Chemistry
25	Dr. S Mukhopadhyay	Associate Professor	CSE
26	Dr. B Bhattacharya	Associate Professor	Electrical Engg.
27	Dr. M K Mukherjee	Associate Professor	AGL
28	Dr. Sandeep Mandal	Associate Professor	M S
29	Dr. Akhilesh Prasad	Associate Professor	A Maths
30	Dr. S P Tiwari	Associate Professor	A Maths
31	Dr. Sanjay Kumar Ghoshal	Associate Professor	Mech. Engg.
32	Dr. Biswajit Choudhury	Associate Professor	A Chemistry
33	Dr. Rohit P John	Associate Professor	A Chemistry
34	Dr. N K Singh	Associate Professor	Mech. Engg.
35	Dr. Upendra Kumar Singh	Associate Professor	AGP
36	Dr. Nitai Pal	Associate Professor	Electrical Engg.
37	Dr. Sukanta Dey	Associate Professor	AGL
38	Dr. Vineet Kumar Rai	Associate Professor	A Physics
39	Dr. Asit Kumar Kar	Associate Professor	A Physics
40	Dr. Sanjoy Mandal	Associate Professor	Electrical Engg.

41	Dr. Jitendra Kumar	Associate Professor	ECE
42	Dr. Bobby K Antony	Associate Professor	A Physics
43	Dr. Syed Tajdardul Hassan	Associate Professor	AGL
44	Dr. Mukul Kumar Das	Associate Professor	Electronics Engg.
45	Dr. Amit Rai Dixit	Associate Professor	Mech. Engg.
46	Dr. Shushanta Sarangi	Associate Professor	AGL
47	Dr. Sagar Pal	Associate Professor	App. Chemistry
48	Dr. Lakshmi Annamalai Kumaraswamidhas	Associate Professor	MME
49	Dr. Chandan Guria	Associate Professor	Pet. Engg.
50	Dr. Tanmoy Maity	Associate Professor	Electrical Engg.
51	Dr. Haider Banka	Associate Professor	CSE
52	Dr. V K Singh	Associate Professor	A. Physics
53	Dr. Arunkumar Samanta	Associate Professor	Chemical Engg.
54	Dr. Ashis Mallick	Associate Professor	Mech. Engg.
55	Dr. Ram Madhab Bhattacharjee	Associate Professor	Mining Engg.
56	Dr. Rabindra Nath Hota	Associate Professor	Mech. Engg.
57	Dr. Anup Krishna Prasad	Associate Professor	App. Geology
58	Dr. B S Kushvah	Associate Professor	App. Maths

1	Dr Abha Rani	Assistant Professor	A/Maths
2	Dr Sachin Tripathi	Assistant Professor	CSE
3	Dr Hari Om	Assistant Professor	CSE
4	Dr (Mrs.) Mrinalini Pandey	Assistant Professor	MS
5	Dr Sushrut Das	Assistant Professor	ECE
6	Dr Anshumali	Assistant Professor	ESE
7	Dr P S Paul	Assistant Professor	ME
8	Dr (Mrs.) Shalini Gautam	Assistant Professor	FME
9	Dr Niladri Das	Assistant Professor	MS
10	Dr Ajoy Kr Bhaumik	Assistant Professor	AGL
11	Dr Swapan Dey	Assistant Professor	A/Chem.
12	Dr Subrata Kr Ghosh	Assistant Professor	Mech. Engg.
13	Dr Devi Prasad Mishra	Assistant Professor	ME
14	Dr Pankaj Mishra	Assistant Professor	A/Phy.
15	Dr Santanu Dwari	Assistant Professor	ECE
16	Dr Alok Sinha	Assistant Professor	ESE
17	Dr V Mukherjee	Assistant Professor	EE
18	Dr P S Rao	Assistant Professor	A/Maths
19	Dr Subindu Kumar	Assistant Professor	ECE
20	Dr K K Singh	Assistant Professor	Mech. Engg.
21	Dr Alok Kr Das	Assistant Professor	Mech. Engg.

22	Dr Vipin Kumar	Assistant Professor	ESE
23	Dr S K Raghuvanshi	Assistant Professor	ECE
24	Dr Tarun Kr Naiya	Assistant Professor	PE
25	Dr Sahendra Singh	Assistant Professor	AGL
26	Dr Somnath Yadav	Assistant Professor	A/Chem.
27	Dr Bhanwar S Choudhary	Assistant Professor	ME
28	Dr Ram Bilash Choudhary	Assistant Professor	A/Phy.
29	Dr Gnananandh Budi	Assistant Professor	ME
30	Dr Abhay Kr Singh	Assistant Professor	A/Maths
31	Dr Anurag Jayswal	Assistant Professor	A/Maths
32	Dr Aju Aravind	Assistant Professor	HSS
33	Dr P K Mahato	Assistant Professor	Mech. Engg.
34	Shri A C Sekhara Rao	Assistant Professor	CSE
35	Shri Amgoth Tarachand	Assistant Professor	CSE
36	Shri Vinay Kr Rajak	Assistant Professor	PE
37	Dr. Rajendra Pamula	Assistant Professor	CSE
38	Ms Archana	Assistant Professor	PE
39	Dr Sukanta Das	Assistant Professor	EE
40	Shri Mrinal Sen	Assistant Professor	ECE
41	Shri Rajeev Kr Ranjan	Assistant Professor	ECE
42	Shri Shatrughan Soren	Assistant Professor	FME
43	Shri Gauri Shankar	Assistant Professor	EE
44	Dr. Sukomal Pal	Assistant Professor	CSE
45	Shri B K Naick	Assistant Professor	EE
46	Dr Santimoy Kundu	Assistant Professor	A/Maths
47	Dr. Sikandar Azam	Assistant Professor	Mech. Engg.
48	Dr Hari Pada Nayek	Assistant Professor	A/Chem.
49	Shri Kashinath Pal	Assistant Professor	ME
50	Shri Brijesh Kr Mishra	Assistant Professor	ESE
51	Dr Suresh Pandian E	Assistant Professor	ESE
52	Dr Kaushal Kumar	Assistant Professor	A/Phy.
53	Dr Hemant Kumar	Assistant Professor	ME
54	Shri Niranjana Kumar	Assistant Professor	MME
55	Shri Dharavath Ramesh	Assistant Professor	CSE
56	Shri Devendra Chack	Assistant Professor	ECE
57	Dr Shibayan Sarkar	Assistant Professor	Mech. Engg.
58	Shri Jaisingh Thangaraj	Assistant Professor	ECE
59	Shri Amitesh Kumar	Assistant Professor	ECE
60	Dr Arup Kr Pal	Assistant Professor	CSE
61	Shri Amitava Mandal	Assistant Professor	Mech. Engg.
62	Dr Sarun P M	Assistant Professor	A/Phy.

63	Md Tanweer Alam	Assistant Professor	MME
64	Dr Ganesh Ch Nayak	Assistant Professor	A/Chem.
65	Dr (Mrs.) Sushila Maheshkar	Assistant Professor	CSE
66	Dr S R Samadder	Assistant Professor	ESE
67	Dr Sumanta Kr Sahu	Assistant Professor	A/Chem.
68	Shri K Priya Ajit	Assistant Professor	MME
69	Dr Pramod Kr Kewat	Assistant Professor	A/Maths
70	Dr Sanjit Kr Pal	Assistant Professor	AGP
71	Shri D B Kishorilal	Assistant Professor	MME
72	Shri Pankaj Kr Jain	Assistant Professor	FME
73	Dr Pranab Das	Assistant Professor	AGL
74	Dr Kartick Ch Jana	Assistant Professor	EE
75	Dr Ravi Kr Gangwar	Assistant Professor	ECE
76	Dr Sanjeev Anand Sahu	Assistant Professor	A/Maths
77	Dr G K Vishwakarma	Assistant Professor	A/Maths
78	Shri M L Chandravanshi	Assistant Professor	Electrical Engg.
79	Shri D V Bhaskar	Assistant Professor	EE
80	Shri Suresh Kr Yatirajula	Assistant Professor	Chemical Engg.
81	Dr Sridhar Sahu	Assistant Professor	A/Phy.
82	Dr R Thangavel	Assistant Professor	A/Phy.
83	Dr P K Sharma	Assistant Professor	A/Phy.
84	Dr Jayanta Das	Assistant Professor	MME
85	Dr K S Thyagaraj	Assistant Professor	MS
86	Shri Anand Anupam	Assistant Professor	FME
87	Shri Neetish Kr Maurya	Assistant Professor	PE
88	Shri Shravan Kumar	Assistant Professor	FME
89	Dr Rashmi Madhuri	Assistant Professor	A/Chem.
90	Shri Kaushik Mazumdar	Assistant Professor	ECE
91	Dr Rakesh Kumar	Assistant Professor	Mech. Engg.
92	Dr (Mrs) Sarita Kar	Assistant Professor	HSS
93	Dr Amit Kr Verma	Assistant Professor	ME
94	Shri Lutukurthi D N V V Konda	Assistant Professor	Chemical Engg.
95	Shri Ajit Kumar	Assistant Professor	MME
96	Dr Nirban Manna	Assistant Professor	HSS
97	Shri Paidinaidu Paluri	Assistant Professor	Chemical Engg.
98	Shri Villuri Vasanta Govind Kumar	Assistant Professor	ME
99	Dr Suman Dutta	Assistant Professor	Chmical Engg.
100	Dr D Krishna Sandilya	Assistant Professor	Chemical Engg.
101	Dr Saumen Maiti	Assistant Professor	AGP
102	Dr Bibhas Chandra	Assistant Professor	MS
103	Dr Upama Dutta	Assistant Professor	AGL

104	Miss Shweta R Malwe	Assistant Professor	CSE
105	Shri Govind Murmu	Assistant Professor	ECE
106	Dr Srinivas Pasupuleti	Assistant Professor	Civil Engg.
107	Shri Ananda Shankar Hati	Assistant Professor	MME
108	Dr Sarat Kr Panda	Assistant Professor	Civil Engg.
109	Dr Raghvendra Kr Chaudhary	Assistant Professor	ECE
110	Dr P Ranjan Sahoo	Assistant Professor	AGL
111	Miss Tanusree Kaibartta	Assistant Professor	CSE
112	Dr R Anand	Assistant Professor	AGL
113	Dr Kripamoy Sarkar	Assistant Professor	AGL
114	Shri Rahul Bhattacharya	Assistant Professor	ECE
115	Dr Chanchal Halder	Assistant Professor	A/Chem.
116	Dr Nirupama Mandal	Assistant Professor	ECE
117	Dr Abhishek Kr Singh	Assistant Professor	A/Maths
118	Dr Sumanta Kr Padhi	Assistant Professor	A/Chem.
119	Dr Binata Panda	Assistant Professor	A/Phy.
120	Dr M Rakesh Singh	Assistant Professor	A/Phy.
121	Md Soyeb Alam	Assistant Professor	ME
122	Dr Jhasaketan Nayak	Assistant Professor	A/Phy.
123	Dr Barun Kr Nandi	Assistant Professor	FME
124	Dr. (Mrs) Sheeja Jagdevan	Assistant Professor	ESE
125	Dr. Rabindra Kumar Sinha	Assistant Professor	ME
126	Dr. Umakanta Tripathy	Assistant Professor	A/Phy.
127	Dr. Soumitra Maiti	Assistant Professor	A/Chem.
128	Dr. Dinbandhu Pradhan	Assistant Professor	A/Maths
129	Dr. Basanta Bhaduri	Assistant Professor	A/Phy.
130	Dr. Subhankar Sen	Assistant Professor	Mech. Engg.
131	Dr. Subramanian Narayanan	Assistant Professor	Mech. Engg.
132	Dr. Rashmi Ranjan Das	Assistant Professor	MME
133	Shri Pawan Kumar Singh	Assistant Professor	Mech. Engg.
134	Dr. Prasun Jana	Assistant Professor	Mech. Engg.
135	Dr. Srinivasa Rao Gangumalla	Assistant Professor	App. Geophysics
136	Dr. Lohitkumar Nainegali	Asst Professor (Contract)	Civil Engg.
137	Dr Sowmiya Chawla	Asst Professor (Contract)	Civil Engg.
138	Dr. Sidartha Sengupta	Asst Professor (Contract)	Chemical Engg.
139	Dr. Arijit Barar	Asst Professor (Contract)	EE
140	Dr. Paresh Kumar Nayak	Asst Professor (Contract)	EE
141	Dr. Sanket Nayak	Asst Professor (Contract)	Civil Engg.
142	Dr. Md. Irfan	Asst Professor (Contract)	MS
143	Dr. Krishnendu Shaw	Asst Professor (Contract)	MS
144	Dr. Gyan Prakash	Asst Professor (Contract)	HSS

145	Dr. Soumen Bag	Asst Professor (Contract)	CSE
146	Dr. Soubhik Kumar Bhaumik	Asst Professor (Contract)	Chemical Engg.
147	Dr. Sachin Kumar Singh	Asst Professor (Contract)	Mech. Engg.
148	Shri Tanish Dey	Asst Professor (Contract)	Civil Engg.
149	Shri Sukanta Chakraborty	Asst Professor (Contract)	Civil Engg.
150	Dr. Patitapaban Sahu	Asst Professor (Contract)	ME
151	Shri Smruti Sourava Mohapatra	Asst Professor (Contract)	Civil Engg.
152	Dr. Deepak Kumar Mandal	Asst Professor (Contract)	Mech. Engg.
153	Dr. Vivek Bajpai	Asst Professor (Contract)	Mech. Engg.
154	Dr. Devaraj Pandimuthu	Asst Professor (Contract)	HSS
155	Dr. Ramanababu Kaligatla	Asst Professor (Contract)	A/Maths

9.2 List of Administrative Officers from 01.04.2015 to 31.03.2016
General Administration

Sl. No.	Name	Designation
1.	Professor D C Panigrahi	Director
2.	Col (Retd) M K Singh	Registrar
3.	Dr. P Mathur	Deputy Registrar (Exam & Academic)
4.	Shri Probodh Pandey	Deputy Registrar (F & A)
5.	Shri Pradhan Rajesh Kr. Sinha	Deputy Registrar (Estt.)
6.	Sri Anil Kumar	Assistant Registrar (Internal Audit)
7.	Sri M S Champia	Assistant Registrar (Project)
8.	Ms Sukhinder Kaur	Assistant Registrar (Exam & Academic)
9.	Sri Babulal Rajak	Assistant Registrar (SW & I)
10.	Sri Ashok Kumar Gupta	Assistant Registrar (Purchase & Store)
11.	Dr. Gopal Sinha	Assistant Registrar (Purchase & Store)
12.	Sri Mahesh Kumar Pandey	Assistant Registrar (Land & Budget)

Essential Services

1.	Dr. Praveen Kumar	Senior Medical Officer
2.	Dr. (Ms) T Banerjee	Lady Medical Officer
3.	Dr. Partha De	Librarian-in-charge
4.	Dr. Kaushik Mondal	System Manager
5.	Sri Rajesh Mishra	System Analyst
6.	Sri Rakesh Soni	System Analyst
7.	Sri Dipankar Ray	Programmer
8.	Sri Anakapalli Kr. Swamy	Programmer
9.	Sri H R Singh	Technical Officer
10.	Sri U P Sharma	Technical Officer
11.	Sri Sanatan Ghosh	Campus Engineer
12.	Sri K C Nandi	Assistant Campus Engineer (Civil)
13.	Sri Anil Kumar Barnwal	Assistant Engineer (Electrical)
14.	Sri D N Acharya	Sports Officer

15.	Sri Shailendra Bhatia	Assistant Workshop Superintendent
16.	Dr. L K Verma	Research Officer
17.	Shri Ram Monohar	SR. SEO
18.	Shri Rahul Kumar	SEO
19.	Dr. Dhiraj Kumar	Horticulturist

3 Appointed during the period 01.04.2015 to 31.03.2016				
Sl. No.	Name	Designation	Department	Date of appointment
1.	Dr. Satish Kumar Sinha	Professor	PCE	15.02.2016
2.	Shri Om Prakash	NMDC Chair Professor	Mining Engg	18.03.2016
3.	Shri Tanish Dey	Asstt. Prof.	Civil Engg.	29.05.2015
4.	Shri Sukanta Chakraborty	Asstt. Prof.	Civil Engg.	29.05.2015
5.	Dr. Patitapaban Sahu	Asstt. Prof.	Mining Engg	23.07.2015
6.	Dr. Rashmi Ranjan Das	Asstt. Prof.	MME	05.08.2015
7.	Shri Smruti Sourava Mohapatra	Asstt. Prof.	Civil Engg.	05.08.2015
8.	Dr. Deepak Kumar Mandal	Asstt. Prof.	Mech. Engg.	12.08.2015
9.	Dr. Pawan Kumar Singh	Asstt. Prof.	Mech. Engg.	18.08.2015
10.	Dr. Vivek Bajpai	Asstt. Prof.	Mech. Engg.	27.08.2015
11.	Dr. Devaraj Pandimuthu	Asstt. Prof.	HSS	16.10.2015
12.	Dr. Prasun Jana	Asstt. Prof.	Mech. Engg.	30.11.2015
13.	Dr. Srinivasa Rao Gangumala	Asstt. Prof.	AGP	15.03.2016
14.	Dr. Kaushik Mandal	System Manager	Computer Centre	19.02.2016
15.	Shri Prabodh Pandey	Dy.Registrar	Administration	14.12.2015
16.	Shri Pradhan Rajesh Kr. Sinha	Dy.Registrar	Administration	15.12.2015
17.	Shri Brijesh Kr Pandey	Hindi Officer	Administration	06.04.2015
18.	Shri Ram Manohar	Sr. SEO	Administration	31.07.2015
19.	Shri Subhendu Bhunia	Tech. Asstt.	Administration	10.06.2015
20.	Shri A K Mukherjee	Tech. Asstt.	Administration	12.06.2015
21.	Shri Ramesh Prasad	STA	Administration	18.06.2015
22.	Shri Dayamoy Karmakar	STA	Administration	26.06.2015
23.	Shri Sushil Soren	Tech. Asstt.	Administration	26.06.2015

24.	Shri Indrajit Sarkar	Scientific Asstt.	Administration	26.06.2015
25.	Shri Rajendra Kumar Das	Tech. Asstt.	Administration	01.07.2015
26.	Shri Mihir Datta	Tech. Asstt.	Administration	02.07.2015
27.	Shri Roshan Kumar Sharma	Scientific Asstt.	Administration	08.07.2015
28.	Shri Ashish Kumar	SSA	Administration	03.08.2015
29.	Ms Neetu Kumari	SPA (Lib)	Administration	24.08.2015
30.	Shri Gajendra Singh	SPA (Lib)	Administration	25.08.2015
31.	Shri Gaurav P. Singh	SPA (Lib)	Administration	27.08.2015
32.	Shri Prashant Prasad Mahato	LDC	Administration	14.12.2015
33.	Shri Praven Kumar	LDC	Administration	14.12.2015
34.	Ms Renu Ojha	LDC	Administration	14.12.2015
35.	Shri Guru Prakash	LDC	Administration	14.12.2015
36.	Shri Bishnu Kumar	LDC	Administration	14.12.2015
37.	Shri Manohar Kuamr	LDC	Administration	14.12.2015
38.	Ms Mehga Kuamrai	LDC	Administration	14.12.2015
39.	Ms Shatabdi Sengupta	LDC	Administration	14.12.2015
40.	Shri Chandan Kr Pandey	LDC	Administration	14.12.2015
41.	Shri Bipin Paswan	LDC	Administration	14.12.2015
42.	Shri Dipu Kumar	LDC	Administration	15.12.2015
43.	Shri Manish Kumar	LDC	Administration	15.12.2015
44.	Ms Antora Dutta	LDC	Administration	15.12.2015
45.	Ms Ankita Ghosh	LDC	Administration	15.12.2015
46.	Shri Priyajit Chakraborty	LDC	Administration	15.12.2015
47.	Shri Rahul Mukherjee	Steno	Administration	15.12.2015
48.	Shri Manindra Kumar	LDC	Administration	16.12.2015
49.	Mrs. Purbi Das	LDC	Administration	16.12.2015
50.	Ms A K Anindita Mahadev	LDC	Administration	16.12.2015
51.	Ms Saiwaleni Bhardwaz	LDC	Administration	17.12.2015
52.	Ms Namdrata Updhyay	LDC	Administration	17.12.2015
53.	Shri Deepak Kuamr Das	LDC	Administration	17.12.2015
54.	Md Furquanual Haque	LDC	Administration	18.12.2015
55.	Sri Ravi Kumar Chaurasia	LDC	Administration	18.12.2015
56.	Shri Shiv Ram	LDC	Administration	21.12.2015
57.	Mrs. Neru Kumari	LDC	Administration	21.12.2015
58.	Mrs. Praveen Kr Chourasia	LDC	Administration	21.12.2015

59.	Shri V Prakash Narayan	LDC	Administration	21.12.2015
60.	Shri V Ravi Shankar	LDC	Administration	21.12.2015
61.	Shri Roushan Kuamr	LDC	Administration	21.12.2015
62.	Shri Shyam Kishore Rao	LDC	Administration	21.12.2015
63.	Shri Pushpesh Sinha	LDC	Administration	21.12.2015
64.	Shri Mrinmoy Mukherjee	Steno	Administration	23.12.2015
65.	Ms Nilu Kumari	Steno	Administration	23.12.2015
66.	Shri Karuna Nidhan	Steno	Administration	29.12.2015
67.	Shri Ranjan Kumar	LDC	Administration	31.12.2015
68.	Shri Suraj Kr Gupta	LDC	Administration	04.01.2016
69.	Shri Bipin Gupta	LDC	Administration	12.01.2016

9.4 Promotion of staff members w.e.f. 01.04.2015 to 31.03.2016.

Sl. No.	Name	Date of Promotion
1.	Shri U K Das	30.04.2015
2.	Shri U K Ghosh	30.04.2015
3.	Shri K K Mandal	30.04.2015
4.	Shri Raj Kumar Prasad	30.04.2015
5.	Ms. Anima Mukherjee	30.04.2015
6.	Shri Sirajuddin Ansari	30.04.2015
7.	Shri Ramjee Prasad Singh	30.04.2015
8.	Shri Anik Kumar Das	30.04.2015
9.	Shri James Kindo	30.04.2015
10.	Shri Gopal Gope	30.04.2015
11.	Shri Mahabir Das	16.09.2015
12.	Ms. Dolly Bhattacharya	16.09.2015
13.	Shri Sukhlal Singh	16.09.2015
14.	Shri Sushil Kumar Soren	16.09.2015
15.	Shri Rajendra Prasad Rajak	16.09.2015
16.	Shri S.K. Vishwakarma	22.03.2016
17.	Shri A. Banerjee	22.03.2016
18.	Shri Naresh Prasad (SC)	22.03.2016
19.	Shri M.K. Mahato	22.03.2016
20.	Shri Surendra Giri	22.03.2016
21.	Shri S.N. Prasad	22.03.2016
22.	Shri A.K. Mahato	22.03.2016

23.	Shri Rasid Alam	22.03.2016
24.	Shri H.P.Das (SC)	22.03.2016
25.	Shri Hiren Turi (SC)	22.03.2016
26.	Shri Haricharan Mahato	22.03.2016
27.	Shri G.K.Paul	22.03.2016
28.	Shri Purin Marandi (ST)	22.03.2016
29.	Shri Paltu Mahato	22.03.2016

5 Retirement list of faculty during 01.04.2015 to 31.03.2016

Sl. No.	Name of the faculty/employee	Designation	Date of Retirement	Remarks
1.	Prof. P.S. Gupta	Professor	31.08.2015	Society
2.	Prof. P.C. Pal	Professor	31.10.2015	Society
3.	Prof. R.K. Singh	Professor	31.12.2015	Society
4.	Prof. V Kumar	Professor	29.02.2016	Society
5.	Shri S. Mitra	System Manager	30.06.2015	Society
6.	Shri Y.P.K Murthy	Dy.Registrar	30.09.2015	Society
7.	Shri Madho Mandal	Asstt. Valveman	30.04.2015	Society
8.	Shri Mahendra Prasad	SO	30.06.2015	Society
9.	Shri Bachan Gope	Chowkidar	30.06.2015	Society
10.	Shri D.P. Mandal	Lib. Attendant	30.06.2015	Society
11.	Shri P.K. Sarkar	Electrical Supervisor	31.07.2015	Society
12.	Shri H.K. Mishra	UDC	31.07.2015	Society
13.	Shri S.K. Rano	T.A	31.08.2015	Society
14.	Shri S.K. Dey	Glass Blower	31.08.2015	Society
9	Shri Saroj Dutta	Mech-‘A’	31.10.2015	Society
10	Smt. Leela Devi	Safai Mazdoor	31.10.2015	Society
11	Shri Sahdeo Tiwary	Wardboy	30.11.2015	Society
12	Shri Mahabir Gope	Peon	30.11.2015	Society
13	Shri S.K. Chatterjee	Mech-‘A’	31.12.2015	Society
14	Shri Jitu Ram	Safai Mazdoor	31.12.2015	Society
15	Shri H K Sinha	Assistant	31.01.2016	Society
16	Shri Sukhlal Singh	SO	31.01.2016	Society
17	Shri B K Sharma	Sr. PA	31.01.2016	Society
18	Shri Bistu Gope	Peon	31.01.2016	Society

19	Shri S K Modi	Lab. Attendant	31.01.2016	Society
20	Shri Gokul Mandal	Sr. Driver	29.02.2016	Society
21	Shri N K Sinha	Assistant	31.03.2016	Society
22	Shri Bhim Gope	Mazdoor	31.03.2016	Society
23	Shri Shankar Mahato	Peon	31.03.2016	Society

9.6 Voluntary Retirement during the period 01.04.2015 to 31.03.2016

Sl. No.	Name of the faculty/Staff	Designation	Date of Retirement	Department/Section
1.	Jitu Ram,	Safai Mozdoor	3.6.2015	CA Section
2.	R. N. Viswakarma	Asstt. Valveman	1.10.15	CMU

9.7 Service discontinued during the period 01.04.2015 to 31.03.2016

Sl. No.	Name of the faculty/Staff	Designation	Discontinued with effect from	Department/Section
1.	Dr. Sukomal Pal	Assistant Professor	23.2.16	CSE

9.9 Training received during the period 01.04.2015 to 31.03.2016

Sl. No.	Name of the officer	Designation	Date of Training	Department/Section
1.	Shri Babyulal Rajak	Assistant Registrar	23-27, June 2015	SW & I

9.10 Re-employments during the period 01.04.2015 to 31.03.2016.

1	Prof. A Chattopadhyay	Professor	A Maths
2	Prof. V P Sharma	Professor	Pet. Engg.
3	Prof. I M Mishra	Professor	Chemical Engg.
4	Prof. V Kumar	Professor	Electronics Engg.

10. MEMBER OF GENERAL COUNCIL, EXECUTIVE BOARD & FINANCE COMMITTEE (Period: 1.4.2015 – 31.3.2016)

MEMBERS OF GENERAL COUNCIL

Chairman

Prof D D Misra
Chairman, ISM GC & EB
4, Arya Bhumi,
P.O. Patia
Bhubhaneswar – 751 024

Representative of Ministry of HRD (Deptt. of Higher Education)

Shri R Subrahmanyam, IAS
Addl Secretary to the Govt of India
Ministry of Human Resource Development
Department of Higher Education
Shastri Bhawan, New Delhi 110115

Director, ISM (Ex-officio)

Prof D C Panigrahi
Indian School of Mines
Dhanbad

Representative of Parliament

Representation from Lok Sabha - Vacant
Representation from Rajya Sabha – Vacant

Nominees of Central Government

Prof T C Rao
C/o Mr K Sanat Kumar
501, Jagdish Residency, Road No. 5
Ramkrishan Puram, Nagole
Hyderabad – 500 035

Prof P B Sharma
Ex-Vice Chancellor
Delhi Technological University
Shahbad Daulatpur
Delhi- 110 078

Dr Ranjeet Singh
Executive Secretary, ISTE
D-42, Ayudh Vihar, Plot No. 3
Sector – 13, Dwarka
New Delhi – 110 078

Prof Hamid Ali
Dean, Faculty of Engineering & Technology
Chairman of the Petroleum Studies
& Principal, ZH College of Engineering & Technology
Aligarh Muslim University
Aligarh – 202002

Chairman-cum-Managing Director
Coal India Limited
Coal Bhawan
Premise No.- 04 MAR
Plot No. AF-III, Action Area-1A
Newtown, Rajarhat
Kolkata – 700 156

Representative of All India Council for Technical Education (AICTE)

Prof Souvik Bhattacharyya
Deptt. of Mechanical Engineering
Deputy Director
Indian Institute of Technology
Kharagpur – 721 302

Representative of University Grants Commission
Vacant

Representative of Council of Scientific & Industrial Research
Vacant

Representative of Coal, GOI

Vacant

Representative of Mines, GOI

Dr Niranjan Kumar Singh
Joint Secretary, Govt. of India
Ministry of Mines (MoM)
Room No. 322-A Wing
Shastri Bhawan, New Delhi – 110 001

Director General of Mines Safety

Shri Rahul Guha
Director General of Mines Safety
DGMS
Dhanbad – 826 001

Representative of Geological Survey of India

Director General
Geological Survey of India
27, J.N.Road
Kolkata – 700 016

Representative of ONGC

Shri Avinash Chandra
Head
ONGC Academy
Oil and Natural Gas Corporation Ltd.
KDMIPE Campus
9 - Kaulagarh Road
Dehradun 248135

Representative of NMDC

Chairman-cum-Managing Director
NMDC, Khanij Bhavan 10-3-311/A
Castle Hills, Masab Tank
Hyderabad – 500 173

Chairman-cum Managing Director, CMPDI

Shri A K Debnath (up to 31.12.2015)
Chairman-cum Managing Director
Central Mine Planning & Design Institute Ltd
Gondwana Place, Ranchi – 834 008

Shri Shekhar Saran (01.01.2016)
Chairman-cum Managing Director
Central Mine Planning & Design Institute Ltd
Gondwana Place, Ranchi – 834 008

Controller General of Indian Bureau of Mines

Controller General
Indian Bureau of Mines
Indira Bhawan, Civil Lines
Nagpur – 440 102

Representative of Hindustan Copper Limited

Vacant

Representative of Central Ground Water Board

Vacant

Representative of Indian Mines Managers' Association

Shri Rabindra Kumar Sharma
Indian Mine Managers' Association
701, Garden City
Luby Circular Road
Dhanbad – 826 001

Representative of MGMI

Shri Subrata Chakravorty
Director (Technical)
Eastern Coalfields Limited
Sanctoria, Burdwan
Dishergarh-713 333
West Bengal

Representative of the Industry body such as CII, FICCI, ASSOCHAM

Vacant

Representative of Ministry of Finance

Ms. Darshana M. Dabral
JS & Financial Advisor to the Govt of India
Ministry of HRD
(Integrated Finance Division)
Shastri Bhawan, New Delhi – 110115

Representative of Ministry of Steel

Shri D B Singh
Director
Ministry of Steel, Udyog Bhawan
Room No. 187
New Delhi-110 107

Representative of Ministry of Labour & Employment

Shri B P Ahuja (Upto 18.10.2015)
Deputy Director General
DGMS
North-Western Zone, Udaipur
Jhamarkotra Main Road
Sector- 6, Hiranmagri
Udaipur – 303 002

Representative of Petroleum & Natural Gas

Vacant

Head of Faculty Department

Prof Phalguni Sen
Head Deptt. of Mining Engineering
ISM, Dhanbad

Prof A K Varma (upto 31.12.2015)
Head, Deptt. of Applied Geology
ISM, Dhanbad

Prof D Asthana (from 01.01.2016)
Head, Deptt. of Applied Geology
ISM, Dhanbad

Prof Shalivahan (upto 07.08.2015)
Head, Deptt. of Applied Geophysics
ISM, Dhanbad

Prof P R Mohanty (from 08.08.2015)
Head, Deptt. of Applied Geophysics
ISM, Dhanbad

Prof V P Sharma
Head, Deptt. of Petroleum Engineering
ISM, Dhanbad

Prof N R Mandre
Head, Deptt. of Fuel & Mineral Engineering
ISM, Dhanbad

Prof A K Mukhopadhyay
Head, Deptt. of Mining Machinery Engineering
ISM, Dhanbad

Prof P K Sadhu
Head, Deptt. of Electrical Engineering
ISM, Dhanbad

Dr Chiranjeev Kumar
Head, Deptt. of Computer Science & Engineering
ISM, Dhanbad

Prof Subrata Bhattacharya (up to 09.01.2016)
Head, Deptt. of Electronics Engineering
ISM, Dhanbad

Prof Debjani Mitra (from 10.01.2016)
Head, Deptt. of Electronics Engineering
ISM, Dhanbad

Prof P Pathak
Head, Depatt. of Management Studies
ISM, Dhanbad

Prof P C Pal (up to 30.09.2015)
Head, Deptt. of Applied Mathematics
ISM, Dhanbad

Prof S Gupta (from 01.10.2015)
Head, Deptt. of Applied Mathematics
ISM, Dhanbad

Prof A K Nirala
Head, Deptt. of Applied Physics
ISM, Dhanbad

Prof D D Pathak
Head, Deptt. of Applied Chemistry
ISM, Dhanbad

Prof S K Maiti (up to 31.08.2015)
Head, Deptt. of Environmental Sc. & Engineering
ISM, Dhnabad

Prof A K Singh (from 01.09.2015)
Head, Deptt. of Environmental Sc. & Engineering
ISM, Dhnabad

Dr M Rahaman (from 04.04.2015)
Head, Deptt. of Humanities & Social Sciences
ISM, Dhanbad

Prof V K Saxena (up to 09.11.2015)
Head, Deptt of Chemical Engineering
ISM, Dhanbad

Prof I M Mishra (from 10.11.2015)
Head, Deptt of Chemical Engineering
ISM, Dhanbad

Prof S C Dutta
Head, Deptt. of Civil Engineering
ISM, Dhanbad

Prof R K Das
Deptt. of Mechanical Engineering
ISM, Dhanbad

Nominee from Associate Professors

Dr B Paul (upto 17.03.2016)
Associate Professor
Deptt. of Environmental Science & Engineering
ISM, Dhanbad

Nominee from Assistant Professors

Dr Anshumali (up to 09.12.2015)
Assistant Professor
Deptt. of Environmental Science & Engineering
ISM, Dhanbad

Dr Pankaj Mishra (from 26.2.2016)
Assistant Professor
Deptt. of Applied Physics
ISM, Dhanbad

Registrar & Secretary

Col (Retd) M K Singh
Registrar
ISM, Dhanbad

Members of Executive Board

Prof D D Misra
Chairman, ISM GC & EB
4, Arya Bhumi, P.O. Patia
Bhubhaneswar – 751 024

Representative of MHRD, GOI (Department of Higher Education)

Shri R Subrahmanyam, IAS
Addl Secretary to the Govt of India
Ministry of Human Resource Development
Department of Higher Education
Shastri Bhawan, New Delhi 110115

Director, ISM (Ex-officio Member)

Prof D C Panigrahi
Director
ISM, Dhanbad-826004

Representative of UGC Vacant

Representative of AICTE

Prof Souvik Bhattacharyya
Deptt. of Mechanical Engineering
Deputy Director
Indian Institute of Technology
Kharagpur – 721 302

Nominee of General Council

Prof Hamid Ali
Dean, Faculty of Engineering & Technology
Chairman of the Petroleum Studies
& Principal, ZH College of Engineering & Technology
Aligarh Muslim University
Aligarh – 202002

**Representative of Ministry of Finance, GOI
(Integrated Finance Division)**

Ms. Darshana M. Dabral
Joint Secretary & Financial Advisor to Govt of India
Ministry of HRD (Integrated Finance Division)
Shastri Bhawan
New Delhi – 110115

Director General of Mines Safety (Ex-officio)

Shri Rahul Guha
Director General of Mines Safety
DGMS, Dhanbad – 826 001

Nominee of Ministry of Coal, GOI

Vacant

Nominee of Ministry of Mines, GOI

Dr Niranjan Kumar Singh
Joint Secretary, Govt. of India
Ministry of Mines (MoM)
Room No. 322-A Wing
Shastri Bhawan, New Delhi – 110 001

Chairman-cum-Managing Director, CMPDI (Ranchi)

Shri A K Debnath (up to 31.12.2015)
Chairman-cum Managing Director
Central Mine Planning & Design Institute Ltd
Gondwana Place, Ranchi – 834 008

Shri Shekhar Saran (from 01.01.2016)
Chairman-cum Managing Director
Central Mine Planning & Design Institute Ltd
Gondwana Place, Ranchi – 834 008

Professor's Representative

Prof M Jawed
Deptt. of Mining Engineering
ISM, Dhanbad

Nominee from Associate Professors

Dr B Paul (up to 17.03.2016)
Associate Professor
Deptt. of Environmental Science & Engineering
ISM, Dhanbad

Nominee from Assistant Professors

Dr Anshumali (up to 09.12.2015)
Assistant Professor
Deptt. of Environmental Science & Engineering
ISM, Dhanbad

Dr Pankaj Mishra (from 26.2.2016)
Assistant Professor
Deptt. of Applied Physics
ISM, Dhanbad

Nominees of Central Government

Shri B K Saha, IAS (Retd) (up to 13.03.2016)
Flat – 12 J, Tower-4, South City
375 Prince Anwar Shah Road
Kolkata – 700 068

Chairman- cum-Managing Director
Coal India Limited
Coal Bhawan
Premise No.- 04 MAR
Plot No. AF-III, Action Area-1A
Newtown, Rajarhat, Kolkata – 700 156

Chairman-cum-Managing Director
Oil & Natural Gas Corporation Ltd
Jeevan Bharti, Tower_II
124 Indira Chowk
New Delhi – 110 001
Chief Secretary
1st Floor, Project Building
Dhurwa, Ranchi – 834 004

Registrar & Secretary

Col (Retd) M K Singh
Registrar
ISM, Dhanbad

Members of the Finance Committee

Prof D D Misra
Chairman, ISM GC & EB
4, Arya Bhumi, P.O. Patia
Bhubhaneswar – 751 024

Representative of MHRD, GOI (Department of Higher Education)

Shri R Subrahmanyam, IAS
Addl Secretary to the Govt of India
Ministry of Human Resource Development
Department of Higher Education
Shastri Bhawan, New Delhi 110115

Director, ISM (Ex-officio Member)

Prof D C Panigrahi
Director
ISM, Dhanbad-826004

Representative of Ministry of Finance, GOI (Integrated Finance Division)

Ms. Darshana M. Dabral
Joint Secretary & Financial Advisor to Govt of India
Ministry of HRD (Integrated Finance Division)
Shastri Bhawan
New Delhi – 110115

Representative of General Council

Shri Rahul Guha
Director General of Mines Safety
DGMS
Dhanbad – 826 001

Representative of Executive Board

Shri B K Saha, IAS (Retd) (up to 13.03.2016)
Flat – 12 J, Tower-4, South City
375 Prince Anwar Shah Road
Kolkata – 700 068

Registrar & Secretary

Col (Retd) M K Singh
Registrar
ISM, Dhanbad

Financial Statements

Annexure - I

INDIAN SCHOOL OF MINES DHANBAD



ANNUAL ACCOUNTS FOR THE FINANCIAL YEAR 2015-16



INDIAN SCHOOL OF MINES DHANBAD

ANNUAL ACCOUNTS 2015-16

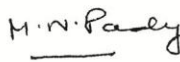
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BALANCE SHEET AS ON 31ST MARCH, 2016

(Amount in ₹)

CORPUS/ CAPITAL FUND AND LIABILITIES	Sch No	Non Plan 2015-16	Plan 2015-16	Project 2015-16	Total Current year 2015-16	Total Previous Year 2014-15
CAPITAL FUND	I	564,725,054.43	6,469,227,569.27	283,728,330.15	7,317,680,953.85	6,295,130,275.96
RESERVE AND SURPLUS	II	79,111,614.50	0.00	60,273,292.95	139,384,907.45	117,224,561.81
EARMARKED/ ENDOWMENT FUND	III	283,198,154.89	0.00	172,100,476.94	455,298,631.83	826,486,310.87
CURRENT LIABILITIES AND PROVISIONS	IV	160,593,849.28	71,947,767.05	554,712,233.41	787,253,849.74	706,911,671.01
TOTAL		1,087,628,673.10	6,541,175,336.32	1,070,814,333.45	8,699,618,342.87	7,945,752,819.65
ASSETS						
FIXED ASSETS	V	608,449,998.00	3,058,935,979.19	425,895,530.73	4,093,281,507.92	3,464,743,913.92
LESS: PROVISION FOR DEPRECIATION		98,691,630.73	1,477,648,296.78	251,125,431.35	1,827,465,358.86	1,532,800,434.24
NET BLOCK (FIXED ASSETS)		509,758,367.27	1,581,287,682.41	174,770,099.38	2,265,816,149.06	1,931,943,479.68
INVESTMENTS	VI	174,084,872.00	50,174,660.00	796,935,342.65	1,021,194,874.65	1,213,959,354.78
CURRENT ASSETS, LOANS, ADVANCES	VII	403,785,433.83	4,909,712,993.91	99,108,891.42	5,412,607,319.16	4,799,849,985.19
TOTAL		1,087,628,673.10	6,541,175,336.32	1,070,814,333.45	8,699,618,342.88	7,945,752,819.65
SIGNIFICANT ACCOUNTING POLICIES	XIV					
CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS	XV					


(M. N. PANDEY)
ASST REGISTRAR (L&B)


(M. S. CHAMPIA)
ASST REGISTRAR (PA)


(PRABODH PANDEY)
DY REGISTRAR (F&A)

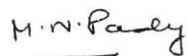

(COL. M. K. SINGH)
REGISTRAR


(PROF. D. C. PANIGRAHI)
DIRECTOR

INCOME AND EXPENDITURE ACCOUNT FOR THE PERIOD 1.4.2015 TO 31.3.2016

(Amount in ₹)

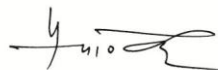
INCOME	Sch No	Non Plan 2015-16	Plan 2015-16	Project 2015-16	Total Current year 2015-16	Total Previous Year 2014-15
Grants-in-aid from MHRD, GOI	VIII	745,000,000.00	1,000,000,000.00	0.00	1,745,000,000.00	1,724,940,000.00
Less: Transferred to Capital Fund towards non recurring expenses		213,408.00	767,635,276.00	0.00	767,848,684.00	906,802,685.50
Net Grants in Aid		744,786,592.00	232,364,724.00	0.00	977,151,316.00	818,137,314.50
Fees from Students	IX	412,288,622.61	0.00	0.00	412,288,622.61	295,960,100.00
Interest Income	X	1,068,186.00	25,080.00	59,912,803.79	61,006,069.79	45,704,148.95
Other Income	XI	55,629,478.90	0.00	0.00	55,629,478.90	58,685,309.50
TOTAL (A)		1,213,772,879.51	232,389,804.00	59,912,803.79	1,506,075,487.30	1,218,486,872.95
EXPENDITURE						
Establishment Expenses	XII	744,126,053.00	0.00	0.00	744,126,053.00	667,979,033.00
Educational Expenses	XIII	284,533,909.00	188,638,241.00	0.00	473,172,150.00	273,583,083.00
General Expenses	XIII	126,601,153.00	26,800,902.00	0.00	153,402,055.00	158,735,930.00
Departmental Expenses	XIII	23,028,026.00	13,617.00	0.00	23,041,643.00	20,181,483.00
Miscellaneous/ other Expenses	XIII	27,958,203.00	16,943,493.00	56,597.00	44,958,293.00	56,256,174.60
Travelling Expenses	XIII	7,548,727.00	0.00	0.00	7,548,727.00	6,905,257.00
Depreciation	V			0.00	0.00	4,557,506.86
TOTAL (B)		1,213,796,071.00	232,396,253.00	56,597.00	1,446,248,921.00	1,188,198,467.46
Deficit/ Surplus (A-B)		- 23,191.49	- 6,449.00	59,856,206.79		
Balance being surplus/(Deficit) transferred to Capital Fund Plan and Non Plan. Project surplus transferred to Non Plan Endowment Fund.		- 23,191.49	- 6,449.00	59,856,206.79		
Significant Accounting Policies	XIV					
Contingent Liabilities and Notes on Accounts	XV					



(M. N. PANDEY)
ASST REGISTRAR (L&B)



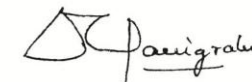
(M. S. CHAMPIA)
ASST REGISTRAR (PA)



(PRABODH PANDEY)
DY REGISTRAR (F&A)



(COL. M.K.SINGH)
REGISTRAR



(PROF. D. C. PANIGRAHI)
DIRECTOR

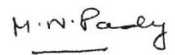
RECEIPT AND PAYMENT ACCOUNT FOR THE YEAR ENDING 31ST MARCH, 2016

Amount (₹)


RECEIPTS	Sch No	Non Plan 2015-16	Plan 2015-16	Project 2015-16	Total Current Year 2015-16	Total Previous Year 2014-15
Opening Balances:						
(a) Cash in Hand	R.1	140,634.70	0.00	27,686.00	168,320.70	116,129.70
(b) Cash at Bank	R.2	149,460,956.47	147,940,634.41	51,107,213.70	348,508,804.58	366,487,735.70
Grants-in-aid from MHRD	R.3	745,000,000.00	1,000,000,000.00	0.00	1,745,000,000.00	1,912,075,000.00
Investment Encashed	R.4	1,476,897,746.00	1,044,000,000.00	251,255,800.00	2,772,153,546.00	1,985,657,234.00
Fees from Students	R.5	395,361,861.61	0.00	0.00	395,361,861.61	286,408,962.00
Interest from Investments/ Advances	R.6	18,319,214.00	11,164,594.00	73,687,600.09	103,171,408.09	33,776,862.13
Other Income	R.7	32,057,315.00	44,768.00	0.00	32,102,083.00	27,769,111.00
Statutory & other Receipts/ Recoveries	R.8	95,819,120.00	3,854,253.00	105,302,963.54	204,976,336.54	326,687,870.12
Recovery of Advances from Staff/ Suppliers/ Deposits/ EMD/ SD	R.9	373,019,233.28	15,087,764.50	0.00	388,106,997.78	769,126,709.00
Deductions in the Fixed Assets	R.10	0.00	1,533,461.00	0.00	1,533,461.00	416,970.00
Additions to Earmarked Funds	R.11	66,428,942.00	0.00	13,096,702.00	79,525,644.00	51,156,624.69
Research and Development Projects	R.12	0.00	0.00	181,809,145.00	181,809,145.00	132,984,357.00
Consultancy and Testing	R.13	0.00	0.00	98,888,907.80	98,888,907.80	101,168,011.48
Departmental Development Fund	R.14	0.00	0.00	5,808,763.76	5,808,763.76	9,907,482.00
Fellowship and Associateship	R.15	0.00	0.00	0.00	0.00	0.00
Professional Development Fund	R.16	0.00	0.00	2,873,461.00	2,873,461.00	4,274,825.00
Additions to Capital/ Other Reserve Funds	R.17	0.00	0.00	0.00	0.00	0.00
TOTAL RECEIPTS		3,352,505,023.06	2,223,625,474.91	783,858,242.89	6,359,988,740.86	6,008,013,883.82

Amount (₹)

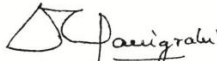
PAYMENTS	Sch No	Non Plan 2015-16	Plan 2015-16	Project 2015-16	Total Current Year 2015-16	Total Previous Year 2014-15
Departmental Expenses	P.1	22,168,307.00	13,617.00	0.00	22,181,924.00	19,496,348.00
Educational Expenses	P.2	303,483,343.00	169,451,104.00	0.00	472,934,447.00	257,009,698.00
Establishment Expenses	P.3	700,639,422.00	0.00	0.00	700,639,422.00	626,888,093.00
General Expenses	P.4	127,362,302.00	26,061,515.00	0.00	153,423,817.00	159,311,186.00
Miscellaneous/ Other Expenses	P.5	28,181,658.00	16,885,710.00	0.00	45,067,368.00	56,194,044.00
Travelling Expenses	P.6	7,199,440.00	0.00	0.00	7,199,440.00	6,803,828.00
Investment of Funds	P.7	1,193,606,802.00	1,094,000,000.00	329,213,537.00	2,616,820,339.00	2,025,750,866.00
Advances to Staff/ Suppliers/ Contractors/ Deposits/ EMD/ SD	P.8	531,960,439.00	602,495,083.00	4,989,385.00	1,139,444,907.00	1,079,959,348.19
Additions to Fixed Assets	P.9	29,287,639.00	224,293,451.00	0.00	253,581,090.00	778,862,269.00
Transfer/ Payment from Earmarked Funds	P.10	1,252,500.00	0.00	10,389,721.00	11,642,221.00	10,453,143.33
Statutory & Other Payments	P.11	185,281,133.00	3,854,253.00	170,007,681.00	359,143,067.00	415,259,012.60
Transfers to Capital Fund/ Reserves	P.12	0.00	0.00	0.00	0.00	0.00
Research and Development Projects	P.13	0.00	0.00	125,342,821.00	125,342,821.00	107,835,958.30
Consultancy and Testing	P.14	0.00	0.00	76,888,419.80	76,888,419.80	112,377,804.12
Departmental Development Fund	P.15	0.00	0.00	4,677,990.00	4,677,990.00	2,512,922.00
Fellowship and Associateship	P.16	0.00	0.00	0.00	0.00	0.00
Professional Development Fund	P.17	0.00	0.00	987,512.00	987,512.00	622,238.00
TOTAL PAYMENTS		3,130,422,985.00	2,137,054,733.00	722,497,066.80	5,989,974,784.80	5,659,336,758.54
Closing Balances:					0.00	0.00
(a) Cash in Hand	P.18	218,614.70	0.00	177,246.00	395,860.70	168,320.70
(b) Cash at Bank/ Post Office	P.19	221,863,423.36	86,570,741.91	61,183,930.09	369,618,095.36	348,508,804.58
TOTAL		3,352,505,023.06	2,223,625,474.91	783,858,242.89	6,359,988,740.86	6,008,013,883.82


(M. N. PANDEY)
ASST REGISTRAR (L&B)


(M. S. CHAMPIA)
ASST REGISTRAR (PA)


(PRABODH PANDEY)
DY REGISTRAR (F&A)


(COL. M.K.SINGH)
REGISTRAR


(PROF. D. C. PANIGRAHI)
DIRECTOR

INDIAN SCHOOL OF MINES DHANBAD



***SCHEDULES FORMING PART OF BALANCE SHEET,
INCOME & EXPENDITURE ACCOUNT AND
RECEIPT & PAYMENT FOR THE
YEAR ENDING 31st MARCH 2015-16***

**SCHEDULES FORMING PART OF BALANCE SHEET, INCOME &
EXPENDITURE A/C AND RECEIPTS & PAYMENTS A/C FOR THE YEAR
ENDING 31st MARCH 2016**

SCHEDULE - I: CAPITAL FUND		(Amount in ₹)			
Sl.No.	PARTICULARS	Current Year : 2015-16		Previous Year : 2014-15	
1 (A) Plan:					
1.1.1	Opening Balance	5,942,937,890.83		5,336,196,290.33	
1.1.2	Add : Previous Year	20,161,711.03		0.00	
1.1.3	Add : Non-recurring grants-in-aid received during the year	767,635,276.00		905,142,834.50	
1.1.4	Less : Deficit	6,449.00			
1.1.5	Less : Depreciation	261,500,859.59		298,401,234.00	
1.1.6	Sub-total		6,469,227,569.27		5,942,937,890.83
1 (B) Non Plan:					
1.2.1	Opening Balance	76,205,476.43		87,507,620.70	
1.2.2	Add: Transfer from Endowment Fund	489,070,549.00			
1.2.3	Add: Non-recurring grants-in-aid received during the year	213,408.00		1,659,851.00	
1.2.4	Less: Depreciation during the Year	12,936,924.51		0.00	
1.2.5	Add: Rectification for previous year	0.00			
1.2.6	Less: Deficit	23,191.49	5525,29,317.43	12,961,995.27	76,205,476.43
1.2.7	Capitalized fund for Assets (Opening Bal)	8,976,889.00		6,119,888.00	
1.2.8	Add : Capitalized fund for Assets (During the Yr) PDA	3,218,848.00	12,195,737.00	2,857,001.00	8,976,889.00
1.2.8	Sub-total		5647,25,054.43		85,182,365.43
1 (C) Project:					
1.3.1	(a) Capital Fund (Opening	121,173,812.44		121,173,812.44	
1.3.2	Less : Payments from Old Consultancy Projects (See Notes on Accounts)				
1.3.3	Less : Transfer for creation of opening balance towards undisbursed consultancy projects		121,173,812.44		121,173,812.44
1.3.4	(b) Project Endowment Fund	249,515.69	249,515.69	249,515.69	
1.3.5	(c) Reserve fund	6,830,829.87	6,830,829.87	6,830,829.87	
1.3.6	(d) Corpus Fund	4,410,060.50	4,410,060.50	4,410,060.50	
1.3.7	(e) Capitalized fund for Assets (OB)	134,345,801.20		97,760,867.12	
1.3.8	Add: Additions during the year	57,107,162.00		71,114,652.00	
1.3.9	Less: Depreciation on Assets including adjustment for previous years	40,388,851.55	151,064,111.65	34,529,717.92	145,836,207.26

1.3.10	Sub-total		283,728,330.15		267,010,019.70
1.A	CAPITAL FUND -		6,469,227,569.27		5,942,937,890.83
1.B	CAPITAL FUND - NON		5647,25,054.43		85,182,365.43
1.C	CAPITAL FUND - PROJECT		283,728,330.15		267,010,019.70
1.00	TOTAL (CAPITAL FUND)		73176,80,953.85		6,295,130,275.96

SCHEDULE - II: RESERVES AND SURPLUS

2 (A) Capital Reserve (Non Plan):

Sl.No.	PARTICULARS	Balance as on 01.04.2015	Additions during the year	Deduction/ Adj during the year	Balance as on 31.03.2016
Non-Plan:					
2.2.1	Building Fund	4,250,000.00	0.00	0.00	4,250,000.00
2.2.2	Computer Development Fund	0.00	0.00	0.00	0.00
2.2.3	Departmental Development	133,045.00	0.00	0.00	133,045.00
2.2.4	Donation Fund	2,057,500.00	0.00	0.00	2,057,500.00
2.2.5	Laboratory Development	0.00	0.00	0.00	0.00
2.2.6	Library Development Fund	310,536.00	0.00	0.00	310,536.00
2.2.7	School Development Fund	24,235,156.50	130,800.00	0.00	24,365,956.50
2.2.8	Student Innovative Project	32,840,727.00	15,183,850.00	30,000.00	47,994,577.00
2.2.9	Total Reserves (Non Plan)	63,826,964.50	15,314,650.00	30,000.00	79,111,614.50

2 (B) Department Development Funds(Project):		Balance as on 01.04.2015	Additions during the year	Deduction/Adj during the year	Balance as on 31.03.2016
2.3.1	AGL Department - DDF	1,378,603.00	176,600.00	14,353.00	1,540,850.00
2.3.2	AGL XRF Maintenance Fund	84,270.00	56,250.00		140,520.00
2.3.3	AGP Department - DDF	284,643.00	384,082.00		668,725.00
2.3.4	APPLIED MATHEMATICS	37,430.00	26,000.00		63,430.00
2.3.5	Applied Physics	390,592.00	105,200.00		495,792.00
2.3.6	Central Administrative Charges	1,264,877.00	1,411,299.00	1,978,509.00	697,667.00
2.3.7	Chemical Engg. Dept.	4,648.00	31,750.00		36,398.00
2.3.8	Chemistry Department	227,391.30	160,108.00	233,328.00	154,171.30
2.3.9	CIVIL ENGG. DEPT. DEV. FUND		345,245.00		345,245.00
2.3.10	C.L.M.M Department	61,476.00			61,476.00
2.3.11	CME Department	5,026,844.92	471,034.94	537,405.00	4,960,474.86
2.3.12	Computer Centre	1,244.00	2,323.00		3,567.00
2.3.13	C.S.E Department	156,970.00	72,106.00		229,076.00
2.3.14	Director Discretionary Fund	416,837.00			416,837.00
2.3.15	EDC Development Fund	4,630,645.77	1,266,885.00	74,642.00	5,822,888.77
2.3.16	EDC Support Services	8,223,674.00	3,500.00	27,124.00	8,200,050.00
2.3.17	EDC Xeroxing (4000) Fund	327,208.42	38,412.00	46,306.00	319,314.42
2.3.18	E & I DEPTT.	50,280.00	28,183.00		78,463.00
2.3.19	ELECTRICAL ENGG.(DEPT.)	256,546.00	44,680.00		301,226.00

2.3.20	FME Department	1,487,894.25	305,887.00	83,590.00	1,710,191.25
2.3.21	Gas Chromatograph Maint Fund of ME	2,440.00			2,440.00
2.3.22	Geology Xeroxing (6000) Fund	41,454.00			41,454.00
2.3.23	Lab. Development Fund	448,393.52			448,393.52
2.3.24	Library Card	46,857.00	31,050.00	200.00	77,707.00
2.3.25	Library Development Fund	714,941.85	26,317.00	333,776.00	407,482.85
2.3.26	Library Fine	15,530.00	5,307.00		20,837.00
2.3.27	MECHANICAL ENGG. DEPT.	47,076.00	134,400.00		181,476.00
2.3.28	ME&MME Department	676,195.40	65,446.00		741,641.40
2.3.29	Mining Engg. Department	10,154,589.21	1,721,545.76	437,224.00	11,438,910.97
2.3.30	Mining Machinery Engg. Dept.	1,181,292.00	537,785.00	845,857.00	873,220.00
2.3.31	MINING MACHINERY ENGG. DEPTT.	-500.00	17,062.00		16,562.00
2.3.32	M S DEPARTMENT	806,921.50	189,352.00	96,500.00	899,773.50
2.3.33	P.E. Department	1,849,118.50	91,997.00		1,941,115.50
2.3.34	Reprographic Unit	31,553.00			31,553.00
2.3.35	Sub-total (DDF)	40,327,936.64	7,749,806.70	4,708,814.00	43,368,929.34
2 (C) Professional Dev. Funds (Project):					
		Balance as on 01.04.2015	Additions during the year	Deduction/Adj during the year	Balance as on 31.03.2016
2.3.36	Achamma Bobby,PDF	16,600.00			16,600.00
2.3.37	A. CHATTOPADHYAY,(MATHS) PDF	10,285.00			10,285.00
2.3.38	A CHATTOPADHYAY PDF	32,390.00			32,390.00
2.3.39	AJAY MANDAL, PDF	19,344.00	91,297.00	87,328.00	23,313.00
2.3.40	AJOY KUMAR BHAUMIK, PDF	36,000.00	19,368.00		55,368.00
2.3.41	A. K. BASU, PDF(ME&MME)	5,276.00			5,276.00
2.3.42	AKHILESH PRASAD, PDF	3,900.00			3,900.00
2.3.43	A K MISHRA, PDF	97,158.00	124,901.00		222,059.00
2.3.44	A K MUKHOPADHYAY, ME & MME PDF	896,447.00	184,212.00		1,080,659.00
2.3.45	A. K. PAL,PDF	91,720.00	42,518.00	52,900.00	81,338.00
2.3.46	A K Pathak PDF	95,331.00			95,331.00
2.3.47	A K VARMA, PDF	25,375.00	7,815.00		33,190.00
2.3.48	A L AGGARWAL , PDF	58,203.00			58,203.00
2.3.49	ALOK KR. DAS, PDF (MECH.		12,000.00		12,000.00
2.3.50	ALOK SINHA, PDF	63,730.00	17,012.00	15,792.00	64,950.00
2.3.51	Amgoth Tarachand, PDF		3,501.00		3,501.00
2.3.52	Amit Kr. Verma, PDF	9,025.00	17,579.00		26,604.00
2.3.53	Anand Anupam, PDF	3,326.00	34,942.00		38,268.00
2.3.54	ANSHUMALI, PDF (ESE)	19,240.00	70,678.00		89,918.00
2.3.55	ANURAG JAYSWAL, PDF	12,800.00	26,000.00		38,800.00
2.3.56	A R DIXIT, PDF	103,473.00	8,281.00	103,473.00	8,281.00
2.3.57	Arup Kumar Pal, PDF (CSE)		3,364.00		3,364.00
2.3.58	A. SARKAR, PDF (CHEM)	31,264.67		13,900.00	17,364.67

2.3.59	ASHISH MALLICK, PDF	20,000.00	20,000.00		40,000.00
2.3.60	A. S. Venkatesh PDF	19,393.00			19,393.00
2.3.61	BADAM SINGH KUSHVAH,	29,800.00			29,800.00
2.3.62	B. C. SARKAR, PDF	287,972.00			287,972.00
2.3.63	BIBHASH CHANDRA, PDF		2,332.00		2,332.00
2.3.64	BISWAJIT CHOWDHURY,	26,207.00	6,108.00	27,000.00	5,315.00
2.3.65	Biswajit Paul, PDF	118,690.00	93,433.00		212,123.00
2.3.66	B K Mishra, PDF	17,116.00	6,995.00		24,111.00
2.3.67	B K NANDI, PDF	1,050.00	14,550.00		15,600.00
2.3.68	B. M. KUMAR, PDF	665.00			665.00
2.3.69	Bobby K Antony, PDF (PHYSICS)	12,640.00			12,640.00
2.3.70	B S CHOUDHARY, PDF	21,227.00			21,227.00
2.3.71	CHANCHAL HALDER, PDF	20,000.00	20,000.00		40,000.00
2.3.72	CHANDAN BHAR, DR PDF	140,779.00		43,995.00	96,784.00
2.3.73	Chandan Guria, PDF	78,999.00			78,999.00
2.3.74	CHIRANJEEV KUMAR, PDF		9,294.00	9,016.00	278.00
2.3.75	D C Panigarhi, PDF	2,845,831.00	679,371.00	18,930.00	3,506,272.00
2.3.76	DEBJANI MITRA, PDF	15,428.00			15,428.00
2.3.77	DHEERAJ KUMAR PDF	553,225.00	248,583.00	93,805.00	708,003.00
2.3.78	Dipankar Roy, PDF	4,516.00	2,323.00		6,839.00
2.3.79	DIPANKAR SRIMANI, PDF		7,000.00		7,000.00
2.3.80	G C NAYAK, PDF	20,000.00	40,000.00		60,000.00
2.3.81	G. P. KARMAKAR, PDF	840.00			840.00
2.3.82	G S PATHAK, PDF	8,120.00		7,666.00	454.00
2.3.83	Gurdeep Singh, PDF	1,247,180.00	60,600.94		1,307,780.94
2.3.84	H P NAYAK, PDF	51,000.00			51,000.00
2.3.85	Jayanta Das, PDF (MME)		20,000.00		20,000.00
2.3.86	JIARAM MANAM, PDF (PHYSICS)	60,000.00			60,000.00
2.3.87	Jinia Nandy, PDF		20,000.00		20,000.00
2.3.88	J K PATTANAYAK, PDF	82,930.00		58,695.00	24,235.00
2.3.89	Kalyan Chatterjee, PDF	10,896.00	5,326.00		16,222.00
2.3.90	KAMPAN MUKHERJEE PDF	36,404.00	50,120.00		86,524.00
2.3.91	Kaushal Kumar, PDF (Appl. Physics)	4,000.00			4,000.00
2.3.92	K.DASGUPTA, PDF	572,136.00	188,753.00		760,889.00
2.3.93	KEKA OJHA, PDF	33,788.00		2,019.00	31,769.00
2.3.94	K K SINGH, PDF	3,000.00			3,000.00
2.3.95	KRIPAMAY SARKAR, PDF (AGL)		10,000.00		10,000.00
2.3.96	K S THYAGARAJ, PDF	11,560.00			11,560.00
2.3.97	L A Kumaraswamidhas, PDF		14,766.00		14,766.00
2.3.98	L. N. JHA, PDF	1,576.00			1,576.00
2.3.99	MANISH KR. JAIN, PDF	6,147.00	528.00		6,675.00
2.3.100	M Jawed, PDF	135,275.00	8,099.00		143,374.00
2.3.101	M K MUKHERJEE,PDF	83,278.00			83,278.00
2.3.102	M L Chandravanshi, PDF	11,000.00			11,000.00
2.3.103	Moirangtham Rakesh Soni, PDF (APH)		20,000.00		20,000.00

2.3.104	MRINALINI PANDEY, PDF		4,550.00		4,550.00
2.3.105	NILADRI DAS, PDF	53,020.00	17,927.00		70,947.00
2.3.106	NITAI PAL, PDF	7,967.00	6,722.00		14,689.00
2.3.107	N R Mandre, PDF	66,688.00	6,913.00		73,601.00
2.3.108	N Suresh, Assoc. PDF	414,356.00	82,525.00	86,413.00	410,468.00
2.3.109	Pankaj Kr. Jain, PDF	700.00			700.00
2.3.110	Pankaj Mishra, PDF	20,175.00			20,175.00
2.3.111	PHALGUNI SEN, PDF	83,351.00			83,351.00
2.3.112	P K Behra, PDF	155,127.00		30,890.00	124,237.00
2.3.113	P K JANA, PDF	4,969.00	1,680.00		6,649.00
2.3.114	P K KHAN, PDF	12,001.00	20,000.00		32,001.00
2.3.115	P K MAHATO, PDF (Mech. Engg.)		20,000.00		20,000.00
2.3.116	P K SADHU, PDF	12,344.00	7,033.00		19,377.00
2.3.117	P K SINGH, PDF (ESE)	40,488.00	22,660.00		63,148.00
2.3.118	P N S SINGHA ROY, PDF	15,885.00	40,000.00	9,772.00	46,113.00
2.3.119	P P Bahuguna, PDF	141,262.00			141,262.00
2.3.120	P. P. CHAKRABORTY, PDF	800.00			800.00
2.3.121	Pramod Pathak PDF	91,060.00	60,581.00	13,459.00	138,182.00
2.3.122	Prasant Kr. Sharma, PDF	31,255.00			31,255.00
2.3.123	P. R. MOHANTY, PDF	50,834.00		8,440.00	42,394.00
2.3.124	P R SAHOO, PDF		3,500.00		3,500.00
2.3.125	P. SEN, PDF	167,208.00	7,000.00		174,208.00
2.3.126	P S GUPTA, PDF	193,512.00			193,512.00
2.3.127	P S MUKHERJEE, PDF	266,453.00	113,042.00		379,495.00
2.3.128	P S PAUL, PDF	24,185.00	11,629.00		35,814.00
2.3.129	RASHMI MATHUR, PDF		30,000.00		30,000.00
2.3.130	R B CHOUDHARY, PDF		12,000.00		12,000.00
2.3.131	RIMA CHATTERJEE, PDF	10,000.00		8,355.00	1,645.00
2.3.132	R. K. DUBEY, PDF	1,075.00	20,980.00		22,055.00
2.3.133	R K GANGWAR, PDF (ECE)		20,000.00		20,000.00
2.3.134	R. L. MALHOTRA, PDF	83,456.00			83,456.00
2.3.135	R N HOTA, PDF (MECH. ENGG.)		60,000.00		60,000.00
2.3.136	Rohit P John, PDF	23,000.00			23,000.00
2.3.137	R Thangavel, PDF (Appl. Physics)		23,200.00		23,200.00
2.3.138	R. Venugopal, PDF	53,657.00	14,032.00		67,689.00
2.3.139	SACHIN TRIPATHI, PDF, CSE		56,393.00		56,393.00
2.3.140	SAGAR PAL, PDF	16,009.00	31,507.00	7,438.00	40,078.00
2.3.141	SAHENDRA SINGH, PDF (AGL)		30,000.00		30,000.00
2.3.142	SANDEEP MONDAL, PDF		9,345.00		9,345.00
2.3.143	SANJAY MANDAL, PDF	4,112.00			4,112.00
2.3.144	Sanjeev Kr. Paul, PDF (AGP)	12,000.00	62,429.00		74,429.00
2.3.145	SANKET NAYAK, PDF (CIVIL ENGG.)		16,520.00		16,520.00
2.3.146	SANTANU DWARI, PDF	18,015.00	3,131.50	7,889.00	13,257.50
2.3.147	SARUN PM, PDF (PHYSICS)	2,000.00			2,000.00
2.3.148	Sauma Singh, PDF	26,709.00	8,397.00		35,106.00
2.3.149	S. BHATTACHARYA, PDF	98,728.00	112,824.00		211,552.00
2.3.150	S. Bhattacharya, PDF (E & I)	11,160.00			11,160.00

2.3.151	S B SRIVASTAVA, PDF	36,171.00			36,171.00
2.3.152	S C DUTTA, PDF (CIVIL ENGG.)		301,084.00		301,084.00
2.3.153	S. CHATTOPADHYA, PDF	42,034.00		42,034.00	0.00
2.3.154	S. CHOUDHARI, PDF (CIL	141,354.00	85,130.00	13,733.00	212,751.00
2.3.155	SHALINI GOUTAM , PDF	2,260.00	6,398.00		8,658.00
2.3.156	SHALIVAHAN, PDF	108,197.00	2,126.00	40,603.00	69,720.00
2.3.157	Shatrughan Soren, PDF	2,828.00	2,908.00		5,736.00
2.3.158	Shibayan Sarkar, PDF (MECH ENGG.)		22,400.00		22,400.00
2.3.159	SHRAVAN KUMAR, PDF	6,879.00	7,320.00		14,199.00
2.3.160	SHUSHRUT DAS, PDF		3,131.50		3,131.50
2.3.161	Siddharth Sengupta, PDF (CHEM. ENGG.)		30,000.00		30,000.00
2.3.162	S K GHOSHAL, PDF	327.00			327.00
2.3.163	S. K. GUPTA, PDF	58,198.00	99,282.00	55,790.00	101,690.00
2.3.164	S.K. MAITI, PDF	46,066.00	56,976.00		103,042.00
2.3.165	S K PADHI, PDF (APPL. CHEM.)		20,000.00		20,000.00
2.3.166	S K PAL, (AGP), PDF	19,624.00	14,000.00		33,624.00
2.3.167	S K PANDA, PDF		27,641.00		27,641.00
2.3.168	S K PAUL, (ECE), PDF	2,181.00	1,719.00		3,900.00
2.3.169	S K SAHU, PFD (CHEMISTRY)	5,000.00			5,000.00
2.3.170	S K SHARMA, (PHY), PDF	23,920.00			23,920.00
2.3.171	S LAIK PDF	56,728.00			56,728.00
2.3.172	S MOHANTY,PDF	123,309.00	6,883.00		130,192.00
2.3.173	S N Mukherjee, PDF	86,353.00			86,353.00
2.3.174	SOMNATH YADAV, PDF	4,482.00			4,482.00
2.3.175	Soument Maiti, PDF (AGP)		10,000.00		10,000.00
2.3.176	Soumitra Maity, PDF (CHEMISTRY)		7,000.00		7,000.00
2.3.177	Sridhar Sahu,PDF (Appl. Physics)		20,000.00	5,500.00	14,500.00
2.3.178	S SARANGI, PDF	20,000.00	40,000.00	19,858.00	40,142.00
2.3.179	SUBINDU KUMAR, PDF	9,600.00			9,600.00
2.3.180	Subrato Kr. Ghosh, PDF	3,987.00			3,987.00
2.3.181	SUKANTA DEY, PDF, AGL		77,600.00	19,209.00	58,391.00
2.3.182	Sushila Maheshkar, PDF		2,554.00		2,554.00
2.3.183	SWAPAN DEY, PDF	27,721.00		29,404.00	-1,683.00
2.3.184	Tanmoy Maiti, PDF	19,656.00	15,212.00		34,868.00
2.3.185	Thangavel, PDF	4,000.00			4,000.00
2.3.186	T H Syed, PDF	29,518.00			29,518.00
2.3.187	T.K. CHATTERJEE, PDF	161,495.00	67,428.00		228,923.00
2.3.188	T K NAIYA, PDF	18,316.00			18,316.00
2.3.189	T KUMAR PDF	9,366.00			9,366.00
2.3.190	T Mazumdar, PDF	1,422.00			1,422.00
2.3.191	T Sharma, PDF	315,374.00			315,374.00
2.3.192	U K. Singh PDF	186,623.00	148,474.00	45,114.00	289,983.00
2.3.193	UPAMA DUTTA, PDF	8,000.00			8,000.00
2.3.194	UPENDRA KR. SINGH, PDF (AGP)	94,917.00	231,653.00	14,885.00	311,685.00
2.3.195	VIKASH MAHATO PDF	1,083.00	700.00		1,783.00

2.3.196	VINEET KR. RAI, PDF	22,200.00	30,000.00		52,200.00
2.3.197	VINOD P SINHA, PDF	28,000.00	82,040.00		110,040.00
2.3.198	VIPIN KUMAR, PDF		350.00		350.00
2.3.199	VISHNU PRIYE	4,689.00	10,000.00	14,500.00	189.00
2.3.200	Vivekanand Mukherjee, PDF	1,000.00			1,000.00
2.3.201	V K GUPTA, PDF	27,773.00			27,773.00
2.3.202	V K Saxena, PDF	81,935.00	16,816.00		98,751.00
2.3.203	V K Srivastava, PDF	39,669.00			39,669.00
2.3.204	V KUMAR,PDF	2,444.00			2,444.00
2.3.205	V M S R Murthy, PDF	637,575.00	247,512.00		885,087.00
2.3.206	V.P. Sharma PDF	109,821.00			109,821.00
2.3.207	Y. R. DHAR PDF	449.00			449.00
2.3.208		13,069,660.67	4,842,507.94	1,007,805.00	16,904,363.61
2.3.209	Sub-total Project (DDF+PDF)	53,397,597.31	12,592,314.64	5,716,619.00	60,273,292.95
2.A	RESERVE & SURPLUS - PLAN	0.00	0.00	0.00	0.00
2.B	RESERVE & SURPLUS - NON PLAN	63,826,964.50	15,314,650.00	30,000.00	79,111,614.50
2.C	RESERVE & SURPLUS - PROJECT	53,397,597.31	12,592,314.64	5,716,619.00	60,273,292.95
2.00	TOTAL (RESERVE & SURPLUS)	117,224,561.81	27,906,964.64	5,746,619.00	139,384,907.45

SCHEDULE - III: EARMARKED/ ENDOWMENT FUNDS:

Non Plan:					
S No	Particulars	Balance as on 01.04.2015	Additions during the year	Deduction/Adj during the year	Balance as on 31.03.2016
3.2.1	Basant Scholarship Fund	135,784.00	14,379.00	0.00	150,163.00
3.2.2	Benevolent Fund	7,940,804.00	1,802,851.00	1,061,000.00	8,682,655.00
3.2.3	Bihar Chief Minister Relief Fund	183,387.00			183,387.00
3.2.4	Budhwanti Mrig Memo. Sch.Fund	6,249,893.00	762,030.00	104,000.00	6,907,923.00
3.2.5	Director's Discretionary Fund	4,267.00			4,267.00
3.2.6	Endowment Fund (Corpus fund under B.G.Scheme)	616,727,964.10	174,224,719.79	558,066,360.00	232,886,323.89
3.2.7	HOD Discretionary Fund	81,278.00			81,278.00
3.2.8	House Building Revolving Fund	7,741,437.00			7,741,437.00
3.2.9	Ishan Rajbanshi Merit Scholarship	658,166.00	0.00	30,000.00	628,166.00
3.2.10	ISM Alumni Award Fund	1,894,500.00	1,692,771.00	0.00	3,587,271.00
3.2.11	ISS Scholarship Fund	147,194.00	23,909.00	9,000.00	162,103.00
3.2.12	Late J D M Dhawan M G Med End Fund	100,267.00	16,379.00	0.00	116,646.00
3.2.13	Matching grant for Deptt Societies	184,800.00			184,800.00
3.2.14	Mess Subsidy Fund	10,742,235.00	1,000.00	0.00	10,743,235.00
3.2.15	Platinum Jubilee Fund	2,500.00			2,500.00
3.2.16	Student Aid Fund	114,487.00			114,487.00
3.2.17	Student Medical Fund	7,131,173.00	3,695,750.00	18,500.00	10,808,423.00
3.2.18	Student Welfare Fund	213,090.00			213,090.00
3.2.19	Sub-total Non-Plan	660,253,226.10	182,233,788.79	559,288,860.00	283,198,154.89
Project: Chair & Scholarship Funds (Earmarked Funds)					

S No	Particulars	Balance as on 01.04.2015	Additions during the year	Deduction/Adj during the year	Balance as on 31.03.2016
Scholarship / Award Funds					
3.3.1	ATLAS CAPCO SCH. FUND	511,254.00	0.00	18,000.00	493,254.00
3.3.2	Bhaskar Bhattacharya Memorial Fund	733,126.99	3,060.00	33,330.00	702,856.99
3.3.3	D N Prasad Memorial Fund	95,102.10	7,608.00	0.00	102,710.10
3.3.4	Inderjeet & Satyawat Bodhwar Scholarship	248,296.00	22,684.00	4,000.00	266,980.00
3.3.5	ISM AANA Scholarship Award	0.00	323,117.00	315,274.00	7,843.00
3.3.6	Late Mrs. Chitra Bhattacharya Memorial Fund	0.00	330,000.00	0.00	330,000.00
3.3.7	L J JHONSON AWARD	226,305.00	0.00	0.00	226,305.00
3.3.8	Mata Gurdev Kaur Memorial Fund	53,056.00	4,164.00	1,000.00	56,220.00
3.3.9	Mitali Sen Gold Medal Memorial End. Fund	503,620.00	0.00	50,000.00	453,620.00
3.3.10	NAA Scholarship Fund	557,500.00	199,338.00	0.00	756,838.00
3.3.11	Nirja Sahay Memorial Fund	119,080.00	0.00	0.00	119,080.00
3.3.12	N K Mukherjee Momorial Fund	72,695.00	5,816.00	0.00	78,511.00
3.3.13	Paritosh & Patikrit End. Fund	259,023.00	20,162.00	7,000.00	272,185.00
3.3.14	Petroleum Deptt. Endow Fund	336,504.16	26,920.00	0.00	363,424.16
3.3.15	Platinum Jubilee Fund	429,193.11	34,335.00	0.00	463,528.11
3.3.16	Poonam (Khanna) Singh Endowmend Mem Fund	1,742,063.00	100,000.00	200,000.00	1,642,063.00
3.3.17	Prof N L Sharma Mem Fund	195,785.00	15,352.00	3,885.00	207,252.00
3.3.18	Prof S Srinivasan Mem. Fund	72,168.00	5,773.00	0.00	77,941.00
3.3.19	Renuka Rajhans Memorial Gold Medal Fund	356,325.00	0.00	0.00	356,325.00
3.3.20	Rollong Scholarship	94,110.00	7,529.00	0.00	101,639.00
3.3.21	S.L Sehgal Scholarship	365,907.00	28,633.00	8,000.00	386,540.00
3.3.22	Smt. Kaushalia Devi Gold Medal	210,977.00	16,878.00	0.00	227,855.00
3.3.23	Smt Sneh Lata Srivastava Memorial Gold Medal	193,264.00	58,207.00	0.00	251,471.00
3.3.24	Subarna & Shashibhushan Bharracharya Mem End Fund	239,975.00	19,199.00	0.00	259,174.00
3.3.25	Vishesvaraya Ph.D Scheme for Elec & IT		812,500.00	0.00	812,500.00
3.3.26	Total Scholarship/Award funds	7,615,329.36	2,041,275.00	640,489.00	9,016,115.36
Chair Funds:					
3.3.27	CIL Chair for Mining Deptt.	22,823,370.00	2,861,285.00	2,745,858.56	22,938,796.44
3.3.28	MoLE Chair Professor Fund	10,103,583.00	1,309,406.00	833,957.00	10,579,032.00
3.3.29	NMDC Chair for Open Cast Mining	25,459,136.00	2,465,801.00	1,544,264.00	26,380,673.00
3.3.30	ONGC Chair	9,690,245.12	985,172.00	564,667.54	10,110,749.58
3.3.31	Rajeev Gandhi Memorial Chair	24,343,855.43	2,293,023.00	1,957,780.35	24,679,098.08
3.3.32	SAIL NMDC Chair (Gr.Rs.5000000)	26,166,306.78	4,538,091.00	3,245,317.30	27,459,080.48
3.3.33	Sandvik Chair Prof. Fund	7,654,486.09	1,636,307.00	2,744,615.09	6,546,178.00
3.3.34	Tata Steel Chair	20,625,651.33	2,245,055.00	681,810.33	22,188,896.00
3.3.35	URANIUM CHAIR	11,751,121.66	2,460,086.00	2,009,349.66	12,201,858.00
3.3.36	Total Chair Funds	158,617,755.41	20,794,226.00	16,327,619.83	163,084,361.58
3.3.37	Total Chairs & Scholarship funds	166,233,084.77	22,835,501.00	16,968,108.83	172,100,476.94

3.A	EARMARKED/ ENDOWMENT FUND - PLAN	0.00	0.00	0.00	0.00
3.B	EARMARKED/ ENDOWMENT FUND - NON PLAN	660,253,226.10	182,233,788.79	559,288,860.00	283,198,154.89
3.C	EARMARKED/ ENDOWMENT FUND - PROJECT	166,233,084.77	22,835,501.00	16,968,108.83	172,100,476.94
3.00	TOTAL EARMARKED/ ENDOWMENT FUND	826,486,310.87	205,069,289.79	576,256,968.83	455,298,631.83

SCHEDULE- IV: CURRENT LIABILITIES & PROVISIONS

CURRENT LIABILITIES:(Plan)					
A	Statutory Liabilities:	Balance as on 01.04.2015	Additions during the year	Deduction/Adj during the year	Balance as on 31.03.2016
4.1.1	Income Tax	0.00	1,720,952.00	1,720,952.00	0.00
4.1.2	Income Tax 94 J	0.00	322,679.00	322,679.00	0.00
4.1.3	Labour Welfare CESS	0.00	362,130.00	362,130.00	0.00
4.1.4	Sales Tax	0.00	1,448,492.00	1,448,492.00	0.00
4.1.5	Service Tax	0.00	0.00	0.00	0.00
4.1.6	Sub Total	0.00	3,854,253.00	3,854,253.00	0.00
B	Other Current Liabilities:				
4.1.7	BRS Liability	827,178.00	211,390.50	0.00	1,038,568.50
4.1.8	Earnest/Security Money-contractors	11,375,122.00	4,504,259.00	6,373,194.00	9,506,187.00
4.1.9	Jasper Hostel	67,500.00	0.00	0.00	67,500.00
4.1.10	License Fee	6,400.00	3,200.00	9,600.00	0.00
4.1.11	Miscellaneous Receipt	0.00			0.00
4.1.12	Non Plan Control A/c	52,792,944.36	29,934,465.00	52,792,944.00	29,934,465.36
4.1.13	Non Plan Control Endowment A/c	0.00	11,339,254.00	0.00	11,339,254.00
4.1.14	PF Control Account	0.00			0.00
4.1.15	Project Control Account	18,713,916.19	1,347,876.00	0.00	20,061,792.19
4.1.16	Room Rent	0.00			0.00
4.1.17	Sub-total	83,783,060.55	47,340,444.50	59,175,738.00	71,947,767.05
4.1.18	Total Current Liabilities & Provisions (Plan)	83,783,060.55	51,194,697.50	63,029,991.00	71,947,767.05
CURRENT LIABILITIES:(Non Plan)					
A	Statutory Liabilities:	Balance as on 01.04.2015	Additions during the year	Deduction/Adj during the year	Balance as on 31.03.2016
4.2.1	Income Tax (TDS) - Contractors	0.00	6,019,591.00	6,208,101.00	-188,510.00
4.2.2	Income Tax (TDS) - Contr-Project	0.00	19,846.00	19,846.00	0.00
4.2.3	Income Tax (TDS) - Emplo-Project	0.00	11,996,792.00	11,996,792.00	0.00
4.2.4	Income Tax (TDS) - Employees	0.00	56,903,407.00	56,903,407.00	0.00
4.2.5	Income Tax (TDS) - Guest Faculty	17,170.00	439,737.00	456,907.00	0.00
4.2.6	Income Tax (TDS) - Plan	0.00	1,688,061.00	1,688,061.00	0.00
4.2.7	Income Tax (TDS) - Plan-Profession	0.00	110,958.00	110,958.00	0.00
4.2.8	Income Tax (TDS) - TEQIP II	0.00	0.00	0.00	0.00
4.2.9	Income Tax (TDS) - U/S I	0.00	0.00	0.00	0.00
4.2.10	Jharkhand State Prof. Tax	100.00	1,018,412.00	1,018,512.00	0.00
4.2.11	Labour Welfare	0.00	139,245.00	139,245.00	0.00
4.2.12	Sales Tax	0.00	563,171.00	563,171.00	0.00

4.2.13	Service Tax	8,820.00	2,786,653.00	2,785,994.00	9,479.00
4.2.14	Service Tax- Project	0.00	13,851,126.00	13,851,126.00	0.00
	Sub Total	26,090.00	95,536,999.00	95,742,120.00	-179,031.00
B	Other Liabilities:				
4.2.15	Accidental Insurance	0.00	0.00	0.00	0.00
4.2.16	Advance Fee	522,094.00	0.00	0.00	522,094.00
4.2.17	Advance Fee from IIT-JEE	42.00	0.00	0.00	42.00
4.2.18	Alumni Subscription	1,196,500.00	1,124,500.00	27,500.00	2,293,500.00
4.2.19	ANREMT	1,000.00	0.00	0.00	1,000.00
4.2.20	Backward Scholarship A/c	33,570.00	0.00	0.00	33,570.00
4.2.21	Basant Subscription	104,050.00	1,459,100.00	1,398,700.00	164,450.00
4.2.22	Bihar SC/ST Scholarship	49,560.00	0.00	0.00	49,560.00
4.2.23	BRS Liability	1,163,070.00	433,307.28	0.00	1,596,377.28
4.2.24	Canara Bank SDL Loan Recovery	0.00	8,784,763.00	8,784,763.00	0.00
4.2.25	Central Sector Scholarship for SC	8,948.00	1,765,632.00	1,887,332.00	-112,752.00
4.2.26	Central Sector Scholarship for ST	70,801.00	1,767,787.00	1,838,588.00	0.00
4.2.27	Children Activity Centre	5,960.00	118,400.00	118,400.00	5,960.00
4.2.28	Concetto	0.00	0.00	0.00	0.00
4.2.29	Court Attachment Deduction	0.00	32,700.00	32,700.00	0.00
4.2.30	CPF Subscription & Loan Recovery	0.00	13,712,000.00	13,712,000.00	0.00
4.2.31	CSLS	9,882.00	0.00	0.00	9,882.00
4.2.32	Cyber Society	20,504.00	0.00	0.00	20,504.00
4.2.33	DCPS Subscription	148,573.00	23,801,077.00	23,359,357.00	590,293.00
4.2.34	DST Inspire Scholarship	-1,090,967.00	9,440,000.00	8,488,539.00	-139,506.00
4.2.35	EMD from parties	12,181,277.00	16,376,398.00	12,545,568.00	16,012,107.00
4.2.36	Executive MBA	2,723,338.00	2,823,341.00	2,795,338.00	2,751,341.00
4.2.37	ISM IIIF Mech Engg	0.00	3,366,251.00	2,274,264.00	1,091,987.00
4.2.38	ISM IIIF ECE	0.00	1,693,995.00	1,218,396.00	475,599.00
4.2.39	ISM IIIF Electrical Engg	0.00	5,426,844.00	3,746,842.00	1,680,002.00
4.2.40	ISM IIIF CSE	0.00	3,404,161.00	2,366,477.00	1,037,684.00
4.2.41	GIS Premium	107,690.00	1,553,466.00	1,570,702.00	90,454.00
4.2.42	GPF Subscription & Loan Recovery	500.00	41,064,160.00	41,064,160.00	500.00
4.2.43	Hostel Security Deposit	12,373,500.00	0.00	0.00	12,373,500.00
4.2.44	IEEE Student Chapter	0.00	0.00	0.00	0.00
4.2.45	Indo-Afgan Scholarship	0.00	0.00	0.00	0.00
4.2.46	Inspire Internship	0.00	0.00	0.00	0.00
4.2.47	ISM 89 Silver Jubilee Fund	2,550,000.00	300,055.00	0.00	2,850,055.00
4.2.48	Jasper Hostel	49,500.00	0.00	0.00	49,500.00
4.2.49	Liability Towards Convocation	0.00	1,543,320.00	0.00	1,543,320.00
4.2.50	Library Securiry	851,687.00	0.00	0.00	851,687.00
4.2.51	LIC Premium	30,998.00	5,729,043.00	5,729,031.00	31,010.00
4.2.52	Lok Sabha Election 2014	400.00	265,800.00	248,200.00	18,000.00
4.2.53	Miscellaneous Receipts	450,429.00	1,081,613.00	1,212,005.00	320,037.00
4.2.54	Muqabla Tournament	1,894.00	0.00	0.00	1,894.00
4.2.55	Music Club	14,420.00	0.00	0.00	14,420.00
4.2.56	NEC Merit Scholarship	10,600.00	0.00	0.00	10,600.00
4.2.57	NPESMD 2011	0.00	0.00	0.00	0.00

4.2.58	Outside scholarship Control A/c	2,169,038.00	433,340.00	392,908.00	2,209,470.00
4.2.59	Outside Travel Assistance	0.00	0.00	0.00	0.00
4.2.60	Outstanding Expenses	42,081,470.00	43,589,552.00	42,081,470.00	43,589,552.00
4.2.61	Parliament Election Advance 2009	1,200.00	0.00	0.00	1,200.00
4.2.62	PF Control Account	-1,125,740.00	13,701,827.00	10,000,000.00	2,576,087.00
4.2.63	Photographic Society	9,548.00	0.00	0.00	9,548.00
4.2.64	PM Relief Fund	0.00	66,250.00	66,250.00	0.00
4.2.65	Post Office CTD/RD	0.00	399,200.00	399,200.00	0.00
4.2.66	Prakram 11	723.00	0.00	0.00	723.00
4.2.67	RAIT 2012	0.00	0.00	0.00	0.00
4.2.68	Relief fund (DBS)	64,593.00	70,700.00	70,700.00	64,593.00
4.2.69	Remmuneration of GJLT/ Penman	-16,250.00	0.00	0.00	-16,250.00
4.2.70	Scolomin Club	2,800.00	302,950.00	300,350.00	5,400.00
4.2.71	Security Deposit from parties	8,185,884.00	5,286,603.00	4,549,532.00	8,922,955.00
4.2.72	SRIJAN	699,000.00	347,000.00	1,013,000.00	33,000.00
4.2.73	Staff Recreation Club	0.00	322,800.00	322,800.00	0.00
4.2.74	Student Caution Money	37,625,951.00	18,900,000.00	7,735,000.00	48,790,951.00
4.2.75	Student Insurance Scheme	2,134,894.00	6,716,404.00	5,196,488.00	3,654,810.00
4.2.76	Student Loan	34,000.00	181,700.00	215,700.00	0.00
4.2.77	Student Uniform Deposit	6,350,827.00	238,000.00	2,079,000.00	4,509,827.00
4.2.78	Undisbursed Pay	69,849.00	0.00	69,849.00	0.00
4.2.79	Unpaid Liability	170,093.00	16,800.00	8,950.00	177,943.00
4.2.80	Vidhan Sabha Election Advance	4,400.00	0.00	0.00	4,400.00
4.2.81	Sub Total	132,052,100.00	237,640,839.28	208,920,059.00	160,772,880.28
4.2.82	Total Current Liabilities (N Plan)	132,078,190.00	333,177,838.28	304,662,179.00	160,593,849.28
4.2.83	Total Current Liabilities & Provisions (Non Plan)	132,078,190.00	333,177,838.28	304,662,179.00	160,593,849.28
Project: Current Liabilities & Provisions					
SI No	Particulars	Balance as on 01.04.2015	Additions during the year	Deduction/Adj during the year	Balance as on 31.03.2016
A	Statutory Liabilities:				
4.3.1	Income Tax Empl - CIL Chair	0.00	239,064.00	239,064.00	0.00
4.3.2	Income Tax Contractors	0.00	73,581.00	73,068.00	513.00
4.3.3	Income Tax Employees	8,240.00	12,215,949.00	12,224,189.00	0.00
4.3.4	Income Tax Empl - Rajeev Gandhi Chair	0.00	486,707.00	486,707.00	0.00
4.3.5	Income Tax Empl - NMDC Chair	0.00	296,457.00	296,457.00	0.00
4.3.6	Income Tax Empl - Sandvik Chair	0.00	590,963.00	590,963.00	0.00
4.3.7	Income Tax Contractors - TEQIP-II	8.00	16,291.00	16,261.00	38.00
4.3.8	Income Tax Empl - SAIL NMDC CHAIR	0.00	383,405.00	383,405.00	0.00
4.3.9	Labour Cess Tax - TEQIP-II	0.00	5,310.00	5,310.00	0.00
4.3.10	Labour Welfare Cess	0.00	4,703.00	4,703.00	0.00
4.3.11	Sales Tax	0.00	18,810.00	18,810.00	0.00
4.3.12	SALES TAX - TEQIP-II	0.00	21,242.00	21,242.00	0.00
4.3.13	Service Tax	1,100.00	13,847,639.00	13,848,739.00	0.00
	Sub-total	9,348.00	28,200,121.00	28,208,918.00	551.00

Project : Other Current Liabilities

(a) UGC Sponsored Projects		Balance as on 01.04.2015	Additions during the year	Deduction/Adj during the year	Balance as on 31.03.2016
4.3.14	JRF/SRF Fellowship (F.17-161/98(SA-1)	426,637.00			426,637.00
4.3.15	Spl. Assistance/CAS Programme	1,034,801.32			1,034,801.32
4.3.16	UGC/161/98/JRF	146,566.00	6,655.00	153,221.00	0.00
4.3.17	UGC/192/AC	64,104.00			64,104.00
4.3.18	UGC/193/APPL. MATHS	3,700.00			3,700.00
4.3.19	UGC/195/APPL. MATHS	71,671.00			71,671.00
4.3.20	UGC/2007/BSR/7-79	62,902.00	2,265,367.00	1,296,427.00	1,031,842.00
4.3.21	UGC/202/FME	201,192.00		201,192.00	0.00
4.3.22	UGC/204/AM	7,653.00			7,653.00
4.3.23	UGC/205/PET ENGG.	480,781.00			480,781.00
4.3.24	UGC/206/PE	150,000.00		150,000.00	0.00
4.3.25	UGC/214(43)/2008-09/AM	1,207,403.00			1,207,403.00
4.3.26	UGC/222/(34)/2008-09/MS	14,969.00			14,969.00
4.3.27	UGC/249/(48)/2009-10/APH	92,847.00			92,847.00
4.3.28	UGC/255/AM	9,805.00			9,805.00
4.3.29	UGC/257/APPL. PHY	3,904.00			3,904.00
4.3.30	UGC/266/PE	500,000.00			500,000.00
4.3.31	UGC/277/APH	9,533.00	361,871.00	352,000.00	19,404.00
4.3.32	UGC/278/APH	3,204.00			3,204.00
4.3.33	UGC/279/EE			1,804.00	-1,804.00
4.3.34	UGC/283/APH	47,648.00	310,886.00	310,886.00	47,648.00
4.3.35	UGC/284/FME	38,143.00			38,143.00
4.3.36	UGC/285/AC	18,819.00			18,819.00
4.3.37	UGC/286/AM	34,304.00			34,304.00
4.3.38	UGC/287/APH	13,869.00	328,365.00	332,445.00	9,789.00
4.3.39	UGC/288/10-11/ME&MME	19,450.00			19,450.00
4.3.40	UGC/289/HSS/10-11	110,412.00			110,412.00
4.3.41	UGC/292/AM	6.00			6.00
4.3.42	UGC-295/DCSR.APH	160.00			160.00
4.3.43	UGC/296/11-12/AGP	2,723,445.00		287,128.00	2,436,317.00
4.3.44	UGC/297/ECE	73,112.00		48,711.00	24,401.00
4.3.45	UGC/298/AM	25,284.00		25,284.00	0.00
4.3.46	UGC/313/EE/12-13	19,353.00		19,353.00	0.00
4.3.47	UGC/316/CSE/2012-13	94,842.00		1,750.00	93,092.00
4.3.48	UGC/317/AGL/2012-13	375,091.00		210,000.00	165,091.00
4.3.49	UGC/318/ESE/2012-13	74,074.00		73,547.00	527.00
4.3.50	UGC/319/2012-13/AM	162,615.00		162,115.00	500.00
4.3.51	UGC/323/APH	120,731.00		120,546.00	185.00
4.3.52	UGC/330/MS	41,358.00	444,800.00	420,130.00	66,028.00
4.3.53	UGC/331/13-14/MS	75,846.00		1,073.00	74,773.00
4.3.54	UGC/332/MS	8,605.00			8,605.00
4.3.55	UGC/333/MS	924.00			924.00
4.3.56	UGC/334/PF	105,402.00		69,969.00	35,433.00
4.3.57	UGC/335/PE/2013-14	127,972.00		121,315.00	6,657.00
4.3.58	UGC/336/PE/2013-14	57,846.00		56,000.00	1,846.00

4.3.59	UGC/337/AM/2013-14	79,558.00		66,142.00	13,416.00
4.3.60	UGC/340/2013-14/PE	185,668.00		185,470.00	198.00
4.3.61	UGC/341/2013-15/EC	172,742.00		18,091.00	154,651.00
4.3.62	UGC/342/2013-14/EE	88,223.00	30,774.00	88,175.00	30,822.00
4.3.63	UGC/343/2013-14/ECE	55,359.00		55,315.00	44.00
4.3.64	UGC/345/2013-14/EE	607,460.00		605,938.00	1,522.00
4.3.65	UGC/346/EE	50,536.00		27,461.00	23,075.00
4.3.66	UGC/347/2013-14/EE	513,768.00		6,596.00	507,172.00
4.3.67	UGC/353/MECH/2013-14	1,005,102.00		958,918.00	46,184.00
4.3.68	UGC/354/MECH/2013-14	84,209.00		15,409.00	68,800.00
4.3.69	UGC/98/JRF/F.17-161	1,446,053.00	2,387,303.00	3,376,619.00	456,737.00
4.3.70	UGC/98/JRF/GYAN PRAKASH		444,161.00	261,210.00	182,951.00
4.3.71	UGC/CAS/ME Phase-II (Grants)	484,687.87			484,687.87
4.3.72	UGC/HEPSN-TEPSE	418,302.00			418,302.00
4.3.73	UGC Misc. Project	500,000.00			500,000.00
4.3.74	UGC/SAP/179/AGP/Phase-III	217,006.00			217,006.00
4.3.75	UGC/SAP/AGP Phase - II	190,112.00			190,112.00
4.3.76	UGC/ ST/ SC/ SCHOLARSHIP (PROJECT)	147,904.00		147,904.00	0.00
4.3.77	UGC - Unassigned Grant	137,161.75			137,161.75
4.3.78	Sub total (UGC Projects)	15,244,834.94	6,580,182.00	10,228,144.00	11,596,872.94
(b) Other R&D Projects:		Balance as on 01.04.2015	Additions during the year	Deduction/Adj during the year	Balance as on 31.03.2016
4.3.79	AICTE/EFIP/PS/ME/06	110,000.00		110,000.00	0.00
4.3.80	AICTE/NDF/NK/07	217,012.00			217,012.00
4.3.81	AICTE/NDF/Shankar	45,000.00			45,000.00
4.3.82	CIL/410/AGP/2014-15	8,000,000.00	4,000,000.00	6,159,870.00	5,840,130.00
4.3.83	CME-4079	445,269.00			445,269.00
4.3.84	CME-ENVIS	42,928.00	1,344,033.00	1,355,337.00	31,624.00
4.3.85	CSIR/029	0.40			0.40
4.3.86	CSIR/09/85(102)2009-EMR-1	645.00			645.00
4.3.87	CSIR/108/2012-EMR-I		327,200.00	327,200.00	0.00
4.3.88	CSIR/109/2012-EMR-I	12.00	227,988.00	227,200.00	800.00
4.3.89	CSIR/110/2013 EMR-1	295.00	211,705.00	211,467.00	533.00
4.3.90	CSIR/111/14/EMR I		243,849.00	243,849.00	0.00
4.3.91	CSIR/112/EMRI		304,505.00	298,807.00	5,698.00
4.3.92	CSIR/13/EMR		53,333.00	52,660.00	673.00
4.3.93	CSIR/250/AC	541,645.00			541,645.00
4.3.94	CSIR/314/CSE/12-13	319,330.00		19,147.00	300,183.00
4.3.95	CSIR/326/2012-13/PE	129,077.00	6,825.00	129,818.00	6,084.00
4.3.96	CSIR/327/ME/2012-13	2,628,263.00	3,788,500.00	1,126,199.00	5,290,564.00
4.3.97	CSIR/362/AM/12-13	2,013.00	400,467.00	227,497.00	174,983.00
4.3.98	CSIR/369/PE/2013-14	698,617.00	304,174.00	780,306.00	222,485.00
4.3.99	CSIR/371/AC/13-14	2,857.00	732,267.00	529,943.00	205,181.00
4.3.100	CSIR/380/APH/2013-14	1,001,843.00	148,157.00	159,986.00	990,014.00
4.3.101	CSIR/430/15-16/AM		356,000.00	116,427.00	239,573.00
4.3.102	CSIR/ADHOC FELLOWSHIP GRANT	81,000.00		81,000.00	0.00

4.3.103	DAE/309/(2)2012-13/AM	119,987.00		119,987.00	0.00
4.3.104	DAE/375/AGL/2013-14	346,441.00		39,556.00	306,885.00
4.3.105	DAE/386/APH/2014-15	1,511,750.00		471,333.00	1,040,417.00
4.3.106	DBT/440/FME/2015-16		1,490,000.00	73,141.00	1,416,859.00
4.3.107	DEPT OF SCI & ENGG (GOI)	0.00	1,829,448.00	0.00	1,829,448.00
4.3.108	DRDO/401/2014-15/ECE	1,480,000.00		232,287.00	1,247,713.00
4.3.109	DRDO/431/15-16/CSE		1,033,780.00	30,968.00	1,002,812.00
4.3.110	DRDO/437/MECH. ENGG./15-16		8,075,000.00	724,732.00	7,350,268.00
4.3.111	DRDO/444/MECH.ENGG/2015-16		449,978.00	65,250.00	384,728.00
4.3.112	DST/11/MS/14-15		75,000.00	75,000.00	0.00
4.3.113	DST/12/AGP/14-15	5,198.00	49,557.00	54,755.00	0.00
4.3.114	DST/143/inspire Faculty Award/2014		1,900,000.00	1,900,000.00	0.00
4.3.115	DST/14/MATHS/15-16		627,250.00	415,000.00	212,250.00
4.3.116	DST/15/MS/15-16		175,000.00	175,000.00	0.00
4.3.117	DST/161/ME&MME		194,409.00		194,409.00
4.3.118	DST/16/AGL/15-16		293,000.00		293,000.00
4.3.119	DST/214/AC/07-08	3,393.00			3,393.00
4.3.120	DST/216/ME/07-08	95,341.00			95,341.00
4.3.121	DST/223/AM/08-09	86,307.00			86,307.00
4.3.122	DST/235/E&I/08-09	108,973.00			108,973.00
4.3.123	DST/244/MEMME/08-09	5,810.00			5,810.00
4.3.124	DST/269/AP/10-11	2,978.00			2,978.00
4.3.125	DST/274/AM/10-11	24,178.00			24,178.00
4.3.126	DST/276/AGL/10-11	160,000.00			160,000.00
4.3.127	DST/280/AGP/10-11	3,534,989.00		86,267.00	3,448,722.00
4.3.128	DST/281/AC/10-11	16,079.00			16,079.00
4.3.129	DST/299/2011-12/APH	327,626.00			327,626.00
4.3.130	DST/300/AGL/11-12	41,644.00	300,000.00	341,644.00	0.00
4.3.131	DST/301/AGL/11-12	8,291.00	300,000.00	307,657.00	634.00
4.3.132	DST/303/2012-13/AGL	167,953.00	200,000.00	254,927.00	113,026.00
4.3.133	DST/304/AGL/11-12	126,741.00		126,741.00	0.00
4.3.134	DST/310/(65)/2012-13/ME	2,815,048.00		2,815,048.00	0.00
4.3.135	DST/311/ECE/2012-13	35,538.00		35,538.00	0.00
4.3.136	DST/312/AC/12-13	94,186.00		94,186.00	0.00
4.3.137	DST/315/AC/12-13	217,583.00		214,715.00	2,868.00
4.3.138	DST/324/ECE/12-13	26,956.00	40,000.00	34,621.00	32,335.00
4.3.139	DST/325/2012-13/PE	8,300.00	400,000.00	208,933.00	199,367.00
4.3.140	DST/339/ME&MME/2013-14	505,585.00		59,540.00	446,045.00
4.3.141	DST/344/ECE/2013-14	5,414,954.00		3,655,050.00	1,759,904.00
4.3.142	DST/348/2013-14/AC	1,653,781.00		660,169.00	993,612.00
4.3.143	DST/349/13-14/MME	994,249.00	200,000.00	790,718.00	403,531.00
4.3.144	DST/350/2013-14/PE	736,041.00		570.00	735,471.00
4.3.145	DST/351/13-14/AGL	250,575.00	300,000.00	302,609.00	247,966.00
4.3.146	DST/352/AGP/2013-14	225,314.00	400,000.00	544,911.00	80,403.00
4.3.147	DST/356/13-14/AC	3,401,191.00		3,240,267.00	160,924.00
4.3.148	DST/358/2013-14/AGL	178,942.00		53,677.00	125,265.00
4.3.149	DST/359/APPL. PHYSICS/13-14	270,354.00		9,440.00	260,914.00

4.3.150	DST/360/MECH. ENGG	1,344,080.00		992,501.00	351,579.00
4.3.151	DST/361/AGL (FIST)/2013-14	11,492,159.00	262,001.00	7,707,190.00	4,046,970.00
4.3.152	DST/363/CE	389,446.00	300,000.00	368,566.00	320,880.00
4.3.153	DST/364/2013-14/AGP	219,882.00	600,000.00	544,804.00	275,078.00
4.3.154	DST/365/2013-14/AGP	272,838.00	300,000.00	292,688.00	280,150.00
4.3.155	DST/366/13-14/AM	370,840.00	450,000.00	526,007.00	294,833.00
4.3.156	DST/368/MECH/2013-14	3,729,348.00	500,000.00	3,287,395.00	941,953.00
4.3.157	DST/370/AC/2013-14	334,243.00	500,000.00	495,000.00	339,243.00
4.3.158	DST/372/2013-14/AC(FIST)	14,987,951.00		8,477.00	14,979,474.00
4.3.159	DST/373/APPL. PHY./13-14	1,070,479.00	550,000.00	432,927.00	1,187,552.00
4.3.160	DST/374/2013-14/AC	1,526,968.00	5,866.00	1,416,690.00	116,144.00
4.3.161	DST/376/APH/13-14	8,077,197.00		1,543,668.00	6,533,529.00
4.3.162	DST/378/APPL. PHY/13-14	902,819.00	500,000.00	1,083,067.00	319,752.00
4.3.163	DST/379/APPLIED PHYSICS/13-14	1,938,063.00		141,416.00	1,796,647.00
4.3.164	DST/381/2013-14/ESE	884,792.00		286,018.00	598,774.00
4.3.165	DST/382/APPLIED PHYSICS	0.00	900,000.00	0.00	900,000.00
4.3.166	DST/382/APPLIED PHYSICS/2013-14	741,775.00		222,982.00	518,793.00
4.3.167	DST/383/APPL. PHYSICS/13-14	970,000.00		469,692.00	500,308.00
4.3.168	DST/384/AGP/14-16	1,962,296.00	500,000.00	2,091,487.00	370,809.00
4.3.169	DST/385/APH/14-15	358,677.00	500,000.00	622,264.00	236,413.00
4.3.170	DST/387/2014-15/AC	1,299,530.00		1,344,210.00	-44,680.00
4.3.171	DST/388/2014-15/AC	1,752,645.00		1,725,883.00	26,762.00
4.3.172	DST/389/FME/2014-15	1,376,868.00		269,171.00	1,107,697.00
4.3.173	DST/390/14-15/APH	2,517,367.00	500,000.00	938,662.00	2,078,705.00
4.3.174	DST/391/ME/2014-15	312,063.00	300,000.00	421,977.00	190,086.00
4.3.175	DST/392/14-15/AC	1,527,738.00	400,000.00	871,793.00	1,055,945.00
4.3.176	DST/393/AM (FIST)/2014-15	2,162,380.00		1,388,582.00	773,798.00
4.3.177	DST/394/14-15/AC	1,609,878.00		41,586.00	1,568,292.00
4.3.178	DST/395/MS/14-15	150,627.00	300,000.00	406,063.00	44,564.00
4.3.179	DST/398/AC/14-15	3,318,158.00		487,965.00	2,830,193.00
4.3.180	DST/403/PE/2014-15	8,200,000.00			8,200,000.00
4.3.181	DST/404/AGL/14-15	1,030,000.00	401,600.00	1,389,687.00	41,913.00
4.3.182	DST/405/MECH/2014-15	2,210,000.00		751,216.00	1,458,784.00
4.3.183	DST/409/2014-15/AGL	1,150,000.00		874,663.00	275,337.00
4.3.184	DST/415/AC		2,175,000.00	390,010.00	1,784,990.00
4.3.185	DST/418/AC		809,488.00	520,336.00	289,152.00
4.3.186	DST/420/15-16/CSE		1,313,000.00	252,364.00	1,060,636.00
4.3.187	DST/421/2015-16/APPL. PHYSICS		1,250,000.00	185,715.00	1,064,285.00
4.3.188	DST/422/2015-16/ APPL. CHEMISTRY		3,100,000.00	156,997.00	2,943,003.00
4.3.189	DST/423/AGL/2015-16		1,195,000.00	42,616.00	1,152,384.00
4.3.190	DST/427/2015-16/AM		650,000.00	41,500.00	608,500.00
4.3.191	DST/429/ESE/15-16		1,600,000.00	225,284.00	1,374,716.00
4.3.192	DST/432/15-16/ECE		2,023,700.00	100,000.00	1,923,700.00
4.3.193	DST/432/2015-16/APH		1,150,000.00	170,140.00	979,860.00
4.3.194	DST/433/2015-16/APPL. PHY.		1,790,000.00	150,068.00	1,639,932.00

4.3.195	DST/442/ECE/2015-16		180,000.00	79,678.00	100,322.00
4.3.196	DST/445/15-16/ME		292,000.00	266,277.00	25,723.00
4.3.197	DST/446/MME/15-16		1,940,000.00	100,000.00	1,840,000.00
4.3.198	DST /447/AGL/128/15-16		3,000,000.00	150,000.00	2,850,000.00
4.3.199	DST/448/2015-16/CHEM.ENGG		1,638,333.00	150,000.00	1,488,333.00
4.3.200	DST/452/SERB/AGL/15-16		2,965,000.00	100,000.00	2,865,000.00
4.3.201	DST/454/MECHANICAL/2015		1,896,666.00	112,000.00	1,784,666.00
4.3.202	DST/455/MECHANICAL ENGG/15-16		2,280,932.00		2,280,932.00
4.3.203	DST/457/APPLIED GEOLOGY/15-16		1,430,000.00		1,430,000.00
4.3.204	DST/458/ELECTRICAL ENGG		2,188,750.00	128,000.00	2,060,750.00
4.3.205	DST/459/CIVIL ENGG/2015-16		1,456,666.00		1,456,666.00
4.3.206	DST/460/CIVIL ENGG/2015-16		1,908,333.00	82,600.00	1,825,733.00
4.3.207	DST/479/inspire Fellowship/2012		423,200.00	242,897.00	180,303.00
4.3.208	DST/Inspire Faculty/2013-17	976,925.00		746,710.00	230,215.00
4.3.209	DST/ Inspire Faculty Award AGL/14	1,334,684.00		907,848.00	426,836.00
4.3.210	DST/INSPIRE FACULTY WARD14/LSPA-25		1,900,000.00	1,104,881.00	795,119.00
4.3.211	DST/SCIENCE INSPIRE CAMP		1,100,000.00	943,335.00	156,665.00
4.3.212	EC(1)/2008-09/239/AGL	8,181.00			8,181.00
4.3.213	HUDCO/436/CE/2015-16		656,580.00	134,700.00	521,880.00
4.3.214	ICPR/408/HSS		180,000.00	47,401.00	132,599.00
4.3.215	ICPR/451/15-16/HSS		150,000.00		150,000.00
4.3.216	ICSSR/355/13-14/MS	88.00	22,500.00	22,430.00	158.00
4.3.217	ICSSR/414/MS		155,462.00	11,660.00	143,802.00
4.3.218	IICP(I)/2007-2008/01/FME	573,106.00			573,106.00
4.3.219	Inspire Fellowship		9,440,000.00	9,440,000.00	0.00
4.3.220	INSPIRE/JRF	39,979.00	425,021.00	374,922.00	90,078.00
4.3.221	IPEM/399/INST/2014-15	170,452.00		6,051.00	164,401.00
4.3.222	ISRO/328/2012-13/AM	89,432.00	342,000.00	307,825.00	123,607.00
4.3.223	ISRO/400/2014-15/ECE	978,875.00		269,767.00	709,108.00
4.3.224	KRC/ESE/2014-15	140,377.00	569,545.00	579,845.00	130,077.00
4.3.225	MCIT/419/CSE		3,606,000.00	292,987.00	3,313,013.00
4.3.226	MDWS/453/ESE/2015-16		1,008,000.00	100,800.00	907,200.00
4.3.227	MHRD/402/INST/14-15	14,924,219.00		335,986.00	14,588,233.00
4.3.228	MHRD/438/15-16/ (FDC)/INST		26,900,000.00	707,459.00	26,192,541.00
4.3.229	MIT/189/CSE	549.00			549.00
4.3.230	MOC/441/15-16/ME		4,000,000.00	753,921.00	3,246,079.00
4.3.231	MOC/449/CE/15-16		15,000,000.00	1,374,536.00	13,625,464.00
4.3.232	MOC(7)/2009-10/252/PE	-2,019.00	2,019.00		0.00
4.3.233	MOC(8)/2010-11/271/ME	387,205.00		387,205.00	0.00
4.3.234	MOEF/294/ (13)/2011-12.ESE	303,004.70		303,004.70	0.00
4.3.235	MOES/293/AGP/11-12	54,473.00		54,473.00	0.00
4.3.236	MOES/322/12-13/AGP	48,374.00	460,000.00	496,057.00	12,317.00
4.3.237	MOES/357/2013-14/AGP	1,704,456.00	500,000.00	1,530,452.00	674,004.00
4.3.238	MOES/396/ESE/2014-15	1,047,515.00		433,137.00	614,378.00
4.3.239	MOES/407/2014-15/AGL	5,353,440.00		726,949.00	4,626,491.00
4.3.240	MOES/416/AGP		2,468,500.00	2,045,168.00	423,332.00

4.3.241	MOES/424/2015-16/AGL		966,000.00	616,972.00	349,028.00
4.3.242	MOES/425/2015-16/ME		2,088,140.00	112,743.00	1,975,397.00
4.3.243	MOES/426/2015-16/AGL		3,800,000.00	40,000.00	3,760,000.00
4.3.244	MoES/456/AGP/2015-16		650,000.00		650,000.00
4.3.245	MOM/329/FME/12-13	400,974.00		91,401.00	309,573.00
4.3.246	MOM/417/15-16/ME		189,500.00	14,000.00	175,500.00
4.3.247	MOM/450/2015-16/ME		2,560,000.00		2,560,000.00
4.3.248	MRD(1)2010-2011/290/ESE	65,880.00		65,880.00	0.00
4.3.249	MWR/184/MIN	97,072.00			97,072.00
4.3.250	MWR/307/AGL (2)/2011-12	18,946,745.00			18,946,745.00
4.3.251	MWR/308/ESE (3)/2012-13	1,087,168.00		584,354.00	502,814.00
4.3.252	OIDB/4111	1,871,671.51			1,871,671.51
4.3.253	OIL/321/PE/12-13	1,597,630.00		455,655.00	1,141,975.00
4.3.254	OIL/377/2013-14/PE	72,461.00	193,050.00	216,625.00	48,886.00
4.3.255	OIL/428/PE/2016		508,860.00	125,886.00	382,974.00
4.3.256	OTHER PROJECT	14,635,016.13			14,635,016.13
4.3.257	PCRA(I)/2008-10/225/ME	-19,403.00	19,403.00		0.00
4.3.258	SAC/183/AGP	4,425.00			4,425.00
4.3.259	TEQIP-II	28,402,054.00	21,131,546.00	24,307,344.00	25,226,256.00
4.3.260	UGC/397/ME/2014-15	538,862.00		199,036.00	339,826.00
4.3.261	UGC/79/2007/(BSR)			141,980.00	-141,980.00
4.3.262	Sub total (Other R&D Projects)	215,293,060.74	178,199,086.00	118,873,114.70	274,619,032.04
(c) ISM FRS PROJECTS		Balance as on 01.04.2015	Additions during the year	Deduction/Adj during the year	Balance as on 31.03.2016
4.3.263	FRS(10)/2010-2011/AC	7,218.00	0.00	0.00	7,218.00
4.3.264	FRS(11)/2010-2011/AC	2,574.00	0.00	0.00	2,574.00
4.3.265	FRS(1)2009-10/1/ESE	115,491.00	0.00	0.00	115,491.00
4.3.266	FRS(12)/2010-2011/AC	885,970.00	0.00	0.00	885,970.00
4.3.267	FRS(13)/2010-2011/AGL	1,800.00	0.00	0.00	1,800.00
4.3.268	FRS(14)/2010-2011/AGP	128,290.00	0.00	0.00	128,290.00
4.3.269	FRS(15)/2010-2011	130,066.00	0.00	0.00	130,066.00
4.3.270	FRS(16)/2010-2011	329,418.00	0.00	99.00	329,319.00
4.3.271	FRS(17)/2010-2011/AM	26,048.00	0.00	0.00	26,048.00
4.3.272	FRS(18)/2010-2011/APH	69,287.00	0.00	34,318.00	34,969.00
4.3.273	FRS(19)/2010-2011/APH	904,145.00	0.00	0.00	904,145.00
4.3.274	FRS(20)/2010-2011/EE	853,000.00	0.00	852,768.00	232.00
4.3.275	FRS(21)/2010-2011/EE	207,470.00	0.00	0.00	207,470.00
4.3.276	FRS(2)/2009-10/2/AC	4,928.00	0.00	0.00	4,928.00
4.3.277	FRS(22)/2010-2011/ECE	389.00	0.00	0.00	389.00
4.3.278	FRS(23)/2010-2011/ESE	1,659.00	0.00	0.00	1,659.00
4.3.279	FRS(24)/2010-2011/ME&MME	1,000.00	0.00	1,000.00	0.00
4.3.280	FRS(25)/2010-2011/ME&MME	219,971.00	0.00	0.00	219,971.00
4.3.281	FRS(26)/2010-2011/ME &MME	82,040.00	0.00	22,575.00	59,465.00
4.3.282	FRS(27)/2010-2011/MS	432,728.00	0.00	0.00	432,728.00
4.3.283	FRS(28)/2010-2011/PE	43,480.00	0.00	0.00	43,480.00
4.3.284	FRS(29)/2010-2011/PE	35,448.00	0.00	0.00	35,448.00
4.3.285	FRS(30)/2012-13/AC	843,557.00	0.00	22,486.00	821,071.00
4.3.286	FRS(31)/2012-13/AC	169,540.00	0.00	137,606.00	31,934.00

4.3.287	FRS(3)/2009-10/3/AC	22,857.00	0.00	0.00	22,857.00
4.3.288	FRS(32)/2012-13/AC	127,957.00	0.00	118,206.00	9,751.00
4.3.289	FRS(33)/2012-13/AM	278,194.00	0.00	3,094.00	275,100.00
4.3.290	FRS(34)/2012-13/APH	515,750.00	0.00	169,851.00	345,899.00
4.3.291	FRS(35)/2012-13/EE	429,852.00	0.00	360,937.00	68,915.00
4.3.292	FRS(36)/2012-13/EE	300,000.00	0.00	0.00	300,000.00
4.3.293	FRS(37)/2012-13/EE	387,000.00	0.00	0.00	387,000.00
4.3.294	FRS(38)/2012-13/ECE	264,500.00	0.00	0.00	264,500.00
4.3.295	FRS(39)/2012-13/ESE	800,000.00	0.00	399,852.00	400,148.00
4.3.296	FRS(40)/2012-13/ESE	362,718.00	0.00	7,350.00	355,368.00
4.3.297	FRS(41)/2012-13/ME	507,953.00	0.00	20,982.00	486,971.00
4.3.298	FRS(4)/2009-10(4)APH	86,384.00	0.00	0.00	86,384.00
4.3.299	FRS(42)/2012-13/PE	264,796.00	0.00	127,651.00	137,145.00
4.3.300	FRS(43)/13-14/AC	750,047.00	0.00	482,532.00	267,515.00
4.3.301	FRS(44)/13-14/AC	559,207.00	0.00	469,373.00	89,834.00
4.3.302	FRS(45)/13-14/AC	15,668.00	0.00	14,398.00	1,270.00
4.3.303	FRS(46)/13-14/AGL	219,625.00	0.00	111,378.00	108,247.00
4.3.304	FRS(47)/13-14/AGL	668,511.00	0.00	360,762.00	307,749.00
4.3.305	FRS(48)/13-14/AGL	540,000.00	0.00	0.00	540,000.00
4.3.306	FRS(49)/13-14/AGP	255,862.00	0.00	0.00	255,862.00
4.3.307	FRS(50)/13-14/APH	233,363.00	0.00	156,733.00	76,630.00
4.3.308	FRS(51)/13-14/APH	915,000.00	0.00	61,354.00	853,646.00
4.3.309	FRS(5)/2009-10/5/EE	1,168.00	0.00	0.00	1,168.00
4.3.310	FRS(52)/13-14/APH	562,385.00	0.00	90,033.00	472,352.00
4.3.311	FRS(53)/13-14/APH	351,473.00	0.00	0.00	351,473.00
4.3.312	FRS(54)/13-14/APH	492,538.00	0.00	448,705.00	43,833.00
4.3.313	FRS(55)/13-14/APH	168,029.00	0.00	41,226.00	126,803.00
4.3.314	FRS(56)/13-14/CHE	630,000.00	0.00	42,804.00	587,196.00
4.3.315	FRS(57)/13-14/CHE	400,000.00	0.00	149,674.00	250,326.00
4.3.316	FRS(58)/13-14/CHE	624,905.00	0.00	174,544.00	450,361.00
4.3.317	FRS(59)/13-14/CHE	650,000.00	0.00	236,566.00	413,434.00
4.3.318	FRS(60)/13-14/CHE	580,000.00	0.00	65,667.00	514,333.00
4.3.319	FRS(61)/13-14/CHE	715,220.00	0.00	0.00	715,220.00
4.3.320	FRS(6)/2009-10/6/ME&MME	300,000.00	0.00	0.00	300,000.00
4.3.321	FRS(62)/13-14/CE	519,938.00	4,939.00	0.00	524,877.00
4.3.322	FRS(63)/13-14/ECE	642,042.00	0.00	614,100.00	27,942.00
4.3.323	FRS(64)/13-14/ECE	806,554.00	0.00	768,646.00	37,908.00
4.3.324	FRS(65)/13-14/FME	655,425.00	0.00	0.00	655,425.00
4.3.325	FRS(66)/13-14/FME	818,331.00	0.00	16,973.00	801,358.00
4.3.326	FRS(67)/13-14/FME	465,070.00	0.00	0.00	465,070.00
4.3.327	FRS(68)/13-14/FME	360,359.00	0.00	279,499.00	80,860.00
4.3.328	FRS(69)/13-14/MS	230,859.00	0.00	27,547.00	203,312.00
4.3.329	FRS(70)/13-14/MECH	314,746.00	0.00	288,750.00	25,996.00
4.3.330	FRS(71)/13-14/MECH	950,000.00	0.00	948,060.00	1,940.00
4.3.331	FRS(72)/13-14/ME	121,104.00	0.00	4,351.00	116,753.00
4.3.332	FRS(73)/2014-15/AC	1,055,000.00	0.00	29,982.00	1,025,018.00
4.3.333	FRS(74)/2014-15/APH	1,090,000.00	0.00	9,900.00	1,080,100.00
4.3.334	FRS(75)/2014-15/APH	960,000.00	0.00	334,407.00	625,593.00
4.3.335	FRS(76)/2014-15/CHE	1,115,000.00	0.00	2,900.00	1,112,100.00

4.3.336	FRS(77)/2014-15/CHE	1,150,000.00	0.00	539,964.00	610,036.00
4.3.337	FRS(78)2014-15/CE	880,000.00	0.00	746,411.00	133,589.00
4.3.338	FRS(79)/2014-15/CE	950,000.00	0.00	0.00	950,000.00
4.3.339	FRS(80)2014-15/CE	880,000.00	0.00	0.00	880,000.00
4.3.340	FRS(81)/2014-15/EE	1,000,000.00	0.00	0.00	1,000,000.00
4.3.341	FRS(8)/2009-10/8/CSE	195,197.00	0.00	0.00	195,197.00
4.3.342	FRS(82)/2014-15/EE	536,000.00	0.00	94,500.00	441,500.00
4.3.343	FRS(83)/2014-15/ECE	791,000.00	0.00	156,792.00	634,208.00
4.3.344	FRS(84)/2014-15/ECE	1,000,000.00	0.00	0.00	1,000,000.00
4.3.345	FRS(85)/2014-15/ECE	675,000.00	0.00	0.00	675,000.00
4.3.346	FRS(86)/2014-15/ESE	1,322,000.00	0.00	460,358.00	861,642.00
4.3.347	FRS(87)/2014-15/FME	910,000.00	0.00	35,550.00	874,450.00
4.3.348	FRS(88)/2014-15/HSS	225,000.00	0.00	0.00	225,000.00
4.3.349	FRS(89)/2014-15/ME	800,000.00	0.00	82,114.00	717,886.00
4.3.350	FRS(9)/2009-10/9/CSE	150,145.00	0.00	0.00	150,145.00
4.3.351	Sub-total (ISM FRS PROJECTS)	41,045,249.00	4,939.00	10,625,328.00	30,424,860.00
4.3.352	Total R&D /UGC/FRS Projects (b)	271,583,144.68	184,784,207.00	139,726,586.70	316,640,764.98
(d) Other Current Liabilities:		Balance as on 01.04.2015	Additions during the year	Deduction/Adj during the year	Balance as on 31.03.2016
4.3.353	Short Term Courses	11,000.00	0.00	0.00	11,000.00
4.3.354	Central Research Facility	106,370.00	494,312.00	0.00	600,682.00
4.3.355	Earnest Money	166,750.00	0.00	0.00	166,750.00
4.3.356	Security Deposit	559,870.85	588,823.00	195,294.00	953,399.85
4.3.357	AAPG/AGL	0.00	99,000.00	99,000.00	0.00
4.3.358	ANREMT -2015	256,078.00	316,570.00	572,648.00	0.00
4.3.359	ASDPT	0.00	231,000.00	231,000.00	0.00
4.3.360	ASME	0.00	20,000.00	20,000.00	0.00
4.3.361	Athletica-2k8	206.00	0.00	0.00	206.00
4.3.362	B E Course for Afghan Students - 2014	23,409,747.00	27,152,985.00	42,666,986.00	7,895,746.00
4.3.363	Best Research Award Fund	34,280.00	180,000.00	160,000.00	54,280.00
4.3.364	CALCIO CUP	248.00			248.00
4.3.365	CCL RANCHI	819,963.04			819,963.04
4.3.366	Certificate Course-DMS	15,765.00			15,765.00
4.3.367	Children Activity Centre	675.00			675.00
4.3.368	CONCETTO-2015		70,000.00	70,000.00	0.00
4.3.369	Course Fee for Foreign Language (French)	19,108.00			19,108.00
4.3.370	CRF - FESEM	48,000.00	19,000.00		67,000.00
4.3.371	CRF-SPM		116,710.00		116,710.00
4.3.372	CTC 2014-15/AM	153,318.00	153,318.00		306,636.00
4.3.373	DST/459/inspire Fellowship	170,450.00		147,980.00	22,470.00
4.3.374	DSTA 2016		23,000.00		23,000.00
4.3.375	DST/inspire-SHE/ISMU/2009		1,100,000.00	1,100,000.00	0.00
4.3.376	East Zone Inter University Youth	134,373.10			134,373.10

4.3.377	ECO CLUB DEPTT. OF ESE	4,500.00			4,500.00
4.3.378	FTPMA 2015		153,468.00	4,800.00	148,668.00
4.3.379	GEOCONFLUENCE 2016		85,000.00	1,974.00	83,026.00
4.3.380	HSS- Foreign Language Course		55,000.00	38,400.00	16,600.00
4.3.381	HSS- Foreign Language Course, Monsoon, 2013-14	201,092.00		15,760.00	185,332.00
4.3.382	Industry Institute Interaction		100,000.00		100,000.00
4.3.383	International Conf. on MSEMI-2007	1,538,817.00			1,538,817.00
4.3.384	ISFA		35,000.00		35,000.00
4.3.385	ISM ALUMNI FUND	547,630.00	155,941.00	655,271.00	48,300.00
4.3.386	IWCMVA		50,000.00	50,000.00	0.00
4.3.387	Lab view Certificate Course of MME		55,500.00	55,500.00	0.00
4.3.388	Linux Certificate Course (CSE)	68,000.00			68,000.00
4.3.389	MATLAB CERTIFICATE COURSE EE 2012	83,309.00		83,309.00	0.00
4.3.390	Matlab Certificate Course of Computer Centre	51,378.00	109,500.00	106,979.00	53,899.00
4.3.391	Matlab Certificate Course of CSE	64,500.00		12,000.00	52,500.00
4.3.392	MENTICA 2015	0.00	1,971,990.00	1,971,990.00	0.00
4.3.393	Misc Receipts	4,739,513.00	8,404,624.00	11,221,607.00	1,922,530.00
4.3.394	MOES/17/2015-16		354,000.00	125,000.00	229,000.00
4.3.395	MSME (Arti Hansda)		98,000.00		98,000.00
4.3.396	National Seminar MTGST-2007	1,721.00			1,721.00
4.3.397	National Workshop on E - Governance Awareness	1,778.00			1,778.00
4.3.398	NIT DURGAPUR	233,607.00			233,607.00
4.3.399	NSS (Regular)	3,537.00			3,537.00
4.3.400	NTPC LTD,	49,000.00			49,000.00
4.3.401	Parakram		50,000.00	50,000.00	0.00
4.3.402	Q-Pace-2016		400,000.00	400,000.00	0.00
4.3.403	RAG-2011	9,000.00			9,000.00
4.3.404	RAIT 2016		333,610.00	293,000.00	40,610.00
4.3.405	REMTAI 2016		146,300.00	23,166.00	123,134.00
4.3.406	SBI Cash Award for Non-Teaching Emp.		25,000.00	25,000.00	0.00
4.3.407	Scolomin Club	5,100.00	100.00		5,200.00
4.3.408	Travel Grant	70,248.00	836,453.00	893,676.00	13,025.00
4.3.409	Unpaid Salary	12,516.75			12,516.75
4.3.410	WHPC		217,163.00	217,163.00	0.00
4.3.411	WMVC-2015		75,000.00	75,000.00	0.00
4.3.412	WNSLS 2016		5,000.00		5,000.00
4.3.413	Workshop on NCEP Awareness	345.00			345.00
4.3.414	Workshop on Pandit M M Malya	24.00			24.00

4.3.415	Workshop on Computer Methods	0.00	150,000.00	182,779.00	-32,779.00
4.3.416	Sub-total	33,591,817.74	44,431,367.00	61,765,282.00	16,257,902.74
(e) Inter-Unit Liabilities (Project)		Balance as on 01.04.2015	Additions during the year	Deduction/Adj during the year	Balance as on 31.03.2016
4.3.417	Benevolent Fund		1,448,451.00	1,448,451.00	0.00
4.3.418	EDC Room Rent	37,500.00	3,796,034.00	3,833,534.00	0.00
4.3.419	Electric Charges for CIL Chair		11,637.00	11,637.00	0.00
4.3.420	Electric Charges for Rajiv Gandhi Chair		8,002.00	8,002.00	0.00
4.3.421	Electric Charges From NMDC Chair		10,910.00	10,910.00	0.00
4.3.422	GJLT, RENT		9,700.00	9,700.00	0.00
4.3.423	ISM BASANT A/C		33,800.00	33,800.00	0.00
4.3.424	Medical Charges for CIL Chair		6,500.00	6,500.00	0.00
4.3.425	Medical Charges From NMDC Chair		12,903.00	12,903.00	0.00
4.3.426	Medical Charges From Rajiv Gandhi Chair		16,000.00	16,000.00	0.00
4.3.427	Medical Charges From Sail NMDC Chair Fund		7,067.00	7,067.00	0.00
4.3.428	Medical Charges From Sandvik Chair		6,571.00	6,571.00	0.00
4.3.429	NMDC CHAIR VEHICLE EXP.		99.00	99.00	0.00
4.3.430	Non Plan Control A/c	60,808,748.00	78,471,623.90	71,077,475.00	68,202,896.90
4.3.431	N.Plan End. Fund (Surplus Payable)	33,302,925.88	59,856,206.79	49,302,926.00	43,856,206.67
4.3.432	P F Control A/c		0.00	0.00	0.00
4.3.433	SAH Room Rent	1,200.00	57,815.00	59,015.00	0.00
4.3.434	SAH (ROOM RENT) TEQIP-II		1,600.00	1,600.00	0.00
4.3.435	School Development Fund		147,301.00	147,301.00	0.00
4.3.436	School Support Charges	0.04	25,713,121.86	25,713,121.90	0.00
4.3.437	Scolomin Club for Cil Chair		1,200.00	1,200.00	0.00
4.3.438	Scolomin Club for Rajeev Ghandhi Chair		1,300.00	1,300.00	0.00
4.3.439	Tuition Fee of Afgan Students		36,827,784.00	36,827,784.00	0.00
4.3.440	Vehicle Charge From Tequip-II		447.00	447.00	0.00
4.3.441	VEHICLE CHARGES	60.00	43,902.00	43,962.00	0.00
4.3.442	Vehicle Charges for CIL Chair		470.00	470.00	0.00
4.3.443	Vehicle Charges of NMDC CHAIR		438.00	438.00	0.00
4.3.444	Sub-total	94,150,433.92	206,490,883.55	188,582,213.90	112,059,103.57
4.3.445	Total Other Current Liabilities (Project)	127,742,251.66	250,922,250.55	250,347,495.90	128,317,006.31
4.3.446	Total Other Current Liabilities & Provisions (Project)	399,334,744.34	463,906,578.55	418,283,000.60	444,958,322.29

(f) Consultancy Projects:		2015-16	2015-16	2014-15	2014-15
4.3.447	Opening Balance	91,715,676.12		115,448,661.68	
4.3.448	Add: Total Receipts during the year	99,354,576.80		102,937,625.84	
4.3.449	Less: Payments from consultancy projects during the year	81,316,341.80	109,753,911.12	126,670,611.40	91,715,676.12
4.3.450	Balance as on 31 March		109,753,911.12		91,715,676.12
4.3.451	TOTAL CURRENT LIABILITIES (PROJECTS)	Balance as on 01.04.2015	Additions during the year	Deduction/Adj during the year	Balance as on 31.03.2016
4.3.452	TOTAL CURRENT LIABILITIES- Current year (Projects)	491,050,420.46	5632,61,155.35	4995,99,342.40	554,712,233.41
	Total Current Liabilities	7069,11,671.01	9476,33,691.13	8672,91,512.40	7872,53,849.74
4.A	CURRENT LIABILITIES - PLAN	837,83,060.55	511,94,697.50	630,29,991.00	719,47,767.05
4.B	CURRENT LIABILITIES - NON PLAN	1320,78,190.00	3331,77,838.28	3046,62,179.00	1605,93,849.28
4.C	CURRENT LIABILITIES - PROJECT	4910,50,420.46	5632,61,155.35	4995,99,342.40	5547,12,233.41
4.00	TOTAL CURRENT LIABILITIES	7069,11,671.01	9476,33,691.13	8672,91,512.40	7872,53,849.74

SCHEDULE – V: FIXED ASSETS

Sl. No	Particulars	Balance as on 01.04.2015	Additions during the year	Deduction/Adj during the year	Gross Total	Depreciation				
						Upto 2014-15	Dep %	For 2015-16	Total Depreciation	Closing Balance as on 31.3.2016
Plan:										
5.1.1	Communication System	164,28,528.00	36,31,909.00	0.00	200,60,437.00	50,58,268.96	15%	22,50,325.21	73,08,594.16	127,51,842.84
5.1.2	Computer Software	226,34,456.00	35,77,301.00	0.00	262,11,757.00	182,86,277.69	60%	47,55,287.59	230,41,565.28	31,70,191.72
5.1.3	Computers, Peripherals & Internet Equipment	1728,93,011.00	197,60,006.00	0.00	1926,53,017.00	1569,17,927.37	60%	214,41,053.78	1783,58,981.15	142,94,035.85
5.1.4	Furniture & Fixtures	934,08,446.00	232,36,624.00	0.00	1166,45,070.00	237,71,956.52	10%	92,87,311.35	330,59,267.87	835,85,802.13
5.1.5	Land - Freehold	146,62,250.00	0.00	0.00	146,62,250.00	0.00	0%	0.00	0.00	146,62,250.00
5.1.6	Library Books & Journals	3193,56,535.00	264,42,116.00	13,42,855.00	3444,55,796.00	2803,15,952.35	60%	384,83,906.19	3187,99,858.54	256,55,937.46
5.1.7	Office Automation	16,12,273.00	0.00	0.00	16,12,273.00	6,22,135.84	15%	1,48,520.57	7,70,656.42	8,41,616.58
5.1.8	Equipment/ Lab Development : Plant, Machinery & Equipment	6431,16,222.19	1482,70,717.00	260,77,836.00	7653,09,103.19	2941,47,188.28	15%	706,74,287.24	3648,21,475.52	4004,87,627.67
5.1.9	Power & Water Supply equipment #	1703,32,402.00	132,38,738.00	697,25,408.00	1138,45,732.00	314,79,732.86	10%	82,36,599.91	397,16,332.78	741,29,399.22
5.1.10	Roads & Buildings	14035,79,542.00	258,00,740.00	79,24,713.00	14214,55,569.00	3907,47,683.64	10%	1030,70,788.54	4938,18,472.18	9276,37,096.82
5.1.11	Student Amenities	277,63,786.00	5,30,124.00	0.00	282,93,910.00	96,75,515.57	10%	18,61,839.44	115,37,355.01	167,56,554.99
5.1.12	Vehicles	81,32,538.00	55,98,527.00	0.00	137,31,065.00	51,24,799.82	15%	12,90,939.78	64,15,739.60	73,15,325.40
5.1.13	Total - Current year (Plan)	28939,19,989.19	2700,86,802.00	1050,70,812.00	30589,35,979.19	12161,47,438.90		2615,00,859.59	14776,48,296.78	15812,87,680.70
	#Opening Balance of accumulated depreciation - discharging depreciation with retrospective effect as per Govt Audit observation									

Non-Plan:										
Sl No	Particulars	Balance as on 01.04.2015	Additions during the year	Deduction/Adj during the year	Gross Total	Depreciation				
						Upto 2014-15	Dep. %	For 2015-16	Total Depreciation	Closing Balance as on 31.3.2016
5.2.1	Building including Gen set at NBCC Kolkata - Endowment Fund	900,95,299.00	629,56,730.00	0.00	1530,52,029.00	0.00	10%	90,09,529.90	90,09,530.00	1440,42,499.00
5.2.2	Building including Gen set at NBCC N Delhi - Endowment Fund	0.00	3400,25,456.00	0.00	3400,25,456.00	0.00	10%	0.00	0.00	3400,25,456.00
5.2.3	Communication Facilities	90,03,603.00	7,62,780.00	0.00	97,66,383.00	52,43,092.30	15%	6,78,493.60	59,21,585.91	38,44,796.94
5.2.4	Computer Hardware	29,42,852.00	3,54,886.00	0.00	32,97,738.00	27,58,753.38	60%	3,23,390.77	30,82,144.15	2,15,593.25
5.2.5	Computer Software	16,18,126.00	0.00	0.00	16,18,126.00	16,10,581.66	60%	4,526.60	16,15,108.28	3,017.14
5.2.6	Electrical installations	40,52,962.00	0.00	0.00	40,52,962.00	21,06,339.89	10%	1,94,662.21	23,01,002.10	17,51,959.80
5.2.7	Equipment for Laboratories	139,64,076.00	0.00	0.00	139,64,076.00	119,30,532.75	15%	3,05,031.49	122,35,564.24	17,28,511.61
5.2.8	Furniture & Fixtures	142,89,645.00	0.00	0.00	142,89,645.00	108,48,410.06	10%	3,44,123.49	111,92,533.56	30,97,111.34
5.2.9	Library Books & Journals	368,44,775.00	0.00	0.00	368,44,775.00	361,28,530.43	60%	4,29,746.74	365,58,277.17	2,86,497.23
5.2.10	Office Equipment	158,36,727.00	23,14,590.00	0.00	181,51,317.00	76,33,152.92	10%	10,51,816.41	86,84,969.32	94,66,347.58
5.2.11	Roads & Buildings (On Freehold Land)	97,69,200.00	0.00	0.00	97,69,200.00	54,73,175.03	10%	4,29,602.50	59,02,777.53	38,66,422.37
5.2.12	Student Hostel furniture	14,44,548.00	0.00	0.00	14,44,548.00	7,73,224.86	10%	67,132.31	8,40,357.17	6,04,190.73
5.2.13	Tubewells & Water Supply Equipment	16,22,311.00	0.00	0.00	16,22,311.00	8,25,207.52	10%	79,710.35	9,04,917.87	7,17,393.03
5.2.14	Vehicles	5,51,432.00	0.00	0.00	5,51,432.00	4,23,711.12	15%	19,158.13	4,42,869.25	1,08,562.60
5.2.15	Total - Current year (Non Plan)	2020,35,556.00	4064,14,442.00	0.00	6084,49,998.00	857,54,706.22		129,36,924.51	986,91,630.73	5097,58,358.61
5.2.16	Total (Plan & Non Plan)	30959,55,545.19	6765,01,244.00	1050,70,812.00	36673,85,977.19	4495,68,031.00		2744,37,784.10	15763,39,927.51	20910,46,039.31

Project:										
Sl No	Particulars	Balance as on 01.04.2015	Additions during the year	Deduction/Adj during the year	Gross Total	Depreciation				
						Upto 2014-15	Dep. %	For 2015-16	Total Depreciation	Closing Balance as on 31.3.2016
5.3.1	Books and Journals	23,24,699.00	81,76,220.00	0.00	105,00,919.00	20,58,444.00	60%	50,65,485.00	71,23,929.00	33,76,990.00
5.3.2	Computer Software	155,96,923.00	31,76,254.00	0.00	187,73,177.00	128,88,531.93	60%	35,30,787.04	164,19,318.97	23,53,858.03
5.3.3	Computers, Peripherals & Internet Equipment	309,67,640.40	30,74,692.00	0.00	340,42,332.40	280,62,986.30	60%	35,87,607.66	316,50,593.96	23,91,738.44
5.3.4	Furniture & Fixtures	32,56,501.00	9,56,394.00	0.00	42,12,895.00	10,30,246.47	10%	3,18,264.85	13,48,511.32	28,64,383.68
5.3.5	Office Equipment	27,05,771.00	14,79,612.00	0.00	41,85,383.00	8,26,746.67	10%	3,35,863.63	11,62,610.30	30,22,772.70
5.3.6	Plant, Machinery, & Equipment - Equipment/ Lab. Development	2733,27,470.27	397,12,953.00	0.00	3130,40,423.27	1388,54,717.02	15%	261,27,855.94	1649,82,572.95	1480,57,850.32
5.3.7	Roads & Buildings (On Freehold Land)	395,65,762.06	5,31,037.00	0.00	400,96,799.06	261,80,066.59	10%	13,91,673.25	275,71,739.83	125,25,059.23
5.3.8	Vehicles	10,43,602.00	0.00	0.00	10,43,602.00	8,34,840.83	15%	31,314.18	8,66,155.01	1,77,446.99
5.3.9	Current year (Project)	3687,88,368.73	571,07,162.00	0.00	4258,95,530.73	2107,36,579.80		403,88,851.55	2511,25,431.35	1747,70,099.38
5.3.10	TOTAL - Current year	34647,43,913.92	7336,08,406.00	1050,70,812.00	40932,81,507.92	15126,38,724.92		3148,26,635.65	18274,65,358.86	22658,16,138.69

SCHEDULE - VI : INVESTMENTS					
SI No	PARTICULARS	Balance as on 01.04.2015	Investments/ Renewals during the year	Investments Encashed/ adj. during the year	Balance as on 31.03.2016
Plan:					
6.1.1	Bank Fixed Deposits	0.00	1,094,000,000.00	1,044,000,000.00	50,000,000.00
6.1.2	Accrued Interest	0.00	174,660.00	0.00	174,660.00
6.1.3	Sub-total - Plan	0.00	1,094,174,660.00	1,044,000,000.00	50,174,660.00
Non-Plan:					
6.2.1	8% GOI Bond (End. Fund Invest.)	70,000,000.00	0.00	0.00	70,000,000.00
6.2.2	Accrued Interest on End Fund FDRs	68,995,811.00	39,402,975.00	68,995,811.00	39,402,975.00
6.2.3	Accrued Interest on NP Investments	0.00	0.00	0.00	0.00
6.2.4	Endowment fund: Bank FDs	334,834,264.00	85,263,482.00	370,097,746.00	50,000,000.00
6.2.5	FD with SBI Main Br Dhanbad	0.00	1,543,320.00	0.00	1,543,320.00
6.2.6	GIA & School income: Bank FDs	0.00	0.00	0.00	0.00
6.2.7	Scholarship funds: Bank FDs	12,021,825.00	10,413,577.00	9,296,825.00	13,138,577.00
6.2.8	Sub-total - Non Plan	485,851,900.00	136,623,354.00	448,390,382.00	174,084,872.00
Projects:					
6.3.1	Accrued Interest	78,796,909.02	50,164,072.00	78,796,909.02	50,164,072.00
6.3.2	Bank FDs & GOI Bonds	649,310,545.76	581,312,085.42	483,851,360.53	746,771,270.65
6.3.3	Sub-total - Projects	728,107,454.78	631,476,157.42	562,648,269.55	796,935,342.65
6.00	GRAND TOTAL INVESTMENTS	1,213,959,354.78	1,862,274,171.42	2,055,038,651.55	1,021,194,874.65
SCH.- VII : CURRENT ASSETS, LOANS, ADVANCES, ETC.					
VII (A) - CURRENT ASSETS					
Cash and Bank Balances :					
Plan:	Particulars	2015-16	2015-16	2014-15	2014-15
7.1.1	<u>Cash at Bank :</u>				
7.1.2	SBI, ISM Campus Br, Dhn (Plan C/A)	86,570,741.91		147,940,634.41	
7.1.3	Sub Total (Plan)		86,570,741.91		147,940,634.41
Non-Plan:					
7.2.1	<u>Bank Bal. with Scheduled Banks :</u>				
7.2.2	SBI, ISM Campus Br, Dhn (N Plan C/A)	218,078,437.35		137,849,321.46	
7.2.3	Canara Bank, SDL Br., Dhanbad	28,953.00		28,953.00	
7.2.4	Canara Bank, Parlmt. St. Br., N.Delhi	9,537.00		9,841.00	
7.2.5	SBI, ISM, Dhanbad (Endow Fund SB A/c)	2,880,678.01		2,357,729.01	
7.2.6	Online SBI Bank A/c	0.00		8,350,902.00	
7.2.7	SBI Power Jyoti online	817,032.00		817,132.00	
7.2.8	E-payment SBI Bank Account	48,786.00		47,078.00	
7.2.9	Sub Total (Non Plan)	221,863,423.36	221,863,423.36	149,460,956.47	149,460,956.47
7.2.10	Cash in Hand	218,614.70	218,614.70	140,634.70	140,634.70
7.2.11	Total Cash & Bank Balances (Non Plan)	222,082,038.06	222,082,038.06	149,601,591.17	149,601,591.17

Project:		2015-16	2015-16	2014-15	2014-15
	Balance with Scheduled Banks:				
7.3.1	Bank of India, ISM Branch, SB A/c	57,163.00		56,051.00	
7.3.2	Canara Bank Sandvik Chair A/ C	164,609.00		1,347,536.00	
7.3.3	Canara Bank TEQIP Bank A/C	25,259,196.00		28,415,054.00	
7.3.4	CanBank, SDL Br., Dh. - S.B. A/c	27,281,576.86		16,985,463.95	
7.3.5	CIL Chair, Canara Bank A/c	40,330.44		17,675.44	
7.3.6	ISM AANA Canara Bank A/c	7,843.00		0.00	
7.3.7	MoLE CHAIR Canara Bank A/c	453,306.00		127,857.00	
7.3.8	NMDC Chair in Open Cast, Canara Bank A/c	1,845,656.00		849,377.00	
7.3.9	ONGC AMN Ghosh Chair, Canara Bank A/c	907,525.58		702,635.58	
7.3.10	Rajiv Gandhi Chair, Canara Bank A/c	1,164,440.83		731,838.83	
7.3.11	Sail Chair, Canara Bank A/c	1,213,144.48		182,163.00	
7.3.12	SBI, ISM Br, Dhanbad Current A/c	232,363.90		232,363.90	
7.3.13	TATA Steel Chair, Canara Bank A/c	2,531,872.00		949,419.00	
7.3.14	Uranium Chair Canara Bank A/c	24,903.00		509,779.00	
7.3.15	Sub Total (Project)	61,183,930.09	61,183,930.09	51,107,213.70	51,107,213.70
7.3.16	Cash Balance in hand	177,246.00	177,246.00	27,686.00	27,686.00
7.3.17	Total Cash & Bank Balances (Project)	61,361,176.09	61,361,176.09	102,242,113.40	51,134,899.70
7.3.18	Total Cash & Bank Balances		370,013,956.06		348,677,125.28
VII (B) - LOANS, ADVANCES & OTHER ASSETS:					
(a) Loans/Advances to employees:					
1. Plan:					
SI No	PARTICULARS	Balance as on 01.04.2015	Investments/ Renewals during the year	Investments Encashed/ adj. during the year	Balance as on 31.03.2016
7.1.4	House Building Advance	59,235.00			59,235.00
7.1.5	Staff Advance	4,966.00			4,966.00
7.1.6	Sub-total (Plan)	64,201.00	0.00	0.00	64,201.00
2. Non-Plan:					
7.2.12	Cycle Advance	15,854.00	9,000.00	16,100.00	8,754.00
7.2.13	Car Advance	446,500.00	422,463.00	247,963.00	621,000.00
7.2.14	Festival Advance	609,499.00	1,098,000.00	1,020,225.00	687,274.00
7.2.15	H.B. Advance (Against Rev.Fund)	111,100.00	0.00	60,400.00	50,700.00
7.2.16	House Building Advance	16,161,000.00	6,823,281.00	7,121,981.00	15,862,300.00
7.2.17	Imprest Advances	164,244.00	319,000.00	330,412.00	152,832.00
7.2.18	PC Advance	2,024,200.00	1,517,739.00	2,046,439.00	1,495,500.00
7.2.19	Scooter/Motorcycle Advance	1,327,800.00	1,086,440.00	1,836,840.00	577,400.00
7.2.20	Staff Advance	2,973,859.00	18,744,611.00	20,147,446.00	1,571,024.00
7.2.21	Sub-total (Non Plan)	23,834,056.00	30,020,534.00	32,827,806.00	21,026,784.00
3. Project					
7.3.19	Staff Advance	155,189.02	4,232,157.00	3,251,507.50	1,135,838.52
7.3.20	Sub-total (Project)	155,189.02	4,232,157.00	3,251,507.50	1,135,838.52

(b) Advances to suppliers/Contractors: Capital A/c					
1. Plan:					
7.1.7	Adv. for ISM Work-in-progress	391,086.00	0.00	0.00	391,086.00
7.1.8	Advance of books and Journals	5,779.00	0.00	0.00	5,779.00
7.1.9	Advances to contractors	4,202,179,174.00	571,907,713.00	34,163,783.00	4,739,923,104.00
7.1.10	Advances to suppliers	11,913,826.00	21,249,986.00	6,394,647.00	26,769,165.00
7.1.11	Prepaid Expenses	2,481,750.00	35,610.00	496,350.00	2,021,010.00
7.1.12	Sub-total	4,216,971,615.00	593,193,309.00	41,054,780.00	4,769,110,144.00
2. Non Plan:					
7.2.22	Advances to suppliers	13,977,527.00	361,114,063.00	373,944,035.00	1,147,555.00
7.2.23	Adv.to foreign suppliers against LC	0.00			0.00
7.2.24	Sub-total	13,977,527.00	361,114,063.00	373,944,035.00	1,147,555.00
3. Project:					
7.3.21	Advance to suppliers	20,806,274.62	896,485.00	1,578,080.00	20,124,679.62
7.3.22	Sub-total	20,806,274.62	896,485.00	1,578,080.00	20,124,679.62
(c) - Other Deposits					
1. Plan:		Balance as on 01.04.2015	Additions during the year	Deduction/Adj during the year	Balance as on 31.03.2016
7.1.13	Damodar Valley Corporation	0.00	49,834,247.00	0.00	49,834,247.00
7.1.14	Grants in aid receivable from MHRD	0.00	0.00	0.00	0.00
7.1.15	Non Plan Control Account	0.00	0.00	0.00	0.00
7.1.16	SD with DVC	50,000.00	0.00	0.00	50,000.00
7.1.17	SD with IOC/ Mahavir Gas, Dhanbad	78,342.00	0.00	0.00	78,342.00
7.1.18	SD with JSEB	4,005,318.00	0.00	0.00	4,005,318.00
7.1.19	Sub-total	4,133,660.00	49,834,247.00	0.00	53,967,907.00
2. Non Plan:		Balance as on 01.04.2015	Additions during the year	Deduction/Adj during the year	Balance as on 31.03.2016
7.2.25	Deficit Current Year	0.00	0.00	0.00	0.00
7.2.26	Grants-in-aid Receivable	0.00	0.00	0.00	0.00
7.2.27	Plan Control Account	52,792,944.36	29,934,465.00	52,792,944.00	29,934,465.36
7.2.28	Plan Control Account(End Fund)	0.00	11,339,254.00	0.00	11,339,254.00
7.2.29	Project Control Account (End Fund)	33,302,925.72	60,940,706.79	50,387,426.00	43,856,206.51
7.2.30	Project Control Account (General)	60,808,748.00	69,348,710.90	61,954,312.00	68,203,146.90
7.2.31	SD with IOC/Mahavir Gas, Dh.	187,400.00			187,400.00
7.2.32	SD with Sunita Rani Marwaha	28,500.00			28,500.00
7.2.33	SD with BSNL, Dh.	67,500.00			67,500.00
7.2.34	SD with JSEB	3,877,000.00	1,305,780.00	0.00	5,182,780.00
7.2.35	TDS Receivable	729,804.00	0.00	0.00	729,804.00
7.2.36	Sub-total	151,794,822.08	172,868,916.69	165,134,682.00	159,529,056.77
3. Project:					
7.3.23	Security Deposit with Samanta & Co	12,000.00	0.00	0.00	12,000.00
7.3.24	Plan Control Account	19,423,515.19	0.00	2,948,318.00	16,475,197.19
7.3.25	Sub-total	19,435,515.19	0.00	2,948,318.00	16,487,197.19
Total Loan, Advances & Deposits					
7.A	Total (Loan, Advances & Deposits) - PLAN	4,369,110,110.41	729,598,297.91	41,054,780.00	4,909,712,993.91
7.B	Total (Loan, Advances & Deposits) - NON-PLAN	339,207,996.25	786,085,551.75	571,906,523.00	403,785,433.83
7.C	Total (Loan, Advances & Deposits) - PROJECT	91,531,878.53	5,128,642.00	7,777,905.50	99,108,891.42
7	Total Current Assets	4,799,849,985.19	15208,12,491.66	6207,39,208.50	5,412,607,319.16

SCHEDULE. VIII - GRANTS IN AID

Sl.No.	Particulars	Current Year : 2015-16		Previous Year : 2014-15	
8.1.1	Grants-in-aid from MHRD (Plan)	1,000,000,000.00		1,100,000,000.00	
8.1.2	Add: GIA Receivable for the year	0.00			
8.1.3	Total	1,000,000,000.00		1,100,000,000.00	
8.1.4	Less: Transferred to Capital Fund towards non-recurring expenses	7,676,35,276.00	2323,64,724.00	9,051,42,834.50	1948,57,165.50
8.1.5	Grants-in-aid from MHRD (Non-Plan)	745,000,000.00		6,249,40,000.00	
8.1.6	Less: Transferred to Capital Fund towards non-recurring expenses	213,408.00	744,786,592.00	1,659,851.00	623,280,149.00
8.1.7	Total Grants in Aid	174,50,00,000.00	97,71,51,316.00	172,49,40,000.00	81,81,37,314.50
SCH.- IX - FEES FROM STUDENTS:					
Non-Plan:		Current Year : 2015-16		Previous Year : 2014-15	
9.2.1	(a) Tuition fees	269,595,993.00		196,644,563.00	
9.2.2	(b) Less: Refund of tuition fees	0.00	269,595,993.00	0.00	196,644,563.00
9.2.3	Admission fees	1,504,700.00		1,320,660.00	
9.2.4	Annual fees	6,168,800.00		5,647,700.00	
9.2.5	Application Fees for Admission	5,519,300.00		6,374,350.00	
9.2.6	Computer & Internet Fee	11,537,000.00		10,886,000.00	
9.2.7	Degree Certificate	556,871.00		323,050.00	
9.2.8	Electricity Charges (Students)	5,523,410.00		5,206,631.00	
9.2.9	Entrance Examination Fees	10,591,000.00		817,750.00	
9.2.10	Examination Fees	13,229,750.00		11,991,750.00	
9.2.11	Fee From Foreign Students	596,975.00		0.00	
9.2.12	Fine/Penalty From Students	298,142.00		1,422,416.00	
9.2.13	Hostel & Mess Management Fee	4,221,000.00		3,167,600.00	
9.2.14	Hostel admission fees	1,063,000.00		1,055,300.00	
9.2.15	Hostel seat rent	29,397,600.00		14,108,125.00	
9.2.16	Hostel seat rent(outside students)	6,850.00		68,050.00	
9.2.17	Identity card	317,400.00		354,800.00	
9.2.18	International EDC Annxe Lodgin Fee	198,963.00		380,907.00	
9.2.19	Library fees	8,992,706.76		7,849,205.00	
9.2.20	Marksheet Fees	157,500.00		127,000.00	
9.2.21	Medical Fees From Students	431,695.00		1,304,200.00	
9.2.22	Migration certificate fees	1,097,600.00		829,350.00	
9.2.23	Outside Students Training Fee	200,000.00		236,000.00	
9.2.24	Registration Fee	2,838,000.00		2,674,695.00	
9.2.25	School Development Fee	3,430,000.00		0.00	
9.2.26	Semester Rule Book Fee	1,406,700.00		1,309,955.00	
9.2.27	Sports fees & entry fees	2,719,500.00		2,153,200.00	
9.2.28	Student Activity Centre Fee	539,198.00		46,640.00	
9.2.29	Student activity fees	6,436,578.00		6,472,832.00	
9.2.30	Student Other fees	10,052,440.85		838,421.00	
9.2.31	Thesis Evaluation Fees	1,240,000.00		545,000.00	
9.2.32	Training & Placement Support Fee	11,431,000.00		11,014,000.00	
9.2.33	Transcript Fee	988,950.00		789,950.00	
9.2.34	University/ Degree exam Fees	0.00	142,692,629.61	0.00	99,315,537.00
9.2.35	TOTAL		412,288,622.61		295,960,100.00
SCH. - X: INTEREST INCOME					
Plan:		Current Year : 2015-16		Previous Year : 2014-15	
Interest from Bank					
10.1.1	Interest on FDRs	11,339,254.00		7,158,418.00	

10.1.2	Less: Transfer to Non Plan Endowment	11,339,254.00		0.00	
10.1.3	Miscellaneous Income	25,080.00		48,548.00	
10.1.4	Income from BRS			99,886.50	
10.1.5	Sub Total (Plan)		25,080.00		7,306,852.50
Non Plan:					
A. Interest from Bank					
10.2.1	Interest on Endowment Fund	3,735,342.00		9,615,981.36	
10.2.2	Interest from FDRs	12,726,144.00		4,519,209.00	
10.2.3	Less : Transfer to End Fund	-16,417,942.00		-9,615,981.36	
10.2.3 a	Less : Transfer to Alumni As Aw Fund	- 37,500.00		0.00	
10.2.4	Interest from Post Office SB a/c	0.00	0.00		4,519,209.00
B. Interest from employees:					
10.2.5	(a) Interest from HBA to Employees	776,093.00		448,298.00	
10.2.6	(b) Less: Transfer to HBA	0.00	776,093.00	0.00	448,298.00
10.2.7	Interest on Other Adv. to Employees	130,269.00			
10.2.8	Interest from Cycle Advance				
10.2.9	Interest on LTC Advance	2,844.00		1,894.00	
10.2.10	Interest on PC Advance	16,214.00		78,480.00	
10.2.11	Interest from Scooter Advance	80,303.00		19,669.00	
10.2.12	Interest from Car Advance	62,463.00	292,093.00		100,043.00
10.2.13	Sub Total (Non Plan)		1,068,186.00		5,067,550.00
Project:					
Interest from Bank					
10.3.1	Interest on Investment	58,679,684.79		32,371,620.45	
10.3.2	Interest on S.B. A/cs	1,233,119.00		958,126.00	
10.3.3	Miscellaneous Income		59,912,803.79	0.00	33,329,746.45
10.3.4	Sub Total (Project)		59,912,803.79		33,329,746.45
10.1	INTEREST INCOME - PLAN		25,080.00		7,306,852.50
10.2	INTEREST INCOME - NON PLAN		1,068,186.00		5,067,550.00
10.3	INTEREST INCOME - PROJECT		59,912,803.79		33,329,746.45
10	TOTAL - INTEREST INCOME		61,006,069.79		45,704,148.95
SCH. - XI: OTHER INCOME					
Non-Plan:					
A. Recoveries from employees:					
11.2.1	Bus fare / vehicle charges	288,046.00		296,119.00	
11.2.2	Electricity charges	2,811,337.00		2,608,356.00	
11.2.3	License fees	2,469,652.00		2,204,971.00	
11.2.4	Medical charges	3,112,434.00		2,861,607.00	
11.2.5	Water charges	5,535.00	8,687,004.00	5,026.00	7,976,079.00
B. Income from others:					
11.2.6	Application fees for employment	681,600.00		86,600.00	
11.2.7	Contribution to Seminar Received	0.00		90,000.00	
11.2.8	CRF Analysis Charges	324,480.00		298,500.00	
11.2.9	EDC room rent	5,968,134.00		8,178,300.00	
11.2.10	Electric charges from tenants	3,133,505.00		2,220,299.00	
11.2.11	GJLT/Penman Rent	598,653.00		700,800.00	
11.2.12	Income from BRS	1,905,202.00		236,669.00	
11.2.13	ISM IIF Kolkata Accommodation	29,000.00		0.00	
11.2.14	License fees from tenants	793,389.00		861,927.00	
11.2.15	Miscellaneous income	399,983.00		178,251.50	

11.2.16	Sr. Acad. Hostel Room Rent	1,484,650.00		1,404,020.00	
11.2.17	Tender Cost	1,046,950.00	16,365,546.00	781,600.00	15,036,966.50
C. Income from Consultancy /Projects:					
11.2.18	School share from Consultancy	0.00		0.00	
11.2.19	School support from Consultancy/ Projects	30,576,928.90	30,576,928.90	35,672,264.00	35,672,264.00
11.2.20	Sub Total (Other Income N Plan)		55,629,478.90		58,685,309.50
11.2.21	Total Other Income		55,629,478.90		58,685,309.50
9.B	Total Fees from Students		412,288,622.61		295,960,100.00
10.B	Total Interest Income		61,006,069.79		45,704,148.95
11.B	Total Other Income		55,629,478.90		58,685,309.50
	Total Administrative Income		528,924,171.30		400,349,558.45
SCH. XII - ESTABLISHMENT EXPENSES		Current Year : 2015-16		Previous Year : 2014-15	
Plan:					
12.1.1	Pay & Allowances	0.00	0.00	0.00	0.00
Non-Plan:					
		Current Year : 2015-16		Previous Year : 2014-15	
12.2.1	Pay and Allowances:				
12.2.2	Arrears of VI Pay Commission	0.00		0.00	
12.2.3	Bonus	1,772,109.00		1,007,984.00	
12.2.4	Children Education Allowance	4,457,333.00		4,413,179.00	
12.2.5	City Compensatory Allowance	0.00		0.00	
12.2.6	Conveyance/Transport Allowance	8,726,530.00		8,512,935.00	
12.2.7	Dearness Allowance	272,220,867.00		228,214,429.00	
12.2.8	Grade Pay	39,380,629.00		37,523,154.00	
12.2.9	Honorarium	3,553,541.00		2,921,963.00	
12.2.10	Honorarium TATA Steel Chair	0.00		240,000.00	
12.2.11	House Rent Allowance	4,304,723.00		4,691,650.00	
12.2.12	House Rent for Accommodation to Faculty	0.00		0.00	
12.2.13	Interim Relief	0.00		0.00	
12.2.14	Leave Travel Concession	6,491,636.00		5,894,804.00	
12.2.15	Non-Practicing Allowance	279,852.00		271,659.00	
12.2.16	Other Allowances	1,459,060.00		1,417,013.00	
12.2.17	Overtime	593,457.00		413,663.00	
12.2.18	Pay arrears	0.00		0.00	
12.2.19	Pay of Officers	138,478,139.00		140,127,410.00	
12.2.20	Pay of Staff	48,048,288.00		51,084,137.00	
12.2.21	Personal pay	381,649.00		384,200.00	
12.2.22	Personal Development Allowance	21,969,456.00		16,331,960.00	
12.2.23	Special allowance to Director	0.00		0.00	
12.2.24	Wages	36,447,947.00		23,450,033.00	
12.2.25	Washing Allowance	135,238.00		146,364.00	
12.2.26	Sub-Total	588,700,454.00	588,700,454.00	527,046,537.00	527,046,537.00
12.2.27	Retirement Benefits:				
12.2.28	Pension	92,114,792.00		82,356,464.00	
12.2.29	Gratuity	17,699,423.00		15,668,743.00	
12.2.30	Leave Salary	18,899,400.00		20,219,503.00	
12.2.31	Sub Total	128,713,615.00		118,244,710.00	
12.2.32	Less: Received from other orgns.	0.00		0.00	

12.2.33	Sub-Total	128,713,615.00		118,244,710.00	
12.2.34	Retirement T.A.	663,890.00		617,129.00	
12.2.35	Medical allowance	267,925.00		191,400.00	
12.2.36	Deposit Linked Insurance	60,000.00		0.00	
12.2.37	Matching contribn.to CPF members	2,576,087.00		2,729,282.00	
12.2.38	Matching contrbn.to DCPS members	23,144,082.00	155,425,599.00	19,149,975.00	140,932,496.00
12.2.39	T O T A L (Non Plan)		744,126,053.00		667,979,033.00
12.A	ESTABLISHMENT EXPS - PLAN		0.00		0.00
12.B	ESTABLISHMENT EXPS - NON PLAN		744,126,053.00		667,979,033.00
12	TOTAL - ESTABLISHMENT EXPENSES		744,126,053.00		667,979,033.00
SCH. XIII - OTHER ADMINISTRATIVE EXPENSES		Current Year : 2015-16		Previous Year : 2014-15	
Plan:					
a.	Travelling Expenses	0.00	0.00	0.00	0.00
b.	Departmental Expenses				
13.1.1	Applied Chemistry (Contingent)	0.00		0.00	
13.1.2	Electrical Engg Deptt	0.00		17,904.00	
13.1.3	Environmental Sc & Engg	0.00		0.00	
13.1.4	Chemical Engg.	13,617.00	13,617.00	44,180.00	62,084.00
c.	Other Educational Exp.				
13.1.5	Dual Degree Fellowship	106,479.00		1,786,662.00	
13.1.6	Entrance Exam. & Admission exp.	0.00		19,320.00	
13.1.7	Examination Section	0.00		502,021.00	
13.1.8	Grant for R&D Projects	0.00		15,339,000.00	
13.1.9	MCM Scholarship	0.00		14,798,245.00	
13.1.10	MESS Bill/ Pocket Money (SC/ ST)	4,675,000.00		2,439,098.00	
13.1.11	ONGC Scholarship	0.00		120,000.00	
13.1.12	PG Fellowship	24,294,846.00		5,905,250.00	
13.1.13	PG Contingency	1,410,528.00		0.00	
13.1.14	Post Doctral Fellowship	1,057,153.00		0.00	
13.1.15	Research Contingency	12,254,728.00		71,968,478.00	
13.1.16	Research Fellowship	103,331,616.00		0.00	
13.1.17	Science Direct & E-Journals	41,507,891.00		16,603,833.00	
13.1.18	Student's Amenities and activities	0.00		964,763.00	
13.1.19	UGC Scholarship	0.00	188,638,241.00	582,000.00	131,028,670.00
d.	General Expenses:				
13.1.20	Bank Charges	785.00		12,236.00	
13.1.21	Electricity Charges	7,210,631.00		20,112,894.00	
13.1.22	Generator Running & Maint. Exp.	1,725,855.00		8,293,989.00	
13.1.23	Health Centre & Medical Care Exp.	4,370,573.00		4,712,508.00	
13.1.24	Security Services	5,576,563.00		5,201,929.00	
13.1.25	Staff Selection Expenses	256,725.00		6,272,193.00	
13.1.26	Telephone/fax/internet/Website exp.	7,624,177.00		5,737,598.00	
13.1.27	Vehicle Running & Maint. Exp.	35,593.00	26,800,902.00	6,200.00	50,349,547.00
e.	Miscellaneous Expenses				
13.1.28	ISM Expansion Plan	545,260.00		0.00	

13.1.29	Public Health & Pest Control	1,097,498.00		0.00	
13.1.30	Repair & Maintenance	15,300,735.00		20,723,717.00	
13.1.31	Round off	0.00	16,943,493.00	0.00	20,723,717.00
13.1.32	Sub-total (Plan)		232,396,253.00		202,164,018.00
Non-Plan:		Current Year : 2015-16		Previous Year : 2014-15	
a.	Travelling Expenses:				
13.2.1	TA to Employees	1,572,655.00		765,872.00	
13.2.2	TA for Trg/Seminar/Conf etc in India	36,484.00		63,227.00	
13.2.3	TA for Trg/Seminar/Conf etc abroad	299,707.00		0.00	
13.2.4	TA for Meetings & Meeting Exp.	3,115,024.00		3,923,067.00	
13.2.5	TA to External Experts/Officials	2,524,857.00	7,548,727.00	2,153,091.00	6,905,257.00
b.	Departmental Expenses:				
13.2.6	Administrative Dept Exp	1,082,973.00		562,596.00	
13.2.7	Applied Chemistry	871,684.00		1,193,386.00	
13.2.8	Applied Geology	1,364,513.00		1,354,892.00	
13.2.9	Applied Geophysics	1,099,449.00		925,439.00	
13.2.10	Applied Mathematics	638,770.00		432,450.00	
13.2.11	Applied Physics	633,042.00		619,454.00	
13.2.12	Central Library	322,810.00		479,975.00	
13.2.13	Centre for Mine Environment (ESE)	731,349.00		1,008,282.00	
13.2.14	Chemical Engineering	857,588.00		514,899.00	
13.2.15	Civil Engineering	429,978.00		242,273.00	
13.2.16	Computer Centre	276,370.00		244,465.00	
13.2.17	Computer Science & Engineering	274,589.00		336,955.00	
13.2.18	Electrical Engg	551,394.00		305,867.00	
13.2.19	Electronics & Instrumentation	598,767.00		826,603.00	
13.2.20	Executive Development Centre	1,272,318.00		1,382,203.00	
13.2.21	Fuel & Mineral Engg	652,917.00		844,871.00	
13.2.22	Humanities & Social Sciences	149,951.00		54,815.00	
13.2.23	Inter Disciplinary Research Contingency	36,331.00		39,965.00	
13.2.24	Management Studies	542,586.00		396,782.00	
13.2.25	Mech Engg & Mining Mach Engg	0.00		14,600.00	
13.2.26	Mechanical Engg.	474,016.00		620,118.00	
13.2.27	Mining Engeeniring	1,323,758.00		1,299,662.00	
13.2.28	Mining Mach Engg	299,318.00		519,923.00	
13.2.29	Petroleum Engg	1,439,446.00		1,187,363.00	
13.2.30	Sports & Gymnasium	4,645,390.00		3,099,333.00	
13.2.31	Workshop	2,458,719.00	23,028,026.00	1,612,228.00	20,119,399.00
c.	Other Educational Expenses:		Current Year : 2015-16	Previous Year : 2014-15	
13.2.32	Academic Data	314,640.00			
13.2.33	B Tech - Entrance Examination Exps	531,791.00		580,590.00	
13.2.34	Contbn to Seminars/Symposia	0.00		60,000.00	
13.2.35	Entrance Exam/Admission Expenses	0.00		0.00	
13.2.36	Examination Section Exp	6,190,279.00		6,360,379.00	
13.2.37	JRF - Entrance Examination Exps	2,122,105.00		1,338,638.00	
13.2.38	Liabrary Periodicals	79,080.00		426,969.00	

13.2.39	M Tech - Entrance Examination Exps	1,699,282.00		1,349,760.00	
13.2.40	MBA - Entrance Examination Exps	568,974.00		119,682.00	
13.2.41	MSC/ MSC Tech - Entrance Exam Exps	1,553,200.00		1,671,424.00	
13.2.42	Prizes to Students	19,425.00		405,789.00	
13.2.43	Students Activities	2,573,369.00		2,633,000.00	
13.2.44	Students Amenities	2,038,393.00	17,690,538.00	1,398,844.00	16,345,075.00
13.2.45	Scholarship to Students:				
13.2.46	Dual Degree Contingency	108,760.00		67,345.00	
13.2.47	Dual Degree Fellowship	1,557,827.00		1,635,389.00	
13.2.48	MCM SCHOLARSHIP	83,172,400.00		39,601,909.00	
13.2.49	Mess bill/Pocket Exp to SC/ST Students			2,510,399.00	
13.2.50	PG Contingency	45,104,157.00		1,630,854.00	
13.2.51	Research Contingency			10,237,095.00	
13.2.52	Research Fellowship	136,512,227.00		42,131,399.00	
13.2.53	Student Scholarship (PG)			28,042,948.00	
13.2.54	Student Scholarship (UG)	388,000.00	266,843,371.00	352,000.00	126,209,338.00
13.2.55	Sub Total (Rs)		284,533,909.00		142,554,413.00
d.	General Expenses:		Current Year : 2015-16		Previous Year : 2014-15
13.2.56	Advertisement & Publicity	7,087,115.00		6,097,633.00	
13.2.57	Electricity Charges	40,853,334.00		19,894,750.00	
13.2.58	Generator Running & Maint Exp	13,265,569.00		16,501,408.00	
13.2.59	Health Centre Expenses/Medical cover to Employees/Students	15,933,706.00		16,522,230.00	
13.2.60	Horticulture & Gardening	3,204,343.00		4,108,163.00	
13.2.61	Hospitality & Public Relations	417,133.00		511,250.00	
13.2.62	ISM IIF Kolkata	133,114.00			
13.2.63	Liaisoning Office Expenses	627,273.00		570,056.00	
13.2.64	Postage & Telegram	940,778.00		1,088,310.00	
13.2.65	Printing & Stationery	3,198,528.00		3,991,539.00	
13.2.66	School M'ship to Prof Bodies	329,283.00		191,987.00	
13.2.67	Security Services	30,777,313.00		28,025,752.00	
13.2.68	Telephone/ Telex/ Fax/ Internet Connectivity	4,340,561.00		3,123,131.00	
13.2.69	Uniform to Staff	254,139.00		295,873.00	
13.2.70	University M'ship of Professional Bodies	0.00		173,544.00	
13.2.71	Vehicle Running & Maint Expenses	2,369,608.00		2,029,805.00	
13.2.72	Water Supply expenses	2,869,356.00	126,601,153.00	5,260,952.00	108,386,383.00
e.	Miscellaneous Expenses		Current Year : 2015-16		Previous Year : 2014-15
13.2.73	Audit Fees & Expenses	441,381.00		266,398.00	
13.2.74	Bank Charges	8,259.00		10,748.00	
13.2.75	Contingent Expenses	1,956,619.00		1,715,415.00	
13.2.76	Convocation/ Annual Day/ Exhibition/ Fair	3,051,660.00		1,383,383.00	
13.2.77	CRF Revenue Expenses	82,980.00		150911	
13.2.78	Deficit Set Off	0.00		0.00	
13.2.79	Legal expenses	700,873.00		465,903.00	
13.2.80	Loss by Theft	0.00		0.00	
13.2.81	Miscellaneous Expenses	10,045.00		8,250.00	
13.2.82	Public Health & Pest Control	3,107,078.00		6,144,308.00	
13.2.83	Publications	320,512.00		396,127.00	
13.2.84	Rajbhasha & Other Statutory Exp.	493,973.00		419,120.00	

13.2.85	Senior Academic Hostel	98,140.00		272,625.00	
13.2.86	Training of Teachers/ Staff incl. Seminars etc.	171,500.00		372,295.00	
13.2.87	Visiting Part-time Lecturers	921,610.00		1,149,663.00	
13.2.88	Welfare Measures	875,489.00	12,240,119.00	745,588.00	13,500,734.00
13.2.89	Maintenance Exps (Repairing):				
a	Civil Maintenance	11,038,122.00		17,336,830.00	
b	Computer Maintenance	656,113.00		367,984.00	
c	Electrical Maintenance	2,905,956.00		3,244,971.00	
d	Furniture & Fixtures	294,348.00		684,222.00	
e	Office & Lab Equipment	328,545.00		370,896.00	
f	Refrigeration & Air-conditioning	495,000.00	15,718,084.00	0.00	22,004,903.00
13.2.90	Sub Total (NP Miscellaneous Exp)		27,958,203.00		35,505,637.00
Project Account		Current Year : 2015-16		Previous Year : 2014-15	
Miscellaneous Expenses:					
13.3.1	Bank Charges	31584.00		26820.60	
13.3.2	Miscellaneous	25013.00	56597.00	0.00	26820.60
13.3	Total Admin Expenses Projects		56,597.00		26,820.60
13.1.a	Travelling Exp - PLAN		0.00		0.00
13.2.a	Travelling Exp - NON PLAN		75,48,727.00		69,05,257.00
	TOTAL - Travelling Exp		75,48,727.00		69,05,257.00
13.1.b	Departmental Exp - PLAN		13,617.00		62,084.00
13.2.b	Departmental Exp - N PLAN		230,28,026.00		201,19,399.00
	TOTAL - Departmental Exp		230,41,643.00		201,81,483.00
13.1.c	Other Educational Exp - PLAN		1886,38,241.00		1310,28,670.00
13.2.c	Other Educational Exp - N PLAN		2845,33,909.00		1425,54,413.00
	TOTAL - Other Educational Exp		4731,72,150.00		2735,83,083.00
13.1.d	General Expenses - PLAN		268,00,902.00		503,49,547.00
13.2.d	General Expenses – NON PLAN		1266,01,153.00		1083,86,383.00
	TOTAL - General Expenses		1534,02,055.00		1587,35,930.00
13.1.e	Misc Expenses - PLAN		169,43,493.00		207,23,717.00
13.2.e	Misc Expenses - NON PLAN		279,58,203.00		355,05,637.00
13.3.e	Misc Expenses - PROJECT		56,597.00		26,820.60
	TOTAL - Misc Expenses		449,58,293.00		562,56,174.60
13.A	OTHER ADMIN EXPS - PLAN		2323,96,253.00		2021,64,018.00
13.B	OTHER ADMIN EXPS - N PLAN		4696,70,018.00		3134,71,089.00
13.C	OTHER ADMIN EXPS - PROJECT		56,597.00		26,820.60
13	TOTAL - OTHER ADMIN EXPS		7021,22,868.00		5156,61,927.60

**SCHEDULE: RECEIPT AND PAYMENT ACCOUNT FOR THE YEAR
ENDING 31ST MARCH, 2016**

Sch No	RECEIPTS	Non Plan 2015-16	Plan 2015-16	Project 2015-16	Total Current Year 2015-16	Total Previous Year 2014-15
	Opening Balances:					
R.1	Cash in Hand	140,634.70	0.00	27,686.00	168,320.70	116,129.70
R.2	Cash at Bank	149,460,956.47	147,940,634.41	51,107,213.70	348,508,804.58	366,488,681.70
R.2.1	Unknown Difference to be located	0.00				946.00
R.2.2	Total Cash at Bank	149,601,591.17	147,940,634.41	51,134,899.70	348,677,125.28	366,487,735.70
R.3	Grants-in-aid from MHRD					
R.3.1	GIA Receivable From GOI, MHRD, N Delhi	0.00	0.00	0.00	0.00	87,135,000.00
R.3.2	Grants in Aid	745,000,000.00	0.00	0.00	745,000,000.00	624,940,000.00
R.3.3	Grants-in-Aid Receivable	0.00	0.00	0.00	0.00	100,000,000.00
R.3.4	Grants in Aid	0.00	1,000,000,000.00	0.00	1,000,000,000.00	1,100,000,000.00
R.3.5	Total GIA	745,000,000.00	1,000,000,000.00	0.00	1,745,000,000.00	1,912,075,000.00
R.4	Investment Encashed					
R.4.1	Endowment Fund Investment	370,097,746.00			370,097,746.00	84,075,500.00
R.4.2	GIA & School Income Investment	1,106,800,000.00			1,106,800,000.00	750,737,277.00
R.4.3	Investment encashed		1,044,000,000.00		1,044,000,000.00	897,553,425.00
R.4.4	FD with Bank of India ISM Br. Project Account				0.00	3,452,542.00
R.4.5	FD with Bank of India, CIL Chair				0.00	12,700,000.00
R.4.6	FD with Bank of India, ISM (ONGC Chair)				0.00	4,022,157.00
R.4.7	FD with Bank of India, ISM Branch Mine Env. Chair				0.00	4,029,106.00
R.4.8	FD with Bank of India, ISM Br Rajeev Gandhi Chair				0.00	8,000,000.00
R.4.9	FD With Bank of India, Rajeev Gandhi Chair				0.00	10,500,000.00
R.4.10	FD with Bank of India,ISM(SAIL Chair)				0.00	7,469,721.00
R.4.11	FD with BOI, Jharia, CIL Chair Investment				0.00	10,019,178.00
R.4.12	FD with Canara Bank, Seraidhela, SAIL NMDC Chair				0.00	1,700,000.00
R.4.13	Fixed Deposits			251,255,800.00	251,255,800.00	185,621,468.00
R.4.14	Inderjeet Satyawati Buadhar Fund Inv Canara Bank				0.00	200,000.00
R.4.15	Sandvik Chair Fund Inv with Canara Bank				0.00	5,576,860.00
R.4.16	Total Investment Encashed	1,476,897,746.00	1,044,000,000.00	251,255,800.00	2,772,153,546.00	1,985,657,234.00
R.5	Fees from Students	395,361,861.61	0.00	0.00	395,361,861.61	286,408,962.00
R.6	Interest from Investments/ Advances					
R.6.1	Interest Income				0.00	5,931,705.00
R.6.2	Interest Endowment Fund	3,735,342.00			3,735,342.00	9,615,981.36
R.6.3	Interst From Investments	12,726,144.00	11,164,594.00		23,890,738.00	9,124,687.00
R.6.4	Interest Received			73,687,600.09	73,687,600.09	9,104,488.77
R.6.5	ISM Allumni Association	1,655,271.00			1,655,271.00	
R.6.6	Interest from Adv to Employee	202,457.00			202,457.00	
R.6.7	Total Interest from Investments/ Advances	18,319,214.00	11,164,594.00	73,687,600.09	103,171,408.09	33,776,862.13

R.7	Other Income					
R.7.1	Income Form Projects	1,702,143.00			1,702,143.00	3,739,263.00
R.7.2	Other Income	20,951,455.00			20,951,455.00	16,655,014.50
R.7.3	CRF Analysis Charges	331,980.00			331,980.00	298,500.00
R.7.4	Departmental Expenses	95,122.00			95,122.00	7,145.00
R.7.5	Establishment Expense	6,058,254.00			6,058,254.00	3,180,274.00
R.7.6	General Expenses	1,969,737.00	13,688.00		1,983,425.00	1,944,308.00
R.7.7	Miscellaneous Expenses	671,000.00	6,000.00		677,000.00	1,248,040.00
R.7.8	Other Educational Expenses	277,624.00			277,624.00	501,380.00
R.7.9	Travelling Expenses				0.00	42,667.00
R.7.10	Income Through BRS		25,080.00		25,080.00	99,886.50
R.7.11	Miscellaneous Income				0.00	48,548.00
R.7.12	Bank Charges				0.00	4,085.00
R.7.13	Total Other Income	32,057,315.00	44,768.00	0.00	32,102,083.00	27,769,111.00
R.8	Other Liabilities					
R.8.1	JASPER HOSTEL				0.00	49,500.00
R.8.2	Misc. Receipts (Liab)				0.00	265,893.00
R.8.3	Vidhan Sabha Election				0.00	296,000.00
R.8.4	Income Tax Employees	56,903,407.00			56,903,407.00	50,305,997.00
R.8.5	Jharkhand State Professional Tax	1,018,412.00			1,018,412.00	936,234.00
R.8.6	Income Tax Contractor	5,243,664.00			5,243,664.00	2,335,953.00
R.8.7	Income Tax Endowment Fund	775,927.00			775,927.00	
R.8.8	Labour Welfare	139,245.00			139,245.00	189,103.00
R.8.9	Sales Tax 4%	563,171.00			563,171.00	756,396.00
R.8.10	Service Tax	2,786,653.00			2,786,653.00	3,446,884.00
R.8.11	TEQIP Income Tax				0.00	1,310.00
R.8.12	Income - Tax (Guest Faculties/ Adj. Prof.)	439,258.00			439,258.00	253,100.00
R.8.13	Income Tax {U/S 194 (I)}				0.00	7,740.00
R.8.14	Plan Income Tax A/c	1,688,061.00			1,688,061.00	1,972,527.00
R.8.15	Plan Income Tax A/c Professional	110,958.00			110,958.00	
R.8.16	Project Income Tax A/c Employees	11,996,792.00			11,996,792.00	16,421,971.00
R.8.17	Project Income Tax A/c Contractor	19,846.00			19,846.00	
R.8.18	Project Service Tax A/c	13,851,126.00			13,851,126.00	12,386,942.00
R.8.19	Unpaid	16,800.00			16,800.00	13,600.00
R.8.20	Loksabha Election 2014/ Panchayat	265,800.00			265,800.00	220,800.00
R.8.21	Income Tax		1,720,952.00		1,720,952.00	2,192,182.00
R.8.22	Income Tax (94 J)		322,679.00		322,679.00	27,689.00
R.8.23	Labour Welfare		362,130.00	4,703.00	366,833.00	526,096.00
R.8.24	SALES TAX @ 4%		1,448,492.00	18,810.00	1,467,302.00	2,104,369.00
R.8.25	Service Tax				0.00	5,767.00
R.8.26	Other Current Liability			44,268,926.00	44,268,926.00	33,544,375.00
R.8.27	Income Tax (Cont) From SAIL Chair				0.00	3,867.00
R.8.28	Income Tax Emplpyees, CIL Chair			239,064.00	239,064.00	295,411.00
R.8.29	Income Tax From Contractors			73,581.00	73,581.00	211,992.00
R.8.30	Income Tax From Employees			12,215,949.00	12,215,949.00	16,468,779.00
R.8.31	IT From Employees, Rajeev Gandhi Chair			486,707.00	486,707.00	449,268.00
R.8.32	IT From NMDC Chair (Employees)			296,457.00	296,457.00	508,212.00
R.8.33	IT From Sandvik Chair (Contractors)				0.00	7,101.00
R.8.34	IT From Sandvik Chair (Employees)			590,963.00	590,963.00	315,184.00

R.8.35	Income Tax From TEQIPII (Contractors)			16,291.00	16,291.00	37,410.00
R.8.36	Income Tax From Teqip II (Employees)				0.00	59,486.00
R.8.37	IT SAIL NMDC CHAIR (EMPLOYEES)			383,405.00	383,405.00	86,639.00
R.8.38	Labour Cess Tax From TEQIP II			5,310.00	5,310.00	1,299.00
R.8.39	SALES TAX From TEQIP II			21,242.00	21,242.00	5,197.00
R.8.40	Service Tax			13,847,639.00	13,847,639.00	12,441,208.00
R.8.41	Adm. Fee of Afgan Students				0.00	772,000.00
R.8.42	EDC Room Rent			161,063.00	161,063.00	196,200.00
R.8.43	Electric Charges for CIL Chair			11,637.00	11,637.00	13,094.00
R.8.44	Electric Charges for Rajiv Gandhi Chair			8,002.00	8,002.00	6,598.00
R.8.45	Electric Charges From NMDC CHAIR			10,910.00	10,910.00	17,738.00
R.8.46	Electric Charges From Sandvik Chair				0.00	3,290.00
R.8.47	ISM Basant			25,000.00	25,000.00	
R.8.48	Medical Charges for CIL Chair			6,500.00	6,500.00	6,000.00
R.8.49	Medical Charges for NMDC Chair			12,903.00	12,903.00	
R.8.50	Medical Charges from Rajiv Gandhi Chair			16,000.00	16,000.00	
R.8.51	Medical Charges from SAIL NMDC Chair			7,067.00	7,067.00	
R.8.52	Medical Charges From Sandvik Chair			6,571.00	6,571.00	
R.8.53	Non Plan Control A/c			10,217,486.00	10,217,486.00	15,000,000.00
R.8.54	PF Control A/c			0.00	0.00	
R.8.55	School Development Fund			147,301.00	147,301.00	964,143.00
R.8.56	School Support Charges			20,025,554.04	20,025,554.04	30,104,653.12
R.8.57	Scolomin Club for Cil Chair			1,200.00	1,200.00	1,375.00
R.8.58	Scolomin Club for Rajeev Ghandhi Chair			1,300.00	1,300.00	500.00
R.8.59	Tuition Fee of Afgan Students				0.00	19,454,400.00
R.8.60	VEHICLE CHARGES				0.00	78.00
R.8.61	Vehicle Charges for CIL Chair			470.00	470.00	590.00
R.8.62	Vehicle Charges for NMDC Chair			330.00	330.00	
R.8.63	Vehicle Charges of Sandvik Chair				0.00	110.00
R.8.64	Advance to Supplier			292,929.00	292,929.00	2,010,990.00
R.8.65	Advance of Employee			1,748,423.50	1,748,423.50	1,875,286.00
R.8.66	Plan Control Account			133,270.00	133,270.00	94,968,876.00
R.8.67	Total Statutory & other Receipts/ Recoveries	95,819,120.00	3,854,253.00	105,302,963.54	204,976,336.54	324,547,402.12
R.9	Recovery of Advances from Staff/ Suppliers/ Deposits/ EMD/ SD					
R.9.1	CPF Subscription & Loan Recovery	13,712,000.00			13,712,000.00	13,453,300.00
R.9.2	DCPS SUBSCRIPTION	23,801,077.00			23,801,077.00	19,475,772.00
R.9.3	GPF Subscription & Loan Recovery	41,064,160.00			41,064,160.00	39,808,640.00
R.9.4	PF Control A/c	11,125,740.00			11,125,740.00	0.00
R.9.5	Current Liability to Employee					
R.9.6	CanBank, SDL Br. Loan to Employees	8,784,763.00			8,784,763.00	7,842,315.00
R.9.7	Children Act. Centre Subscription	118,400.00			118,400.00	111,500.00
R.9.8	Court Attachment Deduction	32,700.00			32,700.00	52,350.00
R.9.9	GIS Premium	1,553,466.00			1,553,466.00	2,384,272.00
R.9.10	LIC Premium	5,729,043.00			5,729,043.00	5,681,758.00
R.9.11	PM Relief Fund	66,250.00			66,250.00	
R.9.12	Post Office CTD/RD	399,200.00			399,200.00	381,800.00
R.9.13	Relief Fund (Death Benefit Payable)	70,700.00			70,700.00	
R.9.14	Scolomin Club	300,450.00			300,450.00	271,275.00
R.9.15	Staff Recreation Club	322,600.00			322,600.00	324,600.00

R.9.16	Undisbursed Pay	0.00			0.00	69,849.00
R.9.17	Current Liability - Party					
R.9.18	EARNEST MONEY DEPOSIT	16,376,398.00			16,376,398.00	9,565,540.00
R.9.19	SECURITY DEPOSIT	5,286,603.00			5,286,603.00	5,629,568.00
R.9.20	Current Liability - Students					
R.9.21	Alumni Subscription	1,110,100.00			1,110,100.00	1,165,100.00
R.9.22	ANREMT				0.00	1,000.00
R.9.23	Basant Subscription	1,421,700.00			1,421,700.00	1,415,800.00
R.9.24	CONCETTO				0.00	100,000.00
R.9.25	DST/INSPIRE/SCHOLARSHIP	9,440,000.00			9,440,000.00	8,507,787.00
R.9.26	Executive MBA	2,823,341.00			2,823,341.00	2,881,338.00
R.9.27	Hostel Security Deposit				0.00	10,258,000.00
R.9.28	IIIF Kolkata MECH	260,924.00			260,924.00	
R.9.29	IIIF Kolkata CSE	391,148.00			391,148.00	
R.9.30	ISM 89 Silver Jublee Fund				0.00	2,550,000.00
R.9.31	Library Security				0.00	30,980.00
R.9.32	Outside Scholarships	3,966,759.00			3,966,759.00	1,999,736.00
R.9.33	PRAKARM 11				0.00	145,000.00
R.9.34	SRIJAN FUND	347,000.00			347,000.00	748,000.00
R.9.35	STUDENT CAUTION MONEY	18,540,000.00			18,540,000.00	12,011,620.00
R.9.36	Student Insurance Scheme	6,716,404.00			6,716,404.00	6,073,500.00
R.9.37	Student Loan	181,700.00			181,700.00	
R.9.38	Student Uniform Deposit	108,400.00			108,400.00	3,404,200.00
R.9.39	Current Assets					
R.9.40	Advance to Employee	20,771,072.00			20,771,072.00	12,264,821.00
R.9.41	Plan Control A/C	52,792,944.00			52,792,944.00	33,980,688.00
R.9.42	Project Control A/c (Endowment Fund)	50,387,426.00			50,387,426.00	2,912,346.00
R.9.43	Project Control A/c (General)	61,879,395.00			61,879,395.00	17,762,115.00
R.9.44	Current Liabilities					
R.9.45	Suspence A/c	10,079,130.00			10,079,130.00	
R.9.46	Earnest / Security Money Deposit		4,491,379.00		4,491,379.00	7,011,014.00
R.9.47	LICENCE FEE		3,200.00		3,200.00	3,200.00
R.9.48	Non Plan Control A/c		10,381,795.00		10,381,795.00	37,340,634.00
R.9.49	Project Control A/c				0.00	93,500,000.00
R.9.50	BRS Liability	433,307.28	211,390.50		644,697.78	827,178.00
R.9.51	Advances to Contractors				0.00	407,179,647.00
R.9.52	ADVANCE TO STAFF				0.00	466.00
R.9.53	Liability towards Convocation Deceased Labour	1,543,320.00			1,543,320.00	
R.9.54	Miscellaneous Receipt	1,081,613.00			1,081,613.00	
R.9.55	Total Recovery of Advances from Staff/ Suppliers/ Deposits/ EMD/ SD	373,019,233.28	15,087,764.50	0.00	388,106,997.78	769,126,709.00
R.10	Deductions in the Fixed Assets					
R.10.1	Equipment & Lab. Development		226,216.00		226,216.00	276,214.00
R.10.2	Road & Building				0.00	122,081.00
R.10.3	Books & Journals		1,307,245.00		1,307,245.00	18,675.00
R.10.4	Total Deductions in the Fixed Assets	0.00	1,533,461.00	0.00	1,533,461.00	416,970.00
R.11	Additions to Earmarked Funds					
R.11.1	Library Development Fund				0.00	275,520.00
R.11.2	School Development Fund				0.00	3,953,003.00
R.11.3	Student Innovetive Project Fund	15,183,850.00			15,183,850.00	14,672,500.00

R.11.4	Benevolent Fund				0.00	382,600.00
R.11.5	Mess Subsidy Fund	1,000.00			1,000.00	203,500.00
R.11.6	Student Medical Fund	3,695,750.00			3,695,750.00	2,711,335.00
R.11.7	Student Welfare Fund				0.00	6,500.00
R.11.8	Earmark Fund					
R.11.9	Benevolent Fund	340,000.00		1,448,451.00	1,788,451.00	2,140,468.00
R.11.10	Endowment Fund	47,208,342.00			47,208,342.00	
R.11.11	CIL Chair for Mining Deptt.			1,231,485.00	1,231,485.00	1,985,157.34
R.11.12	MoLE Chair Professor Fund			1,159,406.00	1,159,406.00	10,024,502.00
R.11.13	NMDC Chair for Open Cast Mining			2,044,601.00	2,044,601.00	1,796,132.00
R.11.14	ONGC Chair			266,519.00	266,519.00	1,303,610.58
R.11.15	Rajeev Gandhi Memorial Chair			2,008,933.00	2,008,933.00	2,183,465.80
R.11.16	SAIL NMDC Chair (Gr.Rs.5000000)			910,768.00	910,768.00	8,604,567.48
R.11.17	Sandvik Chair Prof. Fund			251,883.00	251,883.00	448,296.00
R.11.18	Tata Steel Chair			1,996,555.00	1,996,555.00	1,799,195.00
R.11.19	Uranium Chair			10,086.00	10,086.00	3,416.00
R.11.20	Bhaskar Bhattacharya Memorial Fund			3,060.00	3,060.00	63,020.99
R.11.21	ISM AANA Scholarship Award			323,117.00	323,117.00	
R.11.22	Late Chitra Bhattacharya Memorial Award			330,000.00	330,000.00	
R.11.23	NAA Scholarship Fund			199,338.00	199,338.00	
R.11.24	Inderjeet & Satyawat Bodhwar Scholarship				0.00	19,315.00
R.11.25	Mitali Sen Gold Medal Memorial End. Fund				0.00	550,000.00
R.11.26	Nirja Sahay Memorial Fund				0.00	5,688.00
R.11.27	Poonam (Khanna) Singh Endowmend Mem. Fund			100,000.00	100,000.00	138,000.50
R.11.28	Renuka Rajhans Memorial Gold Medal Fund				0.00	27,300.00
R.11.29	Vishwesharaiya PhD Scheme			812,500.00	812,500.00	
R.11.30	Total Additions to Earmarked Funds	66,428,942.00	0.00	13,096,702.00	79,525,644.00	53,297,092.69
R.12	Research and Development Projects					
R.12.1	ISM R&D Projects				0.00	219,971.00
R.12.2	R&D Project			175,235,101.00	175,235,101.00	126,292,335.00
R.12.3	UGC Sponsored Projects			6,574,044.00	6,574,044.00	6,472,051.00
R.12.4	Total Research and Development Projects	0.00	0.00	181,809,145.00	181,809,145.00	132,984,357.00
R.13	Consultancy and Testing					
R.13.1	Consultancy Services			98,888,907.80	98,888,907.80	101,061,641.48
R.13.2	Central Research facility					106,370.00
R.13.3	Total Consultancy and Testing	0.00	0.00	98,888,907.80	98,888,907.80	101,168,011.48
R.14	Departmental Development Fund					
R.14.1	AGL Department DDF			5,369.00	5,369.00	277,239.00
R.14.2	AGL XRF Maintenance Fund			56,250.00	56,250.00	
R.14.3	AGP Department DDF			69,282.00	69,282.00	19,624.00
R.14.4	Applied Physics				0.00	115,087.00
R.14.5	C.S.E Department				0.00	9,238.00
R.14.6	Central Administrative Charges			1,411,299.00	1,411,299.00	2,140,483.00
R.14.7	Chemical Engg. Department			1,750.00	1,750.00	
R.14.8	Civil Engg. Department			33,009.00	33,009.00	
R.14.9	Chemistry Department				0.00	9,900.00
R.14.10	CME Department			335,964.00	335,964.00	1,369,807.00
R.14.11	Computer Centre			2,323.00	2,323.00	1,244.00

R.14.12	CSE Department			18,906.00	18,906.00	
R.14.13	E & I Department			8,183.00	8,183.00	4,268.00
R.14.14	EDC Development Fund			1,266,885.00	1,266,885.00	2,590,232.00
R.14.15	EDC Support Services			3,500.00	3,500.00	
R.14.16	EDC Xeroxing (4000) Fund				0.00	120.00
R.14.17	Electrical Engg. Department			19,080.00	19,080.00	39,958.00
R.14.18	FME Department			265,887.00	265,887.00	306,791.00
R.14.19	Library Card			31,050.00	31,050.00	24,000.00
R.14.20	Library Development Fund			26,317.00	26,317.00	19,602.00
R.14.21	Library Fine			5,307.00	5,307.00	93.00
R.14.22	MS Department			178,120.00	178,120.00	21,026.00
R.14.23	Mechanical Engg. Department				0.00	13,076.00
R.14.24	Mining Engg. Department			1,484,189.76	1,484,189.76	1,933,230.00
R.14.25	Mining Machinery Engg. Dept.			585,393.00	585,393.00	794,153.00
R.14.26	PE Department			700.00	700.00	218,311.00
R.14.27	Total Departmental Development Fund	0.00	0.00	5,808,763.76	5,808,763.76	9,907,482.00
R.15	Fellowship and Associateship					
R.16	Professional Development Fund					
R.16.1	A K MISHRA, PDF			122,101.00	122,101.00	53,308.00
R.16.2	A K MUKHOPADHYAY, PDF			184,212.00	184,212.00	275,386.00
R.16.3	A K Pal PDF			42,518.00	42,518.00	
R.16.4	A K Pathak PDF				0.00	43,687.00
R.16.5	A K VARMA, PDF			1,869.00	1,869.00	24,500.00
R.16.6	A R DIXIT, PDF			8,281.00	8,281.00	93,473.00
R.16.7	A S Venkatesh PDF				0.00	3,570.00
R.16.8	ALOK SINHA, PDF			17,012.00	17,012.00	16,520.00
R.16.9	Amgoth Tarachand PDF			3,501.00	3,501.00	
R.16.10	Amit Kr. Verma, PDF			579.00	579.00	2,025.00
R.16.11	Anand Anupam, PDF			3,325.00	3,325.00	1,138.00
R.16.12	Anshumali (ESE) PDF			40,678.00	40,678.00	
R.16.13	Arup Kumar Pal (CSE) PDF			3,364.00	3,364.00	
R.16.14	B K Mishra, PDF			6,995.00	6,995.00	47,945.00
R.16.15	B K Nandi, PDF			4,550.00	4,550.00	1,050.00
R.16.16	B S CHOUDHARY, PDF				0.00	10,557.00
R.16.17	B C SARKAR, PDF				0.00	165,611.00
R.16.18	BISWAJIT CHOWDHURY, PDF				0.00	10,614.00
R.16.19	Biswajit Paul, PDF			93,433.00	93,433.00	118,690.00
R.16.20	Chandan Guria, PDF				0.00	43,687.00
R.16.21	Chiranjiv Kumar PDF			9,294.00	9,294.00	
R.16.22	D C Panigarhi, PDF			532,571.00	532,571.00	786,335.00
R.16.23	DEBJANI MITRA, PDF				0.00	4,268.00
R.16.24	DHEERAJ KUMAR PDF			248,583.00	248,583.00	324,954.00
R.16.25	Dipankar Roy, PDF			2,323.00	2,323.00	1,244.00
R.16.26	Gurdeep Singh, PDF				0.00	351,760.00
R.16.27	K DASGUPTA, PDF			188,753.00	188,753.00	232,050.00
R.16.28	Kalyan Chatterjee, PDF			5,326.00	5,326.00	4,034.00
R.16.29	L A Kumarswamy Das PDF			366.00	366.00	
R.16.30	Manish Kumar Jain PDF			528.00	528.00	
R.16.31	M Jawed, PDF			8,099.00	8,099.00	87,662.00
R.16.32	Mrinalini Pandey PDF			4,550.00	4,550.00	
R.16.33	Niladri Das PDF			9,027.00	9,027.00	

R.16.34	N R Mandre, PDF			5,460.00	5,460.00	4,739.00
R.16.35	N Suresh, Assoc. PDF			82,525.00	82,525.00	94,033.00
R.16.36	NITAI PAL, PDF			6,722.00	6,722.00	6,767.00
R.16.37	P K Behra, PDF				0.00	91,175.00
R.16.38	P K JANA, PDF			1,680.00	1,680.00	3,079.00
R.16.39	P K SADHU, PDF			7,033.00	7,033.00	12,344.00
R.16.40	Pramod Pathak PDF			60,581.00	60,581.00	
R.16.41	P R Sahoo PDF			3,500.00	3,500.00	
R.16.42	P K SINGH, PDF (ESE)				0.00	28,228.00
R.16.43	P S GUPTA, PDF				0.00	115,087.00
R.16.44	P S MUKHERJEE, PDF			113,042.00	113,042.00	63,462.00
R.16.45	P S PAUL, PDF			11,629.00	11,629.00	12,737.00
R.16.46	P SEN, PDF			7,000.00	7,000.00	57,120.00
R.16.47	PHALGUNI SEN, PDF				0.00	83,351.00
R.16.48	R Venugopal, PDF			14,032.00	14,032.00	4,900.00
R.16.49	S K PAL, (AGP), PDF			62,429.00	62,429.00	19,624.00
R.16.50	S LAIK PDF				0.00	28,875.00
R.16.51	S MOHANTY,PDF				0.00	83,558.00
R.16.52	S BHATTACHARYA, PDF			112,824.00	112,824.00	110,680.00
R.16.53	S C Dutta (Civil Engg) PDF			28,284.00	28,284.00	
R.16.54	S CHATTOPADHYA, PDF				0.00	42,034.00
R.16.55	S CHOUDHARI, PDF (CIL CHAIR)			85,130.00	85,130.00	30,235.00
R.16.56	S K GUPTA, PDF			77,471.00	77,471.00	1,750.00
R.16.57	S K MAITI, PDF			56,976.00	56,976.00	46,056.00
R.16.58	S K Panda PDF			4,725.00	4,725.00	
R.16.59	S K Paul (ECE) PDF			1,719.00	1,719.00	
R.16.60	Sachin Tripathi (CSE) PDF			3,193.00	3,193.00	
R.16.61	Sagar Pal PDF			1,507.00	1,507.00	
R.16.62	Sandeep Mandal PDF			9,345.00	9,345.00	
R.16.63	SANJAY MANDAL, PDF				0.00	4,112.00
R.16.64	SANTANU DWARI, PDF			3,131.50	3,131.50	11,915.00
R.16.65	Sauma Singh, PDF			8,397.00	8,397.00	21,026.00
R.16.66	Shalini Goutam PDF			6,398.00	6,398.00	
R.16.67	Shalivahan PDF			2,126.00	2,126.00	
R.16.68	Shatrughan Soren, PDF			2,908.00	2,908.00	2,828.00
R.16.69	SHRAVAN KUMAR, PDF			7,320.00	7,320.00	5,654.00
R.16.70	Shushrut Das PDF			3,131.50	3,131.50	
R.16.71	Sushila Maheshkar PDF			2,554.00	2,554.00	
R.16.72	Subrato Kr. Ghosh, PDF				0.00	3,987.00
R.16.73	T K NAIYA, PDF				0.00	2,156.00
R.16.74	T K CHATTERJEE, PDF			67,428.00	67,428.00	76,177.00
R.16.75	Tanmoy Maiti, PDF			15,212.00	15,212.00	11,370.00
R.16.76	U K Singh PDF			91,939.00	91,939.00	77,293.00
R.16.77	Upendra Kumar Singh (AGP) PDF			6,853.00	6,853.00	
R.16.78	Vikas Mahato PDF			700.00	700.00	
R.16.79	V K Saxena, PDF			16,816.00	16,816.00	4,489.00
R.16.80	V M S R Murthy, PDF			247,512.00	247,512.00	288,396.00
R.16.81	V P Sharma PDF				0.00	93,520.00
R.16.82	VINOD P SINHA, PDF			82,040.00	82,040.00	28,000.00
R.16.83	Vipin Kumar PDF			350.00	350.00	
R.16.84	Vishnu Priye PDF			10,000.00	10,000.00	
R.16.85	Total Professional Development Fund	0.00	0.00	2,873,461.00	2,873,461.00	4,274,825.00

R.17	Additions to Capital/ Other Reserve Funds					
	TOTAL RECEIPTS (Rs)	3,352,505,023.06	2,223,625,474.91	783,858,242.89	6,359,988,740.86	6,008,013,883.82
Sch No	PAYMENTS	Non Plan 2015-16	Plan 2015-16	Project 2015-16	Total Current Year 2015-16	Total Previous Year 2014-15
P.1	Departmental Expenses	22,168,307.00	13,617.00		22,181,924.00	19,496,348.00
P.2	Educational Expenses	303,483,343.00	169,451,104.00		472,934,447.00	257,009,698.00
P.3	Establishment Expenses	700,639,422.00			700,639,422.00	626,888,093.00
P.4	General Expenses	127,362,302.00	26,061,515.00		153,423,817.00	159,311,186.00
P.5	Miscellaneous/ other Expenses	28,181,658.00	16,885,710.00		45,067,368.00	56,194,044.00
P.6	Travelling Expenses	7,199,440.00			7,199,440.00	6,803,828.00
P.7	Investment of Funds					
P.7.1	Endowment Fund Investment	85,263,482.00			85,263,482.00	
P.7.2	GIA & School Income Investment	1,106,800,000.00			1,106,800,000.00	787,564,195.00
P.7.3	FD with SBI Main Branch Dhanbad	1,543,320.00			1,543,320.00	
P.7.4	Scholarship				0.00	2,500,000.00
P.7.5	Investment		1,094,000,000.00		1,094,000,000.00	880,000,000.00
P.7.6	Central Bank of India, FD (Bartand)			72,637,489.00	72,637,489.00	62,000,000.00
P.7.7	Late Chitra Bhattacharya Fund			300,000.00	300,000.00	
P.7.8	FD with Bank of India ISM Br. Project Account				0.00	3,452,542.00
P.7.9	FD with Bank of India, CIL Chair				0.00	13,100,000.00
P.7.10	FD with Bank of India, ISM Branch Rajeev Gandhi Chair				0.00	12,029,106.00
P.7.11	FD With Bank of India, Rajeev Gandhi Chair				0.00	11,500,000.00
P.7.12	FD with Canara Bank, Seraidhela, SAIL-NMDC Chair				0.00	25,519,169.00
P.7.13	Fixed Deposits			256,276,048.00	256,276,048.00	213,895,437.00
P.7.14	Inderjeet Satyawati Buadhar Fund Inv. Canara Bank				0.00	242,296.00
P.7.15	MOLE Chair Fund Investment with Canara Bank				0.00	10,000,000.00
P.7.16	Sandvik Chair Fund Inv. with Canara Bank				0.00	3,948,121.00
P.7.17	Total Investment of Funds	1,193,606,802.00	1,094,000,000.00	329,213,537.00	2,616,820,339.00	2,025,750,866.00
P.8	Advances to Staff/ Suppliers/ Contractors/ Deposits/ EMD/ SD					
P.8.1	CPF Subscription & Loan Recovery	13,712,000.00			13,712,000.00	11,163,300.00
P.8.2	DCPS SUBSCRIPTION	23,359,357.00			23,359,357.00	19,331,525.00
P.8.3	GPF Subscription & Loan Recovery	41,064,160.00			41,064,160.00	33,224,380.00
P.8.4	PF Control A/c	10,000,000.00			10,000,000.00	10,000,000.00
P.8.5	Current Liability to Employee	0.00			0.00	0.00
P.8.6	CanBank, SDL Br. Loan to Employees	8,784,763.00			8,784,763.00	7,842,315.00
P.8.7	Children Act. Centre Subscription	118,400.00			118,400.00	111,500.00
P.8.8	Court Attachment Deduction	32,700.00			32,700.00	52,350.00
P.8.9	GIS Premium	1,570,702.00			1,570,702.00	2,371,696.00
P.8.10	LIC Premium	5,729,031.00			5,729,031.00	5,651,688.00
P.8.11	PM Relief Fund	66,250.00			66,250.00	
P.8.12	Post Office CTD/RD	399,200.00			399,200.00	381,800.00
P.8.13	Remuneration of GJLT/Penman	0.00			0.00	16,700.00
P.8.14	Scolomin Club	300,350.00			300,350.00	269,400.00
P.8.15	Staff Recreation Club	322,800.00			322,800.00	324,600.00

P.8.16	Undisbursed Pay	69,849.00			69,849.00	
P.8.17	Current Liability to Party					0.00
P.8.18	Earnest Money Deposit	12,545,568.00			12,545,568.00	10,500,580.00
P.8.19	Security Deposit	4,549,532.00			4,549,532.00	6,029,334.00
P.8.20	Security Deposit with JSEB	1,305,780.00			1,305,780.00	
P.8.21	Suspence	10,079,130.00			10,079,130.00	
P.8.22	Advance to Employee					
P.8.23	HB Advance Non Plan	3,340,000.00			3,340,000.00	6,988,500.00
P.8.24	Staff Advbance	18,554,313.00			18,554,313.00	12,032,151.00
P.8.25	Car Advance	360,000.00			360,000.00	
P.8.26	Imprest Advance	309,000.00			309,000.00	297,000.00
P.8.27	PC Advance	490,000.00			490,000.00	655,000.00
P.8.28	Scooter/ Motor Cycle Advance	120,000.00			120,000.00	150,000.00
P.8.29	Cycle Advance	9,000.00			9,000.00	6,000.00
P.8.30	Festival Advance	1,098,000.00			1,098,000.00	1,149,000.00
P.8.31	Advance to Supplier/ Contractor	361,114,063.00			361,114,063.00	82,024,645.00
P.8.32	Earnest / Security Money Deposit		6,360,314.00		6,360,314.00	7,304,030.00
P.8.33	Non Plan Control A/c		52,792,944.00		52,792,944.00	36,379,020.00
P.8.34	Project Control A/c (Endowment)	1,084,500.00			1,084,500.00	
P.8.35	Project Control A/c (General)	1,112,696.00			1,112,696.00	193,338,454.00
P.8.36	Advances to Contractors		541,983,000.00		541,983,000.00	523,561,000.00
P.8.37	Advances to Suppliers		1,358,825.00		1,358,825.00	5,645,893.00
P.8.38	Advance to Staff				0.00	185,550.00
P.8.39	Current Assets - Loans & Advances					0.00
P.8.40	Advance to Supplier			896,485.00	896,485.00	560,354.00
P.8.41	Advance ot Employee			4,092,900.00	4,092,900.00	3,196,646.00
P.8.42	Plan Control Account	10,359,295.00			10,359,295.00	99,214,937.19
P.8.43	Total Advances to Staff/ Suppliers/ Contractors/ Deposits/ EMD/ SD	531,960,439.00	602,495,083.00	4,989,385.00	1,139,444,907.00	1,079,959,348.19
P.9	Additions to Fixed Assets					
P.9.1	Building at NBCC Shopping Complex at Kolkata				0.00	8,389,939.00
P.9.2	Communication Facilities				0.00	27,011.00
P.9.3	Computer Hardware	213,408.00			213,408.00	330,507.00
P.9.4	Computer Software				0.00	4,300.00
P.9.5	Library Books & Journals				0.00	1,083,009.00
P.9.6	Office Equipment				0.00	31,090.00
P.9.7	Water Supply Equipment				0.00	183,934.00
P.9.8	Equipment & Lab. Development		146,165,770.00		146,165,770.00	207,353,620.00
P.9.9	Road & Building		13,700,740.00		13,700,740.00	443,897,822.00
P.9.10	Augmentation of Power & Water		13,218,738.00		13,218,738.00	14,309,636.00
P.9.11	Books & Journals		26,442,116.00		26,442,116.00	59,840,828.00
P.9.12	Communication System		3,631,909.00		3,631,909.00	6,633,416.00
P.9.13	Computer Software				0.00	4,316,897.00
P.9.14	Computers, Peripherals & Internet Equipment		7,292,047.00		7,292,047.00	20,656,737.00
P.9.15	Furniture & Fixtures		13,388,816.00		13,388,816.00	9,147,839.00
P.9.16	Student Amenities		356,184.00		356,184.00	2,655,684.00
P.9.17	Vehicle		97,131.00		97,131.00	
P.9.18	ISM IIIF Kolkata Building	7,857,978.00			7,857,978.00	
P.9.19	ISM IIIF New Delhi Building	21,216,253.00			21,216,253.00	
P.9.20	Total Additions to Fixed Assets	29,287,639.00	224,293,451.00	0.00	253,581,090.00	778,862,269.00

P.10	Transfer/ payment from Earmarked Funds					
P.10.1	School Development Fund				0.00	4,000.00
P.10.2	Student Innovative Project Fund	30,000.00			30,000.00	107,300.00
P.10.3	Benevolent Fund	1,061,000.00			1,061,000.00	298,400.00
P.10.4	Budhwanti Mrig	104,000.00			104,000.00	32,000.00
P.10.5	Ishan Rajbanshi	30,000.00			30,000.00	24,000.00
P.10.6	ISM Alumni Association				0.00	105,500.00
P.10.7	ISS Scholarship	9,000.00			9,000.00	6,000.00
P.10.8	Mess Subsidy Fund				0.00	1,500.00
P.10.9	Student Medical Fund	18,500.00			18,500.00	90,187.00
P.10.10	CIL Chair for Mining Deptt.			1,728,737.00	1,728,737.00	2,049,288.33
P.10.11	MoLE Chair Professor Fund			833,957.00	833,957.00	109,145.00
P.10.12	NMDC Chair for Open Cast Mining			1,086,057.00	1,086,057.00	1,749,037.00
P.10.13	ONGC Chair			61,629.00	61,629.00	272.00
P.10.14	Rajeev Gandhi Memorial Chair			1,601,633.00	1,601,633.00	1,538,072.00
P.10.15	SAIL NMDC Chair			1,376,828.00	1,376,828.00	
P.10.16	SAIL Chair (Gr.Rs.5000000)				0.00	550,805.00
P.10.17	Sandvik Chair Prof. Fund			1,947,356.00	1,947,356.00	1,501,594.00
P.10.18	Tata Steel Chair			414,102.00	414,102.00	1,409,892.00
P.10.19	URANIUM CHAIR			698,933.00	698,933.00	581,089.00
P.10.20	ATLAS CAPCO SCH. FUND			18,000.00	18,000.00	12,000.00
P.10.21	Bhaskar Bhattacharya Memorial Fund			33,330.00	33,330.00	54,419.00
P.10.22	Inderjeet & Satyawat Bodhwar Scholarship			4,000.00	4,000.00	4,000.00
P.10.23	ISM AANA Scholarship Award			315,274.00	315,274.00	
P.10.24	L J JHONSON AWARD				0.00	16,665.00
P.10.25	Mata Gurdev Kaur Memorial Fund			1,000.00	1,000.00	500.00
P.10.26	Mitali Sen Gold Medal Memorial End. Fund			50,000.00	50,000.00	25,000.00
P.10.27	Nirja Sahay Memorial Fund				0.00	11,450.00
P.10.28	Paritosh & Patikrit End. Fund			7,000.00	7,000.00	10,000.00
P.10.29	Poonam (Khanna) Singh Endowment Mem. Fund			200,000.00	200,000.00	100,000.00
P.10.30	Prof N L Sharma Mem Fund			3,885.00	3,885.00	25,913.00
P.10.31	Renuka Rajhans Memorial Gold Medal Fund				0.00	11,450.00
P.10.32	S.L Sehgal Scholarship			8,000.00	8,000.00	7,000.00
P.10.33	Smt. Sneha Lata Srivastava Memorial Gold Medal				0.00	16,665.00
P.10.34	Total Transfer/ Payment from Earmarked Funds	1,252,500.00	0.00	10,389,721.00	11,642,221.00	10,453,143.33
P.11	Statutory & other Payments					
P.11.1	Executive MBA	2,795,338.00			2,795,338.00	2,145,500.00
P.11.2	IIIF Kolkata Mechanical Engg.	80,013.00			80,013.00	0.00
P.11.3	IIIF Kolkata ESE	54,401.00			54,401.00	0.00
P.11.4	IIIF Kolkata Electrical	116,716.00			116,716.00	0.00
P.11.5	IIIF Kolkata CSE	59,316.00			59,316.00	0.00
P.11.6	Outside Scholarships	4,118,828.00			4,118,828.00	3,203,178.00
P.11.7	ADVANCE FEE				0.00	217,686.00
P.11.8	Advance Fee From IIT-JEE				0.00	4,055,902.00
P.11.9	Alumni Subscription	27,500.00			27,500.00	1,000.00
P.11.10	ISM Alimni Fund			655,271.00	655,271.00	
P.11.11	Basant Subscription	1,398,700.00			1,398,700.00	1,334,900.00
P.11.12	CONCETTO			70,000.00	70,000.00	100,000.00
P.11.13	DST / INSPIRE Scholarship	8,488,539.00		147,980.00	8,636,519.00	11,226,824.00

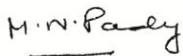
P.11.14	GEOCONFLUENCE 2016			1,974.00	1,974.00	
P.11.15	PRAKARM 11				0.00	145,000.00
P.11.16	SRIJAN FUND	1,013,000.00			1,013,000.00	99,000.00
P.11.17	Student Caution Money	7,735,000.00			7,735,000.00	6,601,000.00
P.11.18	Student Insurance Scheme	5,196,488.00			5,196,488.00	5,081,784.00
P.11.19	Student Loan	215,700.00			215,700.00	
P.11.20	Student Uniform Deposit	2,079,000.00			2,079,000.00	2,534,950.00
P.11.21	Miscellaneous Receipts	1,212,005.00		9,435,507.00	10,647,512.00	197,783.00
P.11.22	MOES/17/2015-16			125,000.00	125,000.00	
P.11.23	Income Tax Employees	56,903,407.00			56,903,407.00	50,305,997.00
P.11.24	Jharkhand State Professional Tax	1,018,512.00			1,018,512.00	936,134.00
P.11.25	Income Tax Contractor	5,432,174.00			5,432,174.00	2,335,953.00
P.11.26	Labour Welfare	139,245.00			139,245.00	189,103.00
P.11.27	Sales Tax 4%	563,171.00			563,171.00	756,396.00
P.11.28	Service Tax	2,785,994.00			2,785,994.00	3,437,864.00
P.11.29	Endowment Fund Income Tax Contractor	775,927.00			775,927.00	
P.11.30	TEQIP Income Tax				0.00	1,310.00
P.11.31	Income - Tax (Guest Faculties/ Adj. Prof.)	456,907.00			456,907.00	235,930.00
P.11.32	Income Tax {U/S 194 (I)}				0.00	7,740.00
P.11.33	Plan Income Tax A/c	1,688,061.00			1,688,061.00	1,972,527.00
P.11.34	Plan Income Tax Professional	110,958.00			110,958.00	
P.11.35	Project Income Tax A/c (Employees)	11,996,792.00			11,996,792.00	16,421,969.00
P.11.36	Project Income Tax Contractor	19,846.00			19,846.00	
P.11.37	Project Service Tax A/c	13,851,126.00			13,851,126.00	12,386,942.00
P.11.38	Unpaid	8,950.00			8,950.00	18,500.00
P.11.39	Lok Sabha Election				0.00	220,400.00
P.11.40	Vidhan Sabha Election/Panchayat Election	248,200.00			248,200.00	294,000.00
P.11.23	Outstanding Expenses	42,081,470.00			42,081,470.00	38,825,438.00
P.11.41	Plan Control				0.00	182,360.00
P.11.42	Project Control (General)				0.00	100,248,851.00
P.11.43	Fee from Students	12,223,113.00			12,223,113.00	10,675,262.00
P.11.44	Recovery form Employees	67,218.00			67,218.00	45,430.00
P.11.45	Application fee for Employment	100.00			100.00	
P.11.46	EDC Room Rent	500.00			500.00	
P.11.47	GJLT/ Penman	99,147.00			99,147.00	25,800.00
P.11.48	Income from BRS	135,687.00			135,687.00	124,958.00
P.11.49	Miscellaneous Income	70,540.00			70,540.00	254,943.00
P.11.50	SAH Room Rent	0.00			0.00	400.00
P.11.51	CRF Analysis Charges	7,500.00			7,500.00	
P.11.52	Interest Income	6,044.00			6,044.00	4,770.00
P.11.53	Income Tax		1,720,952.00		1,720,952.00	2,192,182.00
P.11.54	Income Tax (94 J)		322,679.00		322,679.00	27,689.00
P.11.55	Labour Welfare		362,130.00		362,130.00	526,096.00
P.11.56	SALES TAX @ 4%		1,448,492.00		1,448,492.00	2,104,369.00
P.11.57	Service Tax				0.00	5,767.00
P.11.58	Interest Received				0.00	2,019,694.00
P.11.59	Adv. DSA Certificate Course CSE2013				0.00	100,647.00
P.11.60	ANREMT 2015			346,348.00	346,348.00	91,422.00
P.11.61	BE Course for Afghan Students 2014			5,825,067.00	5,825,067.00	28,116,801.00
P.11.62	Best Research Award Fund			160,000.00	160,000.00	165,720.00
P.11.63	BSWG2014				0.00	146,950.00


P.11.64	Course Fee for Foreign Language (French)			38,400.00	38,400.00	96,492.00
P.11.65	Course Fee for Foreign Language (German)				0.00	34,350.00
P.11.66	DSA Certificate Course CSE2014				0.00	67,000.00
P.11.67	DST/459/inspire Fellowship				0.00	156,000.00
P.11.68	DST/inspireSHE/ISMU/2009				0.00	8,507,787.00
P.11.69	HSS Foreign Language Course, Monsoon, 201314			10,360.00	10,360.00	539,028.00
P.11.70	ICMAP2013				0.00	50,000.00
P.11.71	IMS2014				0.00	885,000.00
P.11.72	Income Tax From Uranium Chair (Cont./supp)				0.00	501.00
P.11.73	ISM Geological Society				0.00	198,501.00
P.11.74	IWCMVA			50,000.00	50,000.00	75,000.00
P.11.75	Lab View Software Course of Mech. Engg.			55,500.00	55,500.00	94,500.00
P.11.76	LAMP CERTIFICATE COURSE 2013/CC				0.00	18,995.00
P.11.77	MATLAB CERTIFICATE COURSE EE 2012			83,309.00	83,309.00	10,691.00
P.11.78	Matlab Certificate Course of Computer Centre			106,979.00	106,979.00	35,693.00
P.11.79	Matlab Certificate Course of CSE			12,000.00	12,000.00	
P.11.80	MENTCA 2015			1,971,990.00	1,971,990.00	
P.11.81	Methodology Certificate Course2014 MS				0.00	79,700.00
P.11.82	MSSEM				0.00	88,200.00
P.11.83	Parakram			50,000.00	50,000.00	49,000.00
P.11.84	Q-Pace 2016			400,000.00	400,000.00	
P.11.85	RAIT 2016			293,000.00	293,000.00	
P.11.86	RENTAI 2016			23,166.00	23,166.00	
P.11.87	SAGES				0.00	8,000.00
P.11.88	SBI Cash Award for Non-Teaching Emp.			25,000.00	25,000.00	25,000.00
P.11.89	Short Term Courses				0.00	54,758.00
P.11.90	SPPS2013				0.00	109,000.00
P.11.91	Travel Grant			893,676.00	893,676.00	307,186.00
P.11.92	WHPC			217,163.00	217,163.00	
P.11.93	WMVC 2015			75,000.00	75,000.00	
P.11.94	Workshop for Computer Method			182,779.00	182,779.00	
P.11.95	Workshop on CFDA2014				0.00	152,440.00
P.11.96	Workshop on Pandit M M Malya				0.00	107,188.00
P.11.97	WSME				0.00	25,950.00
P.11.98	Security Deposit			195,294.00	195,294.00	
P.11.99	AAPG/AGL			99,000.00	99,000.00	
P.11.100	ASDPT			159,763.00	159,763.00	
P.11.101	ASME			20,000.00	20,000.00	
P.11.102	Income Tax (Const) From Sail Chair				0.00	3,867.00
P.11.103	Income Tax Employees, CIL Chair			239,064.00	239,064.00	295,411.00
P.11.104	Income Tax From Contractors			73,068.00	73,068.00	211,992.00
P.11.105	Income Tax From Employees			12,224,189.00	12,224,189.00	16,460,539.00
P.11.106	Income Tax From Employees, Rajeev Gandhi Chair			486,707.00	486,707.00	449,268.00
P.11.107	Income Tax From NMDC Chair (Employees)			296,457.00	296,457.00	508,212.00
P.11.108	Income Tax From Sandvik Chair (Contractors)				0.00	7,101.00
P.11.109	Income Tax From Sandvik Chair (Employees)			590,963.00	590,963.00	315,184.00
P.11.110	INCOME TAX FROM TEQIPII			16,261.00	16,261.00	37,402.00


	(Contractors)					
P.11.111	Income Tax From TeqipII (Employees)				0.00	59,486.00
P.11.112	Income Tax SAIL NMDC CHAIR (EMPLOYEES)			383,405.00	383,405.00	86,639.00
P.11.113	Labour Cess Tax From TeqipII			5,310.00	5,310.00	1,299.00
P.11.114	Labour Welfare Cess			4,703.00	4,703.00	
P.11.115	Sales Tax			18,810.00	18,810.00	
P.11.116	SALES TAX FROM TEQIPII			21,242.00	21,242.00	5,197.00
P.11.117	Service Tax			13,848,739.00	13,848,739.00	12,446,041.00
P.11.118	CPF Cont				0.00	150,277.00
P.11.119	EDC Room Rent From TEQIPII				0.00	1,600.00
P.11.120	Electric Charges for CIL Chair				0.00	13,094.00
P.11.121	Electric Charges for Rajiv Gandhi Chair				0.00	6,598.00
P.11.122	Electric Charges From NMDC CHAIR				0.00	17,738.00
P.11.123	Electric Charges From Sandvik Chair				0.00	3,290.00
P.11.124	Medical Charges for CIL Chair				0.00	6,000.00
P.11.125	N.Plan End. Fund (Surplus Payable)			49,302,926.00	49,302,926.00	40,912,346.00
P.11.126	Non Plan Control A/c			70,665,795.00	70,665,795.00	16,588,881.00
P.11.127	School Development Fund			16,501.00	16,501.00	
P.11.128	SAH (ROOM RENT) TEQIPII				0.00	1,200.00
P.11.129	Scolomin Club for Cil Chair				0.00	1,375.00
P.11.130	Scolomin Club for Rajeev Ghandhi Chair				0.00	500.00
P.11.131	Vehicle Charge From TequipII			447.00	447.00	1,322.00
P.11.132	Vehicle Charges for CIL Chair				0.00	590.00
P.11.133	Vehicle Charges of Sandvik Chair				0.00	455.00
P.11.134	Vehicle Charges of NMDC CHAIR				0.00	99.00
P.11.135	Interest on Investment			26,971.00	26,971.00	2,508,323.00
P.11.136	Bank Charges			31,584.00	31,584.00	30,905.60
P.11.137	Miscellaneous Expenses			25,013.00	25,013.00	
P.11.138	Total Statutory & other payments	185,281,133.00	3,854,253.00	170,007,681.00	359,143,067.00	415,259,012.60
P.12	Transfers to Capital Fund/ Reserves	0.00	0.00	0.00	0.00	0.00
P.13	Research and Development Projects					
P.13.1	ISM R&D PROJECTS			10,117,436.00	10,117,436.00	8,269,708.00
P.13.2	R & D Projects			105,121,688.00	105,121,688.00	83,440,510.30
P.13.3	UGC Sponsored Projects			10,103,697.00	10,103,697.00	16,125,740.00
P.13.4	Total Research and Development Projects	0.00	0.00	125,342,821.00	125,342,821.00	107,835,958.30
P.14	Consultancy and Testing					
P.14.1	Consultancy Services Liability			76,888,419.80	76,888,419.80	112,377,804.12
P.14.2	Total Consultancy and Testing	0.00	0.00	76,888,419.80	76,888,419.80	112,377,804.12
P.15	Departmental Development Fund					
P.15.1	AGL Department DDF			14,353.00	14,353.00	11,400.00
P.15.2	APPLIED MATHEMATICS				0.00	9,970.00
P.15.3	Central Administrative Charges			1,978,509.00	1,978,509.00	1,677,313.00
P.15.4	Chemistry Department			233,328.00	233,328.00	56,317.00
P.15.5	CME Department			537,405.00	537,405.00	203,794.00
P.15.6	EDC Development Fund			74,642.00	74,642.00	12,900.00
P.15.7	EDC Support Services				0.00	266,172.00
P.15.8	EDC Xeroxing (4000) Fund			46,306.00	46,306.00	11,970.00


P.15.9	FME Department			80,390.00	80,390.00	57,280.00
P.15.10	Library Card			200.00	200.00	200.00
P.15.11	Library Development Fund			333,776.00	333,776.00	76,865.00
P.15.12	M S DEPARTMENT			96,500.00	96,500.00	51,465.00
P.15.13	Mining Engg. Department			437,224.00	437,224.00	48,870.00
P.15.14	Mining Machinery Engg. Dept.			845,357.00	845,357.00	27,906.00
P.15.15	MINING MACHINERY ENGG. DEPTT				0.00	500.00
P.15.16	Total Department Development Fund	0.00	0.00	4,677,990.00	4,677,990.00	2,512,922.00
P.16	Fellowship and Associatship	0.00	0.00	0.00	0.00	0.00
P.17	Professional Development Fund					
P.17.1	A. K. PAL,PDF			52,900.00	52,900.00	3,800.00
P.17.2	Ajay Mandal PDF			87,328.00	87,328.00	
P.17.3	ALOK SINHA, PDF			15,792.00	15,792.00	10,045.00
P.17.4	A R Dixit PDF			103,473.00	103,473.00	
P.17.5	A Sarkar PDF			13,900.00	13,900.00	
P.17.6	B K Mishra, PDF				0.00	36,290.00
P.17.7	B. C. SARKAR, PDF				0.00	4,950.00
P.17.8	BISWAJIT CHOWDHURY, PDF			27,000.00	27,000.00	4,207.00
P.17.9	Chandan Bhar PDF			43,995.00	43,995.00	
P.17.10	D C Panigrahi PDF			18,930.00	18,930.00	
P.17.11	DHEERAJ KUMAR PDF			93,805.00	93,805.00	120,238.00
P.17.12	G S Pathak PDF			7,666.00	7,666.00	
P.17.13	J K Pattanayak PDF			58,695.00	58,695.00	
P.17.14	H P NAYAK, PDF				0.00	9,000.00
P.17.15	M Jawed, PDF				0.00	49,698.00
P.17.16	N Suresh, Assoc. PDF			86,413.00	86,413.00	1,908.00
P.17.17	P K Behra PDF			30,890.00	30,890.00	
P.17.18	P K KHAN, PDF				0.00	13,999.00
P.17.19	P K SINGH, PDF (ESE)				0.00	2,460.00
P.17.20	P N S SINGHA ROY, PDF			9,772.00	9,772.00	4,115.00
P.17.21	Pramod Pathak PDF			13,459.00	13,459.00	
P.17.22	P R Mohanty PDF			8,440.00	8,440.00	
P.17.23	Rima Chatterjee PDF			8,355.00	8,355.00	
P.17.24	P. SEN, PDF				0.00	69,400.00
P.17.25	S. BHATTACHARYA, PDF				0.00	34,670.00
P.17.26	S. CHOUDHARI, PDF (CIL CHAIR)			13,733.00	13,733.00	5,563.00
P.17.27	SAGAR PAL, PDF			7,438.00	7,438.00	45,311.00
P.17.28	Santanu Dwari PDF			7,889.00	7,889.00	
P.17.29	S Chattopadhyay PDF			42,034.00	42,034.00	
P.17.30	Shalivahan PDF			40,603.00	40,603.00	
P.17.31	S K Gupta PDF			55,790.00	55,790.00	
P.17.32	Sridhar Sahu (Applied Physics) PDF			5,500.00	5,500.00	
P.17.33	S Sarangi PDF			19,858.00	19,858.00	
P.17.34	Sukanta Dey PDF			19,209.00	19,209.00	
P.17.35	Swapan Dey PDF			20,146.00	20,146.00	
P.17.36	SOMNATH YADAV, PDF				0.00	22,118.00
P.17.37	T H Syed, PDF				0.00	7,682.00
P.17.38	U K. Singh PDF			45,114.00	45,114.00	59,965.00
P.17.39	Upendar Kumar Singh (AGP) PDF			14,885.00	14,885.00	
P.17.40	Vishnu Priye PDF			14,500.00	14,500.00	

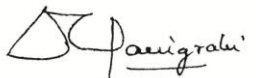
P.17.41	V K Srivastava, PDF				0.00	4,136.00
P.17.42	V M S R Murthy, PDF				0.00	112,683.00
P.17.43	Total Professional Development Fund	0.00	0.00	987,512.00	987,512.00	622,238.00
	TOTAL PAYMENT (Rs)	3,130,422,985.00	2,137,054,733.00	722,497,066.80	5,989,974,784.80	5,659,336,758.54
	Closing Balances:					0.00
P.18	(a) Cash in Hand	218,614.70	0.00	177,246.00	395,860.70	168,320.70
P.19	(b) Cash at Bank	221,863,423.36		61,183,930.09		348,508,804.58
	TOTAL PAYMENT (Rs)	3,352,505,023.06		783,858,242.89		6,008,013,883.82


(M. N. PANDEY)
ASST REGISTRAR (L&B)


(M. S. CHAMPIA)
ASST REGISTRAR (PA)


(PRABODH PANDEY)
DY REGISTRAR (F&A)

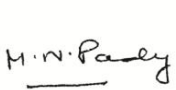

(COL. M.K.SINGH)
REGISTRAR


(PROF. D. C. PANIGRAHI)
DIRECTOR

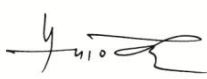
BALANCE SHEET OF G.P.F., C.P.F. AND D.C.P.S. ACCOUNT AS AT 31st MARCH 2016

(Amount in ₹)

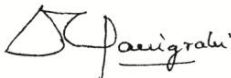
Sl. No.	LIABILITIES	Current Year 2015-16	Previous Year 2014-15
1	GPF MEMBERS' FUNDS:		
1.4.1	Balance at the beginning of the year	2502,10,330.00	2348,71,574.00
1.4.2	Add: Subscriptions/Loan Recovery during the year	413,28,859.00	399,73,640.00
1.4.3	Add: Interest credited to members	214,26,184.00	206,83,826.00
1.4.4	Add: Transfer from CPF Member's fund a/c	0.00	0.00
1.4.5	Sub-total	3129,65,373.00	2955,29,040.00
1.4.6	Less: Advances, withdrawals & final payments	477,92,254.00	453,18,710.00
1.4.7	Balance at the end of the year	2651,73,119.00	2502,10,330.00
2	CPF MEMBERS' FUNDS:		
2.4.1	Balance at the beginning of the year	1768,32,104.00	1668,44,039.00
2.4.2	Add: Subscriptions & Loan recovery during the year	145,32,380.00	140,70,012.00
2.4.3	Add: Interest credited to members	154,46,024.00	142,02,497.00
2.4.4	Add: Matching contribution to the members	26,70,887.00	28,01,911.00
2.4.5	Sub-total	2094,81,395.00	1979,18,459.00
2.4.6	Less: Advances, withdrawals & final payments	271,24,961.00	210,86,355.00
2.4.7	Less: Adjustment for transfer to GPF Members' Fund/ General Reserve	0.00	0.00
2.4.8	Balance as at the end of the year	1823,56,434.00	1768,32,104.00
3	DCPS MEMBERS' FUNDS:		
3.4.1	Balance at the beginning of the year	4,04,103.00	4,04,103.00
3.4.2	Subscriptions during the year	0.00	0.00
3.4.3	Add: Matching contribution to the members	0.00	0.00
3.4.4	Add: Interest credited to members	0.00	0.00
3.4.5	Less: Amount transferred to NSDL Account	0.00	0.00
3.4.6	Balance as at the end of the year	4,04,103.00	4,04,103.00
4	GENERAL RESERVE:		
4.4.1	Balance at the beginning of the year	747,53,649.48	663,42,600.55
4.4.2	Add: Excess of income over exp. for the year and others	41,87,366.00	85,58,355.93
4.4.3	Less: Prior Period Interest Payment	0.00	1,47,307.00
4.4.4	Balance as at the end of the year	789,41,015.48	747,53,649.48
5	TOTAL LIABILITIES	5268,74,671.48	5022,00,186.48
	A S S E T S		
6	CURRENT ASSETS:		
6.4.1	Investments:		
6.4.2	Balance at the beginning of the year	4338,88,934.93	4120,44,115.00
6.4.3	Add: Investments made during the year	2224,66,068.00	1061,18,461.93
6.4.4	Less: Investments encashed during the year	1998,37,482.00	842,73,642.00
6.4.5	Balance as at the end of the year	4565,17,520.93	4338,88,934.93
6.4.6	Accrued Interest on Investment:		
6.4.7	Opening Balance	662,14,590.00	488,70,253.00
6.4.8	Additions/Deductions during the year	-13,26,024.00	173,44,337.00
6.4.9	Balance as at the end of the year	648,88,566.00	662,14,590.00
6.4.10	Total Investment incld. Accrued Interest	5214,06,086.93	5001,03,524.93
6.4.11	CASH & BANK BALANCES:		
6.4.12	Cash at Bank with SBI, ISM Br., Dhanbad	28,92,497.55	32,22,401.55
6.4.13	Sundry Debtors: Project Control A/c	0.00	0.00
6.4.14	Non Plan Control Account (Receivable)	25,76,087.00	11,25,740.00
6.4.15	TOTAL	5268,74,671.48	5044,51,666.48


(M. N. PANDEY)
ASST REGISTRAR (L&B)


(M. S. CHAMPIA)
ASST REGISTRAR (PA)

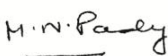

(PRABODH PANDEY)
DY REGISTRAR (F&A)


(COL. M.K.SINGH)
REGISTRAR

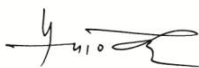

(PROF. D. C. PANIGRAHI)
DIRECTOR

**INCOME AND EXPENDITURE ACCOUNT OF G.P.F., C.P.F. AND D.C.P.S.
ACCOUNT FOR THE YEAR ENDED 31st MARCH 2016**

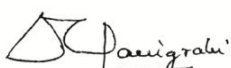
(Amount in ₹)			
Sl. No.	I N C O M E	Current Year 2015-16	Previous Year 2014-15
1	Interest / Income from Investments	423,85,838.00	115,87,845.00
2	Interest Accrued on investment	-13,26,024.00	317,06,556.93
3	TOTAL (A)	410,59,814.00	432,94,401.93
EXPENDITURE			
4	Interest credited to members accounts	368,72,208.00	348,86,323.00
5	Bank charges	240.00	0.00
6	TOTAL (B)	368,72,448.00	348,86,323.00
7	Balance being excess of Income over Expenditure (A - B)	41,87,366.00	84,08,078.93
8	BALANCE BEING SURPLUS CARRIED TO GENERAL RESERVE	41,87,366.00	84,08,078.93


(M. N. PANDEY)
ASST REGISTRAR (L&B)


(M. S. CHAMPIA)
ASST REGISTRAR (PA)

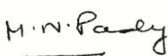

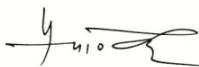

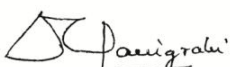

(PRABODH PANDEY)
DY REGISTRAR (F&A)


(COL. M.K.SINGH)
REGISTRAR


(PROF. D. C. PANIGRAHI)
DIRECTOR

**RECEIPTS AND PAYMENTS ACCOUNT OF G.P.F., C.P.F. AND D.C.P.S. ACCOUNT FOR THE
YEAR ENDED 31st MARCH 2016**

Sl. No.	RECEIPTS	(Amount in ₹)	
		Current Year 2015-16	Previous Year 2014-15
1	O.B: Cash at Bank with SBI,ISM Br, Dhanbad	32,22,401.55	75,47,948.55
2	Interest / Income from Investments	98,75,989.00	128,27,417.77
3	Subscription & loan rec. from GPF members	413,28,859.00	333,89,380.00
4	Subscription & loan rec. from CPF members	145,32,380.00	145,81,923.00
5	Subscription from DCPS members		0.00
6	Matching contribution to CPF members	94,800.00	
7	Matching contribution to DCPS members		0.00
8	Investments encashed	626,10,189.00	227,63,094.00
9	Receipt from Plan / Non-Plan A/c	100,00,000.00	100,00,000.00
10	Receipt from Project Control A/c(General Res)		1,50,277.00
11	TOTAL	1416,64,618.55	1012,60,040.32
	PAYMENTS		
12	Advances / withdrawals / final payments to GPF members	477,92,254.00	453,18,710.00
13	Advances / withdrawals / final payments to CPF members	271,24,961.00	210,86,355.00
14	Refund/ Transfer from DCPS to NSDL A/c		
15	Investments made during the year	527,27,926.00	314,85,266.77
16	Refund of dues to Non Plan / Plan / Project A/c	111,25,740.00	
17	Interest Paid	1,000.00	1,47,307.00
18	Bank Charges	240.00	
19	CB: Cash at Bank with SBI,ISM Br.,Dhanbad	28,92,497.55	32,22,401.55
20	TOTAL	1416,64,618.55	1012,60,040.32

				
(M. N. PANDEY) ASST REGISTRAR (L&B)	(M. S. CHAMPIA) ASST REGISTRAR (PA)	(PRABODH PANDEY) DY REGISTRAR (F&A)	(COL. M.K.SINGH) REGISTRAR	(PROF. D. C. PANIGRAHI) DIRECTOR

SCHEDULE - XIV: SIGNIFICANT ACCOUNTING POLICIES

14.1 ACCOUNTING CONVENTION:

The financial statements of Plan, Non-Plan and Project have been prepared on the basis of historical cost convention unless otherwise stated and generally on accrual basis of accounting to the extent possible.

However, provision for retirement benefits viz. gratuity, leave salary, pension liability etc. has not been made during the year.

14.2 REVENUE RECOGNITION

Fees from students, sale of admission forms, interest on saving bank a/c, Income from land, Building and other property etc, are accounted on realisation basis. The tuition fee is collected on semester basis commencing from July to June. Interest on Investment are accounted on accrual basis. Interest on interest bearing advances are accounted for on receipt basis.

14.3 INVENTORIES VALUATION:

Expenditure on purchase of chemicals, glassware, publications, stationery and other stores is accounted as revenue expenditure.

14.4 INVESTMENTS:

- (a) Investments both long term and short term have been shown at face value / cost.
- (b) No shortfall is expected in the value of investments as the same are to be redeemed by Govt. Institutions at face value.

14.5 FIXED ASSETS AND DEPRECIATION

A. FIXED ASSETS:

- (a) Fixed assets have been stated at cost of acquisition inclusive of inward freight, duties, taxes and incidental/direct expenses related to acquisition to the extent possible.
- (b) Fixed assets received by way of non-monetary grants (other than towards the Corpus Fund) have been capitalised at values stated by corresponding credit to capital fund.
- (c) Expenditure for renovation of buildings has been treated as Capital Expenditure.
- (d) Assets acquired under PDA have been capitalised.
- (e) Capitalisation of assets related to previous year and depreciation thereof directly accounted through capital fund.

B. DEPRECIATION:

The depreciation on fixed assets has been recalculated during the year as per observation of audit, accordingly provision for excess/less depreciation has been made during the year. Depreciation rates have also been revised according to Income Tax Act. No depreciation was provided till 2006-07. Depreciation has also been calculated for whole year on the assets procured anytime during the year. With the change of accounting system from cash accounting to Accrual accounting, the depreciation was provided for the first time during 2007-08, for all the previous years upto 31st March 2007 by debiting Capital Fund Account. For the purpose of determining the quantum

of depreciation for all the previous years, depreciation has been calculated separately on diminishing balance method (written down value) for each item from 1997-98 onwards at the following rates and at the ad-hoc rates to cover all the years up to and including 1996-97. In order to reflect the assets at face value, the provision for accumulated depreciation has been shown under Previous Liabilities & Provisions. The Depreciation rates and ad hoc rates adopted are as follows:

S No	Asset's Name for op. balance as on 1.4.1997	Ad-hoc rate of Depreciation yearly basis	Depreciation rate on
1	Land	0%	0%
2	Road & Buildings	25%	10%
3	Furniture & Fixture	50%	10%
4	Office Equipment/ Appliances	50%	10%
5	Electrical Installation	50%	15%
6	Library Books	80%	60%
7	Tube Well & Water supply equipment	50%	10%
8	Communication facilities	50%	15%
9	Computer Hardware/ peripherals	80%	60%
10	Computer Software/Software dev.	80%	60%
11	Plant & Machinery/Lab Equipment	50%	15%
12	Vehicles	50%	15%
13	Student Amenities	50%	10%

The depreciation for Project Assets has been debited to the Capitalised fund for Assets Account through which assets were created in the books of accounts.

14.6 GOVERNMENT GRANTS:

(a) Government grants utilised for acquisition/construction of assets have been capitalised.

(b) The MHRD grant utilized towards capital expenditure is transferred to the Capital Fund Account to the extent of excess of income over expenditure.

(c) MHRD grants for meeting Revenue Expenditure are treated, to the extent utilized as income of the year in which they are realized under Plan.

(d) Break-up of grants-in-aid under the heads recurring and non-recurring has been shown according to utilisation of the grants as no such allocation has been specified by MHRD, New Delhi.

14.7 FOREIGN CURRENCY TRANSACTIONS:

Transactions denominated in foreign currency are accounted for at the exchange rate prevailing on the date of the transaction as per Bank advice.

14.8 RETIREMENT BENEFITS:

Retirement benefits are accounted for on cash basis.

14.9 INCOME TAX:

The income of the School is exempted from Income Tax under Section 10 (23c) of the Income Tax Act. No provision for tax is therefore made in the accounts.

SCHEDULE - XV: CONTINGENT LIABILITIES AND NOTES ON ACCOUNTS

15.1 CONTINGENT LIABILITIES:

(a) There were no disputed demands in respect of income tax, sales tax, municipal taxes, etc. as at the end of the year.

(b) Some suits were filed against ISM, by former/ present employees/ students of ISM and were pending for decision in various courts. These cases are related to employees promotions, increments, pay scales, termination, retirement benefits, student related, tenants, as well as arbitration cases with the suppliers. The quantum of the claims is not ascertainable.

15.2 CAPITAL COMMITMENTS

Estimated value of contracts remaining to be executed on Capital Account and not provided for (Net of Advances) amounted to about Rs. 50.00 Crores as on 31.3.2016. The gross value of construction works to be executed through Advance to CPWD is estimated more than Rs. 500 Crores.

15.3 PREVIOUS ASSETS, LOANS & ADVANCES

In the opinion of the Management the Previous assets, loans and advances have a realisable value in the ordinary course of transactions equal at least to the aggregate amount shown in the Balance Sheet except a few very old balances. The expenditure on renovation/ modification of buildings has been charged to Road & Buildings.

15.4 PAY AND ALLOWANCES:

As a part of implementation of accrual system of accounting the provision for salary of March 2016 has been made in the books of accounts as on 31.3.2016. No other provisions are made for arrears of pay and allowances.

15.5 CONSULTANCY SERVICES:

The accounting system for the consultancy services was changed during the year 2007-08. Up to 2006-07 the amount received and expenditure incurred on consultancy projects were taken into Income & Expenditure Account. From 2007-08 the amount of consultancy has been considered as liability and undisbursed amount has been shown in the Balance sheet. The amount received/ expenditure for new consultancy services and undisbursed amount of old consultancy projects have been taken into Balance Sheet. The receipts/ payments for the consultancy services of previous period has been taken into Capital Fund Account.

15.6 Expenditure exceeding availability of fund in a project, if any, was met out of interest from project investments.

15.7 Corresponding figures for the previous year have been regrouped / rearranged, wherever necessary and segregated to the extent possible. The variation in the previous year figures of balance sheet is due to reclassification/ segregation of ledger accounts. However, no changes were made in the previous year figures of Income & Expenditure A/c and Receipt & Payment accounts.

15.8 As the Provident Fund Accounts and the New Pension Scheme Account are owned by the Members of those funds and not by the School, these accounts are prepared

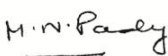

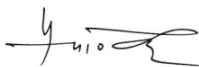

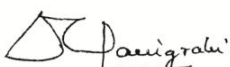
separately. However, a Receipt & Payment Account, an Income & Expenditure Account and a Balance Sheet of the same is attached to the School's Account.

15.9 The surplus funds under Project Accounts were invested in a consolidated manner, and interest income was credited to Non Plan Endowment Fund of the School.

15.10 The Bank FDR's are considered as investment, hence shown as 'Investment of Funds' under Balance Sheet.

15.11 Schedule 1 to 15 are annexed to and form an integral part of the Balance Sheet and the Income & Expenditure Account for the year ended on that date.

15.12 Receipt & Payment has been made with the help of computerised schedules.

				
(M. N. PANDEY) ASST REGISTRAR (L&B)	(M. S. CHAMPIA) ASST REGISTRAR (PA)	(PRABODH PANDEY) DY REGISTRAR (F&A)	(COL. M.K.SINGH) REGISTRAR	(PROF. D. C. PANIGRAHI) DIRECTOR

**Audit Report
Annexure - II**

भारतीय लेखा तथा लेखा परीक्षा विभाग

कार्यालय प्रधान निदेशक लेखापरीक्षा (केन्द्रीय) लखनऊ



INDIAN AUDIT & ACCOUNTS DEPARTMENT

Office of the Principal Director of Audit (Central) Lucknow

No. PDAC/LKO/SAR-ISM/2014-15/144

Dated : October 07, 2016

To

**The Director,
Indian School of Mines,
Dhanbad-826004**

Subject: Separate Audit Report and Audit Certificate on the accounts of Indian School of Mines, Dhanbad for the year 2015-16

Sir,

I am to enclose a copy of Audit Report and Audit Certificate along with audited Annual Accounts of Indian School of Mines, Dhanbad for the year 2015-16 for information and necessary action.

2. A copy of these documents has been sent to the Secretary to the Government of India, Ministry of Human Resource Development, New Delhi for information and necessary action.
3. The audited Annual Accounts, Audit Report should be duly considered and adopted by the Governing Body of the Indian School of Mines, Dhanbad in the Annual General meeting before these are laid in the House of Parliament.
4. A copy of (i) Resolution of Governing Body adopting the Audit Report and Audit Certificate with audited Annual Accounts, (ii) Date of its presentation before the House of Parliament and (iii) Annual Report of the Institute may be furnished to this office in due course for our records and onward transmission to the Comptroller and Auditor General of India, New Delhi.
5. The Hindi version of this SAR may kindly be furnished to this office within one week.
6. The receipt of this letter with enclosures may please be acknowledged.

Encl :- As above

Yours faithfully,

Principal Director of Audit (Central), Lucknow

छठा तल, केंद्रीय भवन, सेक्टर 'एच' अलीगंज, लखनऊ-226024, दूरभाष : 0522-2323955, 2324130, फैक्स : 0522-4068777
VIth Floor, Kendriya Bhawan, Sector 'H', Aliganj, Lucknow-226024, Ph.: 0522-2323955, 2324130, Fax : 0522-4068777

Separate Audit Report of the Comptroller & Auditor General of India on the accounts of Indian School of Mines, Dhanbad for the year ended 31 March 2016

We have audited the attached Balance Sheet of Indian School of Mines (ISM), Dhanbad as on 31 March 2016, the Income and Expenditure Account and Receipts and Payments Account for the year ended on that date under Section 20 (1) of the Comptroller and Auditor General's (Duties, Powers and Conditions of Service) Act, 1971. The audit has been entrusted for the period up to 2016-17. These financial statements are the responsibility of the ISM's management. Our responsibility is to express an opinion on these financial statements based on our audit.

2. This Separate Audit Report contains the comments of the Comptroller and Auditor General of India (C&AG) on the accounting treatment only with regard to classification, conformity with the best accounting practices, accounting standards and disclosure norms, etc. Audit observations on financial transactions with regard to compliance with the Law, Rules and Regulations (Propriety and Regularity) and efficiency-cum-performance aspects, etc., if any, are reported through Inspection Reports/ C&AG's Audit Reports separately.

3. We have conducted our audit in accordance with auditing standards generally accepted in India. These standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free from material misstatements. An audit includes examining, on a test basis, evidences supporting the amounts and disclosure in the financial statements. An audit also includes assessing the accounting principles used and significant estimates made by the managements, as well as evaluating the overall presentation in financial statements. We believe that our audit provides a reasonable basis for our opinion.

4. Based on our audit, we report that :

- (i) We have obtained all the information and explanations, which, to the best of our knowledge and belief, were necessary for the purpose of our audit.

- (ii) The Balance Sheet, Income and Expenditure Account and Receipts and Payments account dealt with by this report have been drawn up in the format approved by the Government of India, Ministry of Finance.
- (iii) In our opinion, proper books of accounts and other relevant records have been maintained by the Indian School of Mines (ISM), Dhanbad as required under section 19 (i to vi) of the Memorandum of Association and Rules and Regulations in so far as it appears from our examination of such books.
- (iv) We further report that ;

A. Balance Sheet

A.1 Liabilities

A.1.1 Capital Fund (Schedule-I) ₹ 731.77 crore

A.1.1.1 The School received grant of ₹ 100 crore under the head Plan during the year. The previous unspent grant under the head plan was ₹ 123.43 crore. The School during the year utilised ₹ 39.74 crore (capital ₹ 16.50 + revenue ₹ 23.24 crore) under the head plan. Thus, the School was required to exhibit ₹ 183.69 crore as grant refundable to Ministry. Non depiction resulted in understatement of Current liabilities and overstatement of Capital Fund by ₹183.69 crore.

A.1.2 Earmarked/Endowment Funds (Schedule III)- ₹ 45.53 crore

A.1.2.1 Schedule XV contingent liabilities and notes on accounts revealed that interest earned from investment of Project fund was transferred to Non-Plan Endowment. But the treatment is not in consonance with the guideline issued by Ministry of Human Resource Development (MHRD) for Endowment Fund (Non-Plan) Block grant scheme on 20.07.2005. The school, as per the Block grant scheme, was allowed to retain the internal revenue generated by them during the block grant period only. The scheme was closed in 2009-10. As such, any transfer after 2009-10 to Endowment Fund is irregular.

The school transferred ₹ 598.56 lakh from project fund during the year to endowment fund instead of crediting interest proportionately in respective Project funds resulting in overstatement of Endowment Fund (Non-Plan) and understatement of income under the head Project fund by ₹ 598.56 lakh.

A.1.2.2 The school has nine Chair funds. Records revealed that there are discrepancies between assets and liabilities by ₹ 57.62 lakh (Appendix I). The figures need to be reconciled.

(₹ in lakh)

Sl. No.	Name of Fund	Liabilities	Investment	Cash Balance	Accrued interest	Total assets	Discrepancy
1.	CIL Chair	229.39	247.08	0.40	3.53	251.01	21.62
2.	Mole Chair	105.79	100.00	4.53	1.50	106.03	0.24
3.	NMDC Chair	263.81	236.00	18.46	4.21	258.67	(-)5.14
4.	ONGC Chair	101.11	91.62	9.08	1.80	102.50	1.39
5.	R. G. Mem. Chair	246.79	236.62	11.64	2.51	249.77	2.98
6.	SAIL NMDC Chair	274.59	270.74	12.13	3.73	286.60	12.01
7.	Sanvik Chair	65.46	68.22	1.65	1.34	71.21	5.75
8.	Tata Steel Chair	221.89	205.00	25.32	2.48	232.80	10.91
9.	Uranium Chair	122.02	100.00	0.24	24.50	124.74	2.72
	Total	1630.85	1554.28				57.62

As per Format of Accounts prescribed by the MHRD, investment and accrued interest of chair fund is to be shown separately from other investment. The School, however, did not exhibit the investment of chair funds separately. This needs to be corrected.

A.2 Assets

A.2.1 Fixed Assets (Schedule V)- ₹ 409.33 crore

A.2.1.1 CPWD completed and handed over to the School works (1200 room boys hostel ₹ 5853 lakh, Student activity centre ₹ 2601.67 lakh, New Health Centre ₹ 587.60 lakh, Children park ₹ 30.17 lakh and Installation of signages ₹ 30.85 lakh) for ₹ 9103.29 lakh.

As the buildings are already in use, it was to be accounted for under the head buildings. The school however, exhibited it under the head advance to supplier. This has resulted in overstatement of advance to Supplier and understatement of Fixed assets by ₹ 9103.29 lakh.

A.2.1.2 The School did not charge depreciation on fixed assets in Income and Expenditure Account, instead it was charged directly on Capital Fund. This resulted in understatement surplus/deficit by ₹ 2615.01 lakh in Plan, ₹ 129.37 lakh in Non plan and ₹ 403.89 lakh in Project Account.

A.2.1.3 The school capitalised ₹ 198.91 lakh under the head fixed assets during the year 2014-15 and passed a journal entry debiting advance to supplier by credit to fixed assets which was

not correct. As the payments were made on the basis of work done by the contractor, it was to be accounted for under the head work-in-progress. This resulted in understatement of work in progress and over statement of advance by ₹ 198.91 lakh.

A.2.1.4 The school received refund of ₹ 0.05 crore (06.08.2014) and ₹ 0.04 crore (05.08.2014) against completed works (construction of boundary cum retaining wall for 150 quarter and construction of pump tank for type V quarter), yet the outstanding advance of ₹ 0.67 crore was not adjusted.

Thus the Current Assets were overstated and Fixed Assets were understated by ₹ 0.67 crore.

A.2.1.5 The school took over from CPWD, the water treatment plant in January, 2016 and adjusted the advance of ₹ 121.00 lakh by debit to 'Road & Building'. But scrutiny of Form 65 revealed that construction of water treatment plant was completed by the CPWD for ₹ 143.32 lakh. The expenditure of ₹ 143.32 lakh was also sanctioned by the EB in its 166th Meeting held on 25.09.2014, yet the full amount was not debited under the head fixed assets. This resulted in understatement of Fixed Assets and Current Liabilities by ₹ 22.32 lakh.

Similarly, during August 2015 the School deposited with CPWD ₹ 4.81 lakh for completed work for Topographical survey for digitised master plan for ISM campus. The amount was also not capitalised.

A.2.1.6 The Institute charged expenditure of ₹ 415.05 lakh on 'E-Journals and Science Direct' in Income and Expenditure Account.

E-Journals is to be accounted for under the head 'Intangible Assets' under the head Fixed assets.

The irregular treatment resulted in understatement of Fixed Assets by ₹ 249.05 lakh, Depreciation by ₹ 166.03 lakh and overstatement of expenditure by ₹ 415.08 lakh.

A.2.1.7 The school purchased equipment amounting to ₹ 200 lakh (Appendix 3) in March 2016, which were not yet installed and ready for use.

As per uniform format of accounts, equipment awaiting installation is to be accounted for under the head 'work-in-progress'. The irregular treatment resulted in overstatement of Equipment and understatement of Work in Progress by ₹ 59.85 lakh and consequent overcharging of depreciation at the rate of 15 percent by ₹ 8.98 lakh.

(₹ in lakh)

Vr. No.	Date	Equipment	Amount
1607	31.03.2016	Multi-angled light scattering spectrometer	41.06
1608	31.03.2016	Trinocular microscope	18.79
1486	09.03.2016	controlled Servo Hydraulic System	41.42
1488	09.03.2016	Laboratory Density Meter DMM 5000M	14.52
1489	09.03.2016	Universal Testing Machine (UTM)	84.21
		Total	200.00

A.2.1.8 The school paid non-refundable service charge of ₹ 498.34 lakh in July, 2012 for construction of 6.657 Km of 33 KV D/C line on D/C structure from 220KV Dhanbad sub-station DVC to ISM.

The school appointed M/s Adiya Construction, Dhanbad (March 2015) and paid ₹ 40.76 lakh for facilitating the erection of 33KV pole & tower at each location as per survey report of DVC. The work is still at initial stage. As the work would be completed after laying of wire/cable by DVC for DVC Sub-station to the School, the above payment was to be debited on work-in-progress. The school irregularly booked the expenditure under the head fixed assets resulting in overstatement of Fixed Assets by ₹ 36.68 lakh, Depreciation by ₹ 4.08 lakh and understatement of Work - in - Progress by ₹ 40.76 lakh.

A.2.2 Investments (Schedule VI)- ₹ 102.12 crore

As per Format of Financial Statements introduced by MHRD, Fixed Deposit/Term Deposits are to be accounted for under the head Current Assets. The Institute, however, exhibited the above amount under the head 'Investment' resulting in overstatement of Investment and understatement of current assets by ₹ 515.43 lakh (FDR Plan ₹ 500 lakh and FDR Non Plan ₹ 15.43 lakh).

Similarly, accrued interest was also to be exhibited under the head 'Current Assets'. Irregular treatment resulted in overstatement of 'Investment' and understatement of 'Current Assets' by ₹ 897.42 lakh (Plan ₹ 1.75 lakh, Endowment Fund ₹ 394.03 lakh and Project ₹ 501.64 lakh).

A.2.3 Current Assets, Loan Advances (Schedule VII)- ₹ 541.26 crore

A.2.3.1 The school subscribed E-Journals for ₹ 185.65 lakh (Complete Freedom Collection 149.79 lakh, Legacy Achieve Lease ₹ 20.33 lakh and Scopous database ₹ 15.53 lakh) for the period January 2016 to December 2016. As the Annual Accounts is closed on 31.03.2016, the

School was required to allocate the above expenditure in two financial years i.e. 2015-16 and 2016-17. The school, however, booked whole expenditure in 2015-16. This resulted in understatement of advance by ₹139.24 lakh and overstatement of Fixed Assets by ₹ 83.54 lakh & Depreciation by ₹55.70 lakh.

B Income and Expenditure Account

B.1 The school received ₹ 7450 lakh under the head non-plan for expenditure on salary and non-salary components, but the school irregularly transferred ₹ 2.13 lakh to capital fund for meeting expenditure of capital nature. This resulted in under statement of income by ₹ 2.13 lakh.

B.2 The school purchased Electron probe Microscope for Euro 905075 during 2014-15. As per terms and conditions of purchase order, Euro 270500 was to be paid to the supplier after the expiry of comprehensive warranty period for service contract for four years. The equipment was installed in November 2014 and the warranty period of one year ended on November 2015 (as per record). The school paid the service contract amount ₹ 190.64 lakh (conversion value of Euro 270500) on 25.05.2015 as advance. As the service contract is of revenue nature, paid for deployment of manpower and maintenance of equipment, it was to be charged on Income and Expenditure Account on systematic manner over 4 year. The school, however, irregularly treated it as capital expenditure. This resulted in overstatement of Fixed Assets by ₹ 190.64 lakh, understatement of deficit by ₹ 63.55 lakh and understatement of Current Assets, Loans and Advances by ₹ 142.98 lakh.

B.3 The school purchased a property from M/s NBCC Ltd. New Delhi for ₹ 3029.07 lakh and paid maintenance charges in advance for five year of ₹ 159.02 lakh. The whole amount was capitalised. Maintenance charge for five year was to be treated as deferred revenue expenditure/pre-paid expenses and one-fifth of it was to be charged on Income and Expenditure Account. The irregular treatment resulted in overstatement of building by ₹ 159.02 lakh, understatement of non-plan expenditure by ₹ 31.80 lakh and understatement of pre-paid expenses by ₹ 127.22 lakh.

B.4 As per Format of Accounts introduced by the MHRD, interest earned from investment is to be accounted for in Income & Expenditure Account as income. Besides, as per guidelines of

Endowment Fund Block Grand Scheme, 2005 introduced by MHRD for ISM, Dhanbad the school was allowed to retain internal revenue/income generated by them during the block grand period i.e. from 2005-06 to 2009-10. Retaining of internal revenue after closure of BG Scheme was irregular. The school, however, transferred interest earned from Non-plan investment (₹ 127.26 lakh) and from Plan investment (₹ 113.39 lakh) in Endowment fund (BG Scheme) in contravention of provision mentioned above.

This resulted in understatement of income and overstatement of Endowment fund by ₹240.65 lakh.

C Significant Accounting policies and Notes on Accounts

As per format of accounts prescribed by MHRD, letter of credit outstanding as on 31.03.2016 was to be disclosed in Notes on Accounts. The school, however, did not disclose outstanding letters of credit in its Notes on Accounts of EURO 15317.10 and USD 48285.

Besides, foreign currency transactions were also not disclosed in Accounts.

E. General

E.1 The MHRD prescribed a format of financial statements for Central Higher Educational Institutions from 2014-15. During audit it was noticed that the school did not prepare its Accounts on the prescribed format. Major deviation are as under :

- (1) The rate of depreciation as per MHRD ranges from two *percent* to 40 *percent* whereas school is charging depreciation at the rate prescribed in Income Tax Act.
- (2) The MHRD advised to account for fixed assets under 18 heads under the caption 'Tangible Assets' & 'Intangible Assets'. But the school is exhibiting assets under 'twelve head'. There is no distinction between tangible and intangible assets. The assets is to be rearranged as per MHRD format.
- (3) Similarly, Income and Expenditure Accounts and Receipts and Payments Accounts also did not tally with that of MHRD prescribed format.

For better comparability, the financial statement is to be prepared as per format prescribed by the MHRD.

E.2 The School received grant of ₹ 100 crore under the head plan during 2015-16. Out of this, ₹ 80 crore was earmarked for creating capital assets and ₹ 20 crore was provided for meeting revenue expenditure. The school utilised ₹ 23.24 crore instead of ₹ 20 crore for revenue expenditure in contravention of sanction.

E.3 The school did not make provisions for the retirement benefits (viz. gratuity, leave salary, pension, liability etc.) on actuarial basis.

E.4. The School exhibited ₹ 146 lakh under the head 'Other Projects'. However, details of other projects were not provided to audit and hence its veracity could not be ascertained.

E.5 As per format of accounts prescribe by MHRD, advances which are outstanding for more than six months should be shown in annual accounts separately.

Although advances of ₹ 203.90 lakh provided to various suppliers had been lying outstanding for more than six months, these advances were not shown separately in annual accounts.

E.6 The Current liabilities exhibited negative balances amounting to ₹ 4.42 lakh under the head Non Plan Current Liabilities (Income Tax ₹ 1.89 lakh, Control Sector Scholarship ₹ 1.13 lakh and DST Inspire Scholarship ₹ 1.40 lakh). These amounts denoted payment in excess of fund received, as such were to be exhibited under the head current assets.

E.7 The advance to CPWD amounting to ₹ 62.83 lakh were not acknowledged by the CPWD in its form 65 for the period 1.4.2014 to 31.3.2016 (Appendix-3). The same needs to be reconciled.

(₹ in lakh)

Sl. No.	Name of work	Amount
1	Construction of Boundary wall	8.00
2	Advance for other	0.46
3	Construction of FME lab	1.25
4	Footpath from main gate to guest house	9.96
5	Renovation of Guard Room at main gate	6.65
6	Sports area at lower ground	36.51
	Total	62.83

E.8 As per format of accounts for higher education institutions prescribed by MHRD, the amount of consultancy income and expenditure on the same is to be routed through Income

and Expenditure Accounts. But the institute is routing all income and expenditure on consultancy projects through Balance Sheet in contravention of the same.

Besides, consultancy is a major source of internal income and has no relation with Research Projects. As such it was to be shown in Non-plan Account. The school irregularly exhibited the transactions under this head in Project Accounts.

Although the para was raised in the previous year's separate Audit Report, but no corrective action was taken by the school.

F. Grants-in-Aid

The school received ₹ 174.50 crore (₹ 74.50 crore under Non plan and ₹ 100 crore under plan) and unspent balance of previous year was ₹ 0.31 crore under Non-plan and ₹ 123.43 crore under plan. Further, the school earned ₹ 1.14 crore as interest on investment under the head plan and the school generated income from internal sources amounting to ₹ 46.90 crore. Thus, the total fund of ₹ 346.28 crore (₹ 224.57 crore under the head plan and ₹ 121.71 crore under the head Non-plan) was available to the school for utilisation, out of which the school could utilise ₹ 161.12 crore (₹ 39.74 lakh under plan and ₹ 121.38 lakh under Non-plan), leaving a balance of ₹ 185.16 crore (₹ 183.69 crore under plan grant and ₹ 1.47 crore interest revenue granted by the school).

G. Management Letter

Deficiencies which have not been included in the Audit Report have been brought to the notice of the Institute through a management letter issued separately for remedial/corrective action.

(i) Subject to our observations in the preceding paragraphs, we report that the Balance Sheet, Income and Expenditure Account and Receipts and Payments Account dealt with by this report are in agreement with the book of accounts.

(ii) In our opinion and to the best of our information and according to the explanations given to us, the said financial statement read together with the Accounting Policies and Notes on Accounts, and subject to the significant matters stated above and other matters mentioned in the Annexure to this Audit Report give a true and fair view in conformity with accounting principles generally accepted in India.

(a) In so far as it relates to the Balance sheet of the state of affairs of the Indian School of Mines, Dhanbad as at 31st March 2016, and

- (b) In so far as it relates to Income and Expenditure Account of the surplus for the year ended on that date.

**For and on behalf of the
Comptroller and Auditor General of India.**



**Place :
Date : 07.10.2016**

Principal Director of Audit (Central), Lucknow

Annexure

1. Adequacy of Internal Audit System :

The Internal Audit (IA) wing of the School comprising one Assistant Registrar and one UDC is inadequate keeping in view the size of the autonomous body. The function of the IA is limited to pre-check of purchase vouchers and pay fixation only. The wing did not conduct audit of annual accounts and other basic records such as cash books, bank book, ledgers, investment register and other records maintained in sections. Besides, no Internal Audit Manual has been prepared by the School. Although the issue had been pointed out in the previous SAR, no remedial action has been completed.

2. Adequacy of Internal control system :

The internal control system in the School reflects the following deficiencies:

- (i) The cash book was not closed daily. Further, there is no uniformity in maintenance of cash/bank books. The Project cash/bank books are closed on monthly basis whereas plan and non-plan cash book are closed yearly basis. Cash/bank books are not authenticated under the signature of competent authority.
- (ii) Physical verification of cash balances was not carried out at the end of every month and no certificate of physical verification was found available on cash books.
- (iii) Ledger Folio numbers were not mentioned in the cash book.
- (iv) There was non-compliance of outstanding audit observations, reflecting poor follow up procedure.
- (v) The school had not maintained fixed Assets Register in the prescribed form till date of audit (July 2016). In absence of this register, actual position of fixed assets could not be verified.
- (vi) As per Endowment Fund Block Grant Scheme introduced by Ministry of human

Resource Development for the year 2005-06 to 2009-10 for ISM, fund in excess of ceiling amount of ₹ 50 crore may be utilised for infrastructure development and its utilisation was to be reflected in the Annual Budget.

The institute incurred expenditure of ₹ 5580.66 lakh on purchase of built up area from NBCC at Kolkata and New Delhi out of above fund during the year reducing the corpus to ₹ 2328.86 lakh, Besides, this expenditure was also not reflected in the annual budget (201516) of the school.

- (vii) The school did not watch expenditure against Revised Estimate resulting in excess expenditure over revised estimate by ₹ 486.34 lakh.
- (viii) The school did not maintain following check Registers for control of expenditure.
 - i. Control Register for payment of Honorarium
 - ii. Register for contract
 - iii. Grans-in-aid Register
 - iv. Though most of the purchase of equipment are made from foreign suppliers, the School did not send the copies of tender notice to Indian embassies abroad as well as to foreign embassies in India for procuring competitive offer as per rule 150(iv) of GFR. The tender notice was also not published in Indian Trade Journal.
 - v. The School does not have an Accounting Manual.

3. Physical verification of Assets and Inventories

The School didnot conduct physical verification of assets/consumables. The value of unserviceable items were not exhibited and deducted from the fixed assets.

4. Regularities in payment of statutory dues

All statutory dues were paid within the stipulated time schedule by ISM.