ANNUAL REPORT

1994-95

BIRLA INSTITUTE OF TECHNOLOGY
MESRA, RANCHI (INDIA)

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VICE CHANCELLOR'S REPORT

Higher education in this country is getting much needed attention focussed on relevance, content, value addition and economic viability. Privatisation is also mooted by Government for a more effective economic participation by Industry.

The academic community suddenly realised the need for imparting the State of the Art Technology in curricula to motivate the students. Many Universities have opened their doors to Industry, Industrial consultations and taking up live projects.

It is clear, that in this context, Institutions and Universities need to change their focus, reorient curricula to tackle National problems. Thanks to our sponsors, BIT has been interacting with industry for a long time, with benefits to both. This approach has become the norm for many institutions now.

This norm can be summarised as: taking Pragmatic projects with an Industrial interface, cost effective local solutions to complex problems, Patenting new technologies and claim intellectual property rights, effective utilization of Institutional resources and designing new system with value addition.

The Institute has started a new programme in polymer engineering, and has developed basic laboratories in this emerging area. A Department of Science and Technology assisted program is initiated to establish a training centre at BIT-STEP in Polymer Applications keeping in view Bio-Medical and Electronic Industries. UNDP assistance is being saught for state of the art technologies and professional assistance.

The solid fuel rocket static firing facility is being modernised with real time computer interface, with a video camera, and direct data acquisition for dynamic rocket parameters, such as Thrust, Temperature, Velocity, Acceleration etc. The setup is totally Indigeneous and it will enable students and researchers to get data directly and analyse it. Terminals will be extended to the supersonic and subsonic wind tunnel testing laboratory also in due course. Two patents were applied for new technologies developed for subsonic parameter measurements.

The Indo Russian collaborative programme namely the Integrated Long Term Programme (ILTP) was initiated by the visit by two Professors Dr. Samrin, and Dr. N. Malyarov from Samara State University, Russia. Discussions centred around collaborative programmes in metal finishing, and utilization of honey comb structures for solar pond fabrications, without the need for salt gradient. Two more Russian Professors Dr. Chakhov a specialist in Aero-Hydrodynamics, and Dr. Prokharov Rector from Samara State Aerospace University are expected during October this year.

A computer network was established in the library using 16 terminals, with a direct access to comprehensive index and IEEE journals facility through CD-ROMS. A telephone interface is also installed for networking with INET. By November, we hope to obtain NICNET facilities also through the auspices of National Informatic Centre, Government of India. With this facility the BIT will be linked by e-mail to Indian and International centres.

A new CAD-CAM laboratory was set up as a Central facility, with particular reference to Mechanical Engineering and Architectural Engineering to enable Architectural and Mechanical Design implementations fast. Simulation and ergonomic viewing of the final product adds dimension to Mechanical perfection in design.

To effectively utilize the infrastructural facilities and manpower the Institute is planning specialist intensive programmes useful to industry with exposure to state of the art technologies to working engineers.

The Science and Technology Park has progressed with some entrepreneurs taking up medium scale Industrial ventures. One such is coming up at Durg for a rolling mill with technology from MECON. With this brake-through many other entrepreneurs are looking ahead for expansion programmes. We expect the new IDBI links with the Department of Science and Technology will be approved by the Government shortly so that funds are processed directly by Department of Science and Technology.

The Institute has programmed to initiate indepth professional expert programmes for entrepreneurs promotion, instead of standard low key EDP programmes with Department of Science and Technology support.

A short Industry oriented course to expose the state of the art technical ability to working engineers was initiated by Flexible Manufacturing Laboratories. The course was well received by Industry.

A working seminar in Neural Networks with applications was conducted for Research Institutions by the Electrical and Electronics Engineering Department with focus on practical Implementations.

The Management Department has conducted a number of short courses, and a special intensive six-day programme to Business executive from Nigeria on Modern methods of Management. The course was well received by the participants.

The BIT, Mesra has been selected as the venue for the All India Inter University Youth Festival 1996. The festival will be participated by 50 Universities with about 800 participants during February 8th - 12th 1996. Appropriate preparations are initiated for this National Integration Programme.

This year the construction of the new Girls Hostel is completed, with accommodation for 160 girl students. With this addition, the BIT has now two girls hostels with a capacity for 218 students. The guest house of the Institute is still being used to accommodate NRI girls.

With increase in number of Postgraduate programmes, and new courses in Architecture and Polymer Engineering, the hostel accommodation in the campus has become insufficient and has to be augmented.

ADMINISTRATION

B.I.T., Mesra is a 'Deemed University' under Sec. 3 of the UGC Act, 1956. It functions under the overall supervision, direction and control of a high-power Board of Governors, comprising representatives of the Ministry of Education, Government of India, the UGC, the State Government, the Chancellor, the AICTE, the Trust and the Institute Faculty. Mr. G.P. Birla is the Chairman of the Board of Governors. The Governor of the State of Bihar is the Chancellor of the Institute. Composition of the Board ofGovernors is given in Annexure - I

The Technical Council decides the academic policy of the Institute. It controls and approves the curriculum, courses and examination results. It appoints committees to look into specific academic matters arising from time to time. The teaching, training and research activities of various departments at the Institute are constantly under review to improve both facilities and standards. The Vice-Chancellor of the Institute is the Chairman of the Technical Council. Members of the Technical Council are listed in Annexure - II.

Financial advice to the Institute is given by the Finance Committee. Similarly, the Building & Works Committee advises the Institute in matters relating to building works activity. The constitution of the Finance Committee and Building & Works Committee is given in Annexure-II.

In addition, there are a number of other committees like the Regulation Committee for Under-graduate and Post-graduate Courses, Semester Programme Coordination Committee, Admission Committee, Scholarship Committee, Students' Welfare Committee etc. These Committees are appointed by the Technical Council to help the administration in the efficient running of the Institute.

GENERAL REVIEW

BRIEF HISTORY

The Institute was established as an All India Institute for imparting technical Education and Research in 1955 by the Hindustan Charity Trust. Initially it functioned as an affiliated college of the erstwhile Bihar University and later in 1960 upon creation of new Universities in the State, its affiliation was transferred to the Ranchi University.

In pursuance of the recommendations of the Education Commission, Government of India (1964-66) and on the basis of the report of a Joint. Selection Committee of the UGC and AUDIT, in March 1972, the Institute was granted the status of an 'Autonomous' College by making special provision in Bihar State Universities Act. The Rules for its governance were made by the Chancellor of the Universities of Bihar.

On the basis of its continued excellence, and approval by the OUCH, the Institute was declared a "Deemed University" in August 1986 under Section 3 of the UGC Act.

Since its inception the Institute is updating its academic standards, and has now acquired a pride of place in Technical Education and is one of the Premier Institute in Eastern India.

COURSES & DEGREE PROGRAMMES

Currently it is offering a variety of curricular progra-mmed as detailed below :

	Course	Intake Capacity	Duration of Course	Year of Introduction of the Course
I.	Bachelor's Degree Courses			
1.	Electrical & Electronics Eng.	45	4 years	1955
2.	Mechanical Eng.	60	do	1955
3.	Civil Eng.	45	do	1957
4.	Electronics & Comm. Eng.	60	do	1964
5.	Production Eng.	30	do	1964
6.	Pharmacy	30	do	1972
7.	Computer Science	30	do	1983
8.	Architecture	20	5 years	1993
9.	Polymer Eng.	20	4 years	1995

II.	Master's Degree Courses			
1.	Electrical i) Control Systems ii) Power System	12	1 1/2 years	1964
2.	Mechanical i) Heat Power Engineering	6	do	1964
3.	Civil i)Soil Mechanics ii) Structural & Foundation Engg.	2	do	1965
4.	Electronics & Communication i) Instrumentation ii) Microwave	12	do	1965
5.	Space Eng. & Rocketry i) Rocket Propulsion ii) Aerodynamics	10	do	1965
6.	Business Administration i) Marketing ii) Finance iii) Systems IV) Industrial Management	30	2 years	1980
7.	Pharmacy i) Farm. Chemistry ii) Pharmaceutics	10	1 1/2 years	1983
8.	Computer Applications	30	3 years	1984
9.	M.Sc. Bio-Medical Instrumentation	15	2 years	1992
10.	M.Sc. Information Science	15	2 years	1993
III.	P.G. Diploma Courses			
1.	Computer Applications,	30	1 year	1988

IV. Continuing Education (Part-Time) Post-Graduate Programme

To enable working Engineers to update their technologies, the part-time Post-Graduate Programme offers 3 levels :

1. A Certificate of Merit after completing 5 units,
2. A Diploma after completing 10 units, and
3. A Degree after completing 15 units.

The disciplines are :

1.	Civil Engineering	:	Structural Design
2.	Electrical Engineering	:	Control Systems & Power Systems
3.	Mechanical Engineering	:	Design of Mechanical Equipment
4.	Production Engineering	:	Industrial Automation
5.	Management	:	Marketing, Personeel, Industrial Management Finance and Systems.
6.	Computer Applications	:	-

In addition to the above, programmes a full-time programme leading to B.E. degree in Polymer Engineering has been approved and started from the academic session 1995-96. The course in Master's degree in Hospital Administration has also been approved.

IV. Doctor Of Philosophy

The Institute offers Research Programmes leading to Ph.D. Degree in all the above disciplines.

ENROLMENT

There are 1833 students who have enrolled during the current Academic year 1994-95. The branch-wise enrolment is detailed below. Of these there are 233 girl students and 54 foreign students :

Course	Full Time	Part Time
B.E.	1319	-
B.Arch.	43	-
B.Pharm.	102	-
M.C.A./D.C.A.	113	46
M.B.A.	38	54
M.Pharm.	13	-
M.E.	48	6
Bio-medical Instrumentation	22	-
Information Science	21	-
	1697	136
	Total : 1833	

FACULTY & STAFF

Against the sanctioned strength of 213 Faculty positions, 137 are filled with 76 vacancies. The break-up is as follows :

Category	Sanctioned	In Strength	Vacancies Position
Professors	57	42	15
Associate Professor	62	30	32
Lecturers/Associate Lecturers	94	65	29
	213	137	76

The number of administrative and supporting staff are approximately 250. In addition, there are about 300 Class-IV Staff to look after the General Maintenance of electricity, water supply, gardens, security, hostels and allied services. It may also be mentioned that under the Welfare Programme for the weaker sections of society specially from villages adjoining the Institute Campus, the Institute has engaged about 100 persons as Trainees/Apprentices in various technical and other trades. While under training these persons are paid some allowance/stipend on a regular monthly basis and they are absorbed in regular posts against vacancies arising, from time to time.

All academic staff have been provided accommodation on the Campus. About 60% of the administrative and other supporting staff have also been provided accommodation on the Campus.

OUT-TURN OF GRADUATES & POST-GRADUATES

In the Annual Convocation of the Institute held on April 8, 1995, an Honorary Degree of Doctor of Science was conferred on Dr. A.P.J. Abdul Kalam, Advisor, Ministry of Defence, Government of India for his outstanding contributions in the field of Aerodynamics.

During the year 1994-95, 511 students have qualified for the award of Degrees and Diplomas of the Institute; 312 for Under-graduate Degrees (B.E./B.Pharm.) and 199 for Post-graduate Degrees (M.E., M. Pharm., M.B.A., M.C.A. & D.C.A.) and 3 for Ph.D. Degrees; the break-up is as follows :

	No. of students graduated in 1994-95	Total No. of graduates upto 1995
I. **Under-Graduate Degree**		
B.E. (4-Yr.) Degree Course		
Civil Engineering	26	
Computer Science	34	

	Electrical & Electronics Engg.	55	
	Electronics & Comm. Engineering	77	
	Mechanical Engineering	79	
	Production Engineering	20	
		291	9198
	B. Pharm. (4-Yr.) Degree Course	21	43
		Total	9629
II.	**Post-Graduate Degree**		
	M.E.		
	Civil Engineering	14	
	Electrical Engineering	7	
	Electronics & Comm. Engg.	12	
	Mechanical Engineering	8	
	Space Engineering & Rocketry	7	
		48	416
	M. Pharm.	07	126
	M.B.A.	73	643
	M.C.A.	46	279
	D.C.A.	25	159
			1623
III.	Ph.D.	3	37*

*Note : The figures show the Ph.D. Degrees awarded after the Institute has become Deemed University in 1986.

CAMPUS AND PHYSICAL FACILITIES

The Institute is fully residential and extends over 780 acres. The main buildings of the Institute covers an area of over 30,000 sq. mtrs. and accommodates the various research and training laboratories, administrative offices, lecture rooms. The Woorkshop annexe has a covered area of 4,000 sq. mtrs. The laboratories and offices of the Department of Space Engineering & Rocketry are situated for security reasons in a sub-campus, about half a kilometer away.

For the convenience of working Engineers to participate in Post-graduate programmes a technology Centre was established in Ranchi City at Lalpur in 1976.

The Campus is self contained amidst well laid lawns, with its own protected water supply, marketing centre, dispensary, bank and schools.

Institute Building	Sq.mtrs.
i) Main building & Administrative Block	3700
ii) Class room and laboratories, Drawing Halls, Staff rooms etc.	9300
iii) Library Block	2600
iv) Space Engg. & Rocketry Block including explosive and Rocket Fuel Centre	930
v) Workshop Sheds, General Stores, Garage/Godown	3721
vi) Gymnasium	850
vii)Animal House	400

Residential Complex	Sq. mtrs
i) Staff quarters in different categories	300
ii) Residential Complex for supporting services : Forest Guards, Diary, Shop Keepers, Washermen etc.	70

Hostel Accommodation	
i) Seven Boy's Hostels	1410 Single Rooms
ii) Two Girls' Hostel	140 Rooms
iii) One Foreign Students' Hostel	100 Rooms

Guest Accommodation

The Institute maintains two Guest Houses. A General purpose Guest House with 8 furnished rooms and a VIP Guest house with 3 deluxe double bed-rooms to accommodate guests appropriately.

Auditorium

To meet the growing needs of the community for public functions an Open Air Theatre is partly completed and can seat 2500 persons.

There is also a Mini-Auditorium with seating capacity of 450 in the main Administrative Block.

Games & Sports

The Institute has a Gymnasium and is spacious enough to accommodate indoor games. Extensive play grounds are provided to facilitate sports. They are :

1. Field Tracks for Sports/Atheletics/Cricket	- 1
2. Football ground	- 2
3. Hockey grounds	- 2
4. Basket Ball grounds	- 4
5. Volley Ball grounds	- 6
6. Tennis Courts	- 6
7. Badminton Courts (One Indoor and 5 Outdoor)	- 6
8. Rifle Firing Range	- 1
9. NCC Parade ground	- 1

Canteen Services

A moderately furnished canteen, provides snacks for students and staff.

Dispensary-cum-Health Unit

A eight-bed newly constructed hospital has just started serving the large campus community mainly as an outdoor patient unit. This unit supports three full time doctors. Excellent rapport exists for acute medical needs with the Government Medical College Hospital at Ranchi.

Marketing Centre :

A well run Cooperative Stores provide the dail requirements of the campus of nearly 5,000 residents. Additional shopping complex is provided for sundry needs.

The construction of a full-fledged Marketing Complex and Cooperative Book Store to meet the growing needs of the Campus is nearing completion. The annual commodity of the Campus exceeds Rs. 2 crores mark.

Others :	Sq. mtrs.
i) Consumers Co-operative Stores	375
ii) NCC Block	400
iii) Primary/High School (temporarily housed in Mechanical Engg. Block	744

CENTRAL FACILITIES

COMPUTER CENTRE

The Computer Centre is equipped with five high end systems known to be qualified under the Supper Mini Computer category, they are :

DEIL 5100 from Digital India with RISC CPU, R3000 and for the floating point unit R 3010, with a clock speed of 20 MHz. It delivers a SPEC Mark I of 14.9 and MIPS 2 of 19.4. The primary memorary is 40 MB and disc capacity is 1.85GB. It has 95 MB CTD and currently supports 32 terminals. The operating system is ULTRIX and it has C, Pascal, Cobol and FORTRAN Compilers alongwith INGRESS Relational Databases.

TUL U6000/65 a high end system from TATA UNISYS with two 80486 CPU'S operating at 50 MHz. It has 64 MB Processor RAM and 1 MB external cache per CPU. Secondary storage is 4.35 GB in the form of SCSI Hard disc, 150 MB CTD and 1.2 MB FDD. There is also a 550 MB CDROM. The system supports 47 terminals and runs AT & T Unix with X windows, Oracle and Scientific Subroutines. The languages supported are C, Basic, Fortran 77, Pascal C++, Image processing and vision software. Recently three Digitals Alphas are installed. One of them operates at 175 MHz with 4 GB Hard Disk and 96 MB processor RAM. It runs on VMS operating system supporting FORTRAN, PASCAL, C, C++ and COBOL compilers, GKS and PHIGS. It is linked with a two 8-port terminal server over DECNET.

The second system is an ALPHA operating at 125 MHz with one giga byte hard disc space and 32 MB RAM. It has OSF operating system with FORTRAN PASCAL and C Compilers.

The third system is an EISA based Alpha operating at 150 MHz with Windows-NT. All the Alpha systems have 600 MB CD-ROMs.

All the above systems are networked on Ethernet with TCP/IP and NFS. Apart from the above, there are 10 PC/PC XT machines, and 20 PC-AT 386/486 range of machines with SVGA, 4 MB or more RAM and 80 MB or more hard discs. The micro computer based software packages include Fox-Pro for Windows 3.1, MS Fortran, MS Word 6.0 for windows 3.1, MS Visual Basic 1.0, Borland and C++, Turbo Pascal 7.0.

There is also a 2 transputer based parallel processing workstations with parallel C, parallel Fortran and one Tektronix 4115B graphics workstation. Very soon I-net access facility for worldwide linkage will be provided. The Computer Lab. is catering to the services of 120 students at a time in one slot. Also laboratory is kept open all 7 days from 8 a.m. to 9 p.m. for the users.

LIBRARY

The Library subscribes over 125 Indian and foreign journals annually. During the current year 3300 volumes were added to the existing stock of library. The up-to-date stock of the Library comprises of 59,500 books and 15,000 back volumes. Facilities for microfilming, photocopying and off-line information retrieval are also being provided by the library.

ACADEMIC INNOVATIONS RESEARCH & DEVELOPMENT

With the support of the Government of India during 1994-95, the Institute has been able to establish and develop infrastructure for interdisciplinary research,and Development and curriculae in Engineering, Pharmaceutical and Applied Sciences. Additional facilities

have been created for Post-graduate studies and research in the area of Applied Sciences to meet the needs of specialized research workers and teachers. New programmes for Industry-Institute interaction have also been developed.

A new Department of Applied Mechanics has been created with a view to develop Engineering Mechanics Laboratory and use of Computers for simulation of studies in complex engineering problems.

A Post-graduate Diploma (1 1/2 Yr.) in Hospital Administration which has already been approved is proposed to be started in the next academic session.

The Institute has submitted the following proposals for approval by the All India Council for Technical Education, New Delhi:-

1) M.Sc. Electronics
2) M.Sc. Applied Sciences
3) M. Pharm. in Pharmacognosy
4) M. Tech. in Bio-Technology.

In pursuance of the new Education Policy of the Government of India, the Institute is keeping pace with the latest technological advances in identified areas of emerging technologies and is creating and establishing necessary infrastructure for Education, Research and Training. The Microprocessor Development Centre has already established a rapport with SAIL, MECON, CMPDI, HEC etc. for design and development of instrumentation and constrol systems for real time Computer controls. Artificial intelligence and Robot technology are being moved from the research domain to the solution of practical problems. Further, the efforts are being made for commercial exploitation of various technologies developed at various Centres/Departments.

MICROPROCESSOR RESEARCH CENTRE

The microprocessor laboratory and Artificial Intelligence Laboratory have been upgraded to handle complex digital signal processing applications, for all real time control applications in the area of Industrial Processes and Bio-Medical Instrumentation. This yields an intelligent approach to problem solving.

ROBOTICS LABORATORY

The Robotics and Microprocessor laboratories are expanded with more floor space for ease of working. A software-hardware project on Mobile Transfer Vehicle (MTV) in collaboration with MECON is under development. This project was taken up during the last year and has progressed well. Hardware sub systems were tested, and software prepared. The MTV is a four wheeled Robot with separate drive for each of the four wheels. This allows the vehicle to move in any direction required on a floor.

PLASMA ENGINEERING

Since the last few years, the Institute has been actively engaged in developing Plasma Technology facilities. Some of the major facilities available at present are :

1) A Cascaded Plasma Arc Generator (Power - 18KW, Hypertherm U.S.A.). It can produce thermal plasmas of Ar, N2, H2 He etc. which may be used as a 'Heat Source' for screening materials for high temperature applications (thermal Shock, thermal stress, ablative materials etc.) and for matrials processing applications.

2) Two glow discharge units equipped with vacuum units (Rotary and Diffusion pumps) having capacity to reach vacuum of the order of 10-6 Torr.

3) A very High Resolution Grating Monochromator (Model THR, JOBIN YVON, Resolu tions of 175,000 in single pass and 350,000 and double pass and dispersion of 2.6 A / mm in single pass and 1.3A /mm in double pass. This along with Fibre Optic Couplers, Photo-multiplier tube and Read out system is now being developed as a non-intrusive plasma diagnostic technique based on Optical Emission Spectroscopy (OES) for the study of plasma parameters.

Work on inter-disciplinary project entitled "Study of Arc Plasma Characteristics of a Cascaded Arc Plasma Generator" sanctioned by Ministry of Science & Technology, DST, New Delhi to Dr. R. C. Prasad of the Electrical Engg. Department as Principal Investigator and Dr. P. K. Barhai of the Applied Physics Department as Principal Co-investigator is in progress. The basic aim of this project is to characterize the Plasma produced by Cascaded Plasma Arc Generator using OES and radial heat flux distributions.

Another project on "Metallic Multilayer Surface Coating Using Anodic Vacuum Arc" submitted by Dr. P. K. Barhai as Principal Investigator and Dr. R. C. Prasad and Mrs. A. Jain as Co-Investigators to ISRO HAS BEEN recommended by Vikram Sarabhai Space Centre, for funding under response.

Final year undergraduate students have succeeded in setting up and doing new experiments on various types of electric discharge lamps and measurement of plasma parameters using special type of gas filled diode tubes.

FLEXIBLE MANUFACTURING AUTOMATION LABORATORY

Product and process development is a continuous process in any industry. Rapid advances in manufacturing technology with computer controlled processes and management information system, are reinforcing the recognition that specialized training on manufacturing is necessary for their potential to be realised. Realizing the need for an integrated programme on the development of Automation Technology, a Flexible Manufacturing Automation Laboratory has been set up in the Department of Production Engineering. Setting up of this laboratory is a step in the methodology of unmanned manufacturing. The laboratory is designed to carry out experiments on various aspects of automation as applied to Production Engineering field.

The equipment and machineries installed in the laboratory include:

1. CNC Trainer Lathe (EMCO)
2. CNC Trainer Milling (EMCO). It has 0.1 micron resulation.
3. A complete FMC comprising of -
   a) TRIAC CNC Milling Machine
   b) ORAC CNC Training Lathe
   c) Conveying system with Conveyer
   d) Two MOVEMASTER Robot
   e) PC and PLC Control System for co-ordinating control actions of different elements (DENFD)
4. Co-ordinate Measuring Machine (CMM - KEMCO)

The laboratory offers excellent opportunities for carrying out research in the areas of CAD, CAM and Robot assisted flexible automation. Some of the projects on which the work is presently in progress include :

1. PETRI-NET Modelling of Automated Manufacturing System.
2. CAD for Toolings.
3. Communication Network in CIM
4. Design and development of Robotic Workstation.
5. Knowledge based system for FMS
6. Robotic End - Effector - Toolings and Grippers.

ENVIRONMENTAL ENGINEERING LABORATORY

With the increased awareness about environment it has become necessary to have a well equipped laboratory where the testing facilities for various environmental pollutants can be carried out with precision and speed. With this object in mind an Environmental Engineering Laboratory has been set-up in the Department of Civil Engineering. The laboratory is well equipped with Scalar Analyzer which is microprocessor controlled and has a capacity to test 37 parameters at a time. The data system can handle upto 16 channels simutaneously. All channels are displayed on CTR. The data system stores all the raw data for post run manipulations, achieveing, transfer and reformatting of reports. Curve generation in all channels is an added attraction.

The laboratory is being used for regular training to Under-graduate and Post-graduate students and also for carrying out consultancy work of various industries.

CENTRE FOR HISTORY OF SCIENCE

The Centre is engaged in studies on the evolutionary aspects of scientific development. The Centre is headed by Internationally reputed scientist, Dr. R. C. Gupta, who has been elected a member of the International Academy of History of Science, Paris in February 1995. The Centre has a rich collection of books, journals and other materials for further investigation. About 400 research papers articles, notes & reviews have been published in

indian & foreign journals from the Centre.

During the year 1994-95, an American Research Fellow, Miss Kim Leslie Plofker visited the Centre in December 1994 and had discussion with Dr. Gupta, delivered a Presidential Address on "Mathematics as a way of Life" to 29th Annual Conference of Association of Mathematics Teachers of India, held at Kancheepuram in December 1994.

A report on Dr. R. C. Gupta's academic work has been published in Indian J. Hist. Sci. (INSA, New Delhi), 30 (1), 78-79(1995)

THE BUILDING CENTRE (Nirman or Nirmithi Kendra)

The Housing and Urban Development Corporation (HUDCO), Ministry of Urban Development, Govt. of India in collaboration with Department of Civil Engineering, Birla Institute of Technology, Mesra, Ranchi has established a Building Centre. The Building Centre's main objective is to carry technology to grass root level in the field of Construction Engineering. Further, the centre is striving for propagation, dissemination of appropriate and cost effective technologies for application in housing and building programmes. The Centre has drawn up a future programme to give the right level of exposure on Organisational, Technological, Managerial, Financial aspects and logistic issues in helping entrepreneur to run such Centres in the right manner. The Centre is developing training module, manufacturing and marketing module, construction module and housing guidance and information module for the Chhotanagpur Area.

DEPARTMENT OF ARCHITECTURE

The Department of Architecture was established in 1993-94. The Departimet has 4 full-time and 2 part-time faculty members.

During the period under review a CAD laboratory for graphics and Computer Aided Design & Drafting has been set-up with terminals and advanced software like ACAD-12 & 3-D Studio. About 450 new titles including books & journals on various topics of Architecture and related areas have been added to the Library.

A Seminar on "Modern Trends in Architecture" conducted by Dr. S.P. Mukhopadhyay, Professor of Architecture, I.I.T., Kharagpur was held. Dr. Mukhopadhyay also held a slide show on "Manhattan Skyline and "Temples of Egypt"

Under the guidance of Prof. Aggarwal, a slide show on "A Contemporary Architecture of Delhi - J. S. Stien" & "Fatehpur-Skiri and Agra" was held by Prof. Surat Kumar, a faculty member of the Department.

Students of 3rd Semester represented the Department at NASA-93 (National Association of Students of Architecture) held at University of Roorkee, in Dec. 1994.

An educational tour B. Architecture III Semester students to Chandigarh, New Delhi, Agra, Fatehpur-Sikri was organised by the Department. The students submitted a report on Architectural Heritage of these places after the tour.

During the visit by Expert Committee of A.I.C.T.E., students of 2nd and 4th Semester organised an exhibition on "Architectural Projects".

Both the faculty and the students of the Department participated in the following All India Open Competition:

i) Tile Design Competition organised by Orient Tiles Ltd.,New Delhi.
ii) "Moon Villa" Design Competition held at Young Architects Festival, YA-95, Cochin.
iii) IInd ISLE Lighting Design Competition 95, held by ISLE, New Delhi.

Out of the above a 2nd prize was on in the "Moon Villa" Design Competition. In the 2nd ISLE Lighting Design Competition, the following prizes were won :

i) 2nd prize of Rs.10,000/- by Ms. Richa Srivastava & Mr. Vivek Ahuja for 'Mys tique - the Light'.
ii) Commendation Prize of Rs.2000/- by Prof.Surat Kumar for "Moon Falls"- a monu ment lightening dedicated to humanity.
iii) Commendation Prize of Rs. 2000/- by Prof. Surat Kumar for "Redefining Wall" - a redefinition of nature, light & wall.
iv) Commendation Prize of Rs.2000/- by Mr. Biplab Nandy & Suman Saha for 'Armadillic' - a solution to contemporary lighting.

In addition to reacting, the faculty members are also actively engaged in research and consultancy activities. The Department has provided design & Consultancy for the New Girls Hostel and the Research & Develop-ment building being constructed in the Campus.

DEPARTMENT OF CIVIL ENGINEERING

Apart from conducting Under-graduate and Post-graduate programme, the Department has varied research activity. The Department is attempting to the needs of the community at large through a variety of activities which includes scientific and industrial consultancy, continuing education, application of science & technology to rural areas and dissemination of scientific information through various forums.

Under the consultancy programme, the Department has been able to establish rapport with large and small scale industries by undertaking consultancy services in the areas where the Department has the expertise and facility. Transfer of technology developed at the Department, improvements in manufacturing processes and development of new research tools are shared with agencies involved in similar activities.

Some of the research programmes include - River Basin Development, Hydraulic Modelling, Soil Structure Interaction, Buckling of Layered Plates, Elastic Buckling of partially Bonded plates, Stability of Cuts and Embankments, Influence of Adverse Environmental Conditions on Composite Material Columns, Stone Columns, Offshore Structures.

Consultancy has been one of the major activities of the Department. Following projects were taken up for consultancy work in the year 1994-95.

1) Design of tall steel chimney for Garden Reach Workshop, Ranchi,

2) Design of River training works for Usha Martin Industries, Tatisilwai, Ranchi,

3) Design of a Weir inclusive of river training works for Indian Institute of Coal Man agement, Kanke Road, Ranchi,

4) Sub Soil Investigations for
   i) Usha Martin Industries,
   ii) Military Engineering Services Ranchi and Ramgarh,
   iii) Central Coal Fields Ltd., Ranchi,
   iv) Central Mining Planning Development Institute, Ranchi,
   v) Rashtriya Pariyojana Nigam, West Bokaro,
   vi) Bihar Plateau Development Projects, Ranchi,
   vii) Bihar Public Health Engineering Department

5) Mix Designs for
   i) Garrison Engineer, Ranchi, Ramgarh.
   ii) Uttar Pradesh Bridge Constructionn Corporation,
   iii) Bhasin Construction Company,
   iv) Rashtriya Pariyojana Nigam.

6) Stress strain characteristics of rock samples for the construction of tunnels, mines and other related structures.

7) Routine test in the field of Soil, Concrete, and Road materials for public sector and private companies were undertaken.

8) Non destructive tests to test the suitability of built in structure was under taken for Tata Consultancy and R.P.N.N. at West Bokaro.

Some of the new areas of research involving interaction with other Departments of the Institute include

1) Effect of detergents and soap on soil characteristics with Departments of Pharmacy.

2) Experimental Investigation on the vibroviscosity of fine grained soil with Applied Mechanics Department.

Prof. G.P.C. Rao is project incharge and Prof. Gopal Pathak as Chief Co-ordinator of the project entitled "Survey of Status of Drinking Water Supply in Rural Habitation" under the "Rajiv Gandhi Drinking Water Mission". The project involved a survey of eight districts. The report has been submitted to Government of India.

The Department is constantly upgrading its laboratories through addition of new equipment The equipment added in different areas during the period under review are -

Remote Sensing

Optical pentograph
Procom with teleconverter
Ground truth radiometer with filters

Digital planimeter
Digital calimeter
PC AT 486 DX 1166
66 MHZ EISA Built Co-processor
16 MB RAM, 16B Hard Disc.
20 inch Monitor
PC ARC/INFO Starter Kit
ERDAS Software, ARC/INFO Software.

Highway Engineering

Impact penetration tester
Float test apparatus for tar and bitumen
Lynx ductility apparatus
Hubbel field test apparatus
Universal penetrometer
Automatic penetrometer
Penetrometer cone
Bankelman beam
Profilograph recorder
Viscometer
Cloud and pourpoint apparatus
Pavement dynamic cone penetrometer

DEPARTMENT OF COMPUTER SCIENCES AND ENGINEERING

During the period under review four module of college Teachers Training Programme under UGC Scheme were conducted for Bihar College Teachers from January - May 1995. Short courses for tribal students in Administrative Training Institute, Ranchi were conducted in April 1995. Courses for B.E. VIII Semester were also conducted for the students of B.I.T., Sindri from May 1995 to July 1995.

The following equipment was added during the period 1994-95 :

Name of Equipment	Value
1) Personal Computer	Rs. 2.40 Lakhs
2) Tata Unisys U 600/65 multi CPU System with 50 terminals	Rs.63.00 "
3) Digital Alpha AX P64 bits systems with 16 terminals	Rs.20.00 "
4) Parallel Processing work station 2 Nos.	Rs.10.00 "

5) Image Processing Work station. Rs. 5.00 "

The Department has obtained grants from Ministry of Human Resource Development for establishing a Computer Aided Design Laboratory.

Dr. P. K. Mahanti has been invited to be a member of Editorial Board of International Journal of Applied Sciences & Computation, a Program Publication.

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGINEERING

Theoretical Modelling and simulation of Solid State devices for high speed and opto-electronic applications have been an active area of research in the Department. The project "Computer Simulation of Heterojunction Solid-State Photodetectors for Fibreoptic Communication Systems" sponsored by the Department of Science & Technology, Government of India has been completed. During the year under report, a number of novel solid-state source detector structures for integrated optoelectronics applications have been introduced. These include Double-Heterostructure InAs/InAs Sb Light emitting - Diode for application in 2m to 6m wave-length region High Electron - Mability - Phototransistor and Photo-MISFET. Further, a number of compact Computer programmes using Fortran-77 and Turbo-Pascal for simulating the devices on IBM PC (XT/AT) have also been developed. The Research Project entitled "Development of Optical Fibre Communication System for Underground Mines" is near completion. Very soon a demonstration of the system will be given in the underground mines. The work on the Picturephones using optical fibres is also in progress. Research work is in progress in the area of Fibre gas sensors. Development of CO2 NO2 and Ch4 gas monitoring system using optical fibre sensors for environmental pollution is in progress. Development of Laser security systems for defence applications is also going on. The Department has upgraded its optical fibre communication laboratory by adding a Monochromator, Video links, Data links, Wavelength division, Multiplexers and demultiplexers (0.5mW to 25mW) and optical powermeters. The Department has added a new laboratory in Digital Image Processing and a Voice Systhesis laboratory by adding DIP station with TMS 30420 video graphic processor, CCD camera, Mediator and CD ROM etc. New courses on Digital Image processing, Speech Synthesis, Microelectronic Engineering, Mobile Communication, Telecommunication Switching Circuits have been introduced at Under-graduate and Post-graduate level.

The Department has also added a PCB Circuit Design and Testing laboratoryfor under-graduate students. The Undergraduate & Postgraduate students have taken up number of projects in Image Processing, Voice processing, PC to PC Communication and Microprocessor based Instrumentation. The students are actively engaged in completing these projects.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

A project sponsored by Eastern Coal Fields Ltd., was taken up during last year to test/ repair and commission a huge Mobile Mine Winder Weighing several tons along with 200

KVA D.G. set. Testing of Electronic and Mechanical/Hydraulic and Pneumatic circuits has been completed. The project is progressing well and is expected to be completed soon. This is unique and challenging work taken up by the Department.

The Department organised a workshop on "Artificial Neural Networks and their Applications in January 1995. It was attended by Engineers from RDCIS, SAIL, CMPDIL, CET-SAIL, MECON, CCL and other Organisations. Guest faculty from I.I.T., Kanpur, I.I.T., Kharagpur and CIP, Ranchi also participated in delivering lectures. Artificial Neural Networks and their applications in Power Systems, Human-face recognition, Handwritten character recognition were among the numerous topics presented.

Faculty Participation

Faculty members were sponsored to attend the following Conferences/Seminars/Workshops in India.

1) The Xth National Convention of Electrical Engineer organisation Institution of Engi neers (India) at Patna, in Sept. 1994. The theme was 'Energy Requirement for Tomor row'.
2) National Conference on Neural Networks and Fuzzy Systems at Anna University, Madras in March 1995.
3) A Workshop orgnised by Electric Power Research Institute(EPRI), Bangalore during Sept. 1994.
4) A faculty member was invited to deliver a lecture on "Microprocessor Based Machine Electronics" at I.S.T.E. Winter School in I.S.M., Dhanbad.

A paper on "Modern High Power Devices" was published in National Conference on "Recent Trends in Semiconductors" at IIT, Delhi in June 1995.

Development/Research Work During the year

Some of the Industrial application topics in which students projects have been completed are -

a) Development of Measurement Process of Thrust Produced During Rocket Ignition.
b) Colour Recognition System a hand stick for guiding blind people.
c) Development of a miniature Transducer for Torque Measurement.
d) In Motion Weighing System Using Load Cell.
e) Development of a Dynamic Pressure Sensing Transducer for Supersonic Wind Tunnel.
f) Bidirectional Data Communication Using MODEM, for remote data aquisition.
g) MHO Relay with Underfrequency Part Using Microprocessor.
h) Image Recognition Using Neural Networks.
i) Solar Lentern Design and Fabrication.
j) Photo Voltaic Powered Water Pumping.
k) Investigation of Solar Powered Transport System.

Work is in progress in the fields of Microprocessors, Artificial Intelligence, Neural Networks, Fuzzy Logic, CAD/CAM, Industrial Automotion, Programmable Logic Controllers, Bio-Medical Electronics, Plasma Engineering, In addition to the conventional fields of Control Systems, Power Systems, etc.

Modern power systems are taxed by non sinusoidal current loading by extensive use of Thyristor drives. One such problem was analysed for Jindal Strips Haryana by the Department sponsored by MECON. This needs identification of harmonics present in the distribution system under various operating configurations and assessment of the magnitude of the harmonic currents, so that appropriate static var compensators with filters could be installed. On site Harmonic identification and assessment of the relative magnitudes of harmonic currents has been carried out using spectrum analyzer. For indepth offline studies, the current and voltage time series under various operating configurations were acquired using computer based data acquisition system.

DEPARTMENT OF INFORMATION SCIENCE

The Department of Information Sciences was started in July 1993 with an object to impart up-to-date knowledge and technologies in the field of Information Science in order to meet the ever growing demand of information seekers with a special reference to developing countries. It runs a two year programme leading to M.Sc. in Information Sciences (MIS). The first batch of students successfully completed the programme and most of them have obtained good placement in various companies.

The Department arranged the following guest faculties lectures for MIS students :

1) Dr. Bruce Roam, Director, Information Services, University ofSterling, U. K.
2) Dr. N. Vijayaditya, Deputy Director General, NYC, New Delhi.
3) Dr. B. K. Seen, Head, Training Division, INSDOC, CZAR, New Delhi.
4) Dr. J. K. Searches, Head, Dept. of Information Science, Vidyasagar University, Medinapur, West Benal.
5) Dr. B. N. Shine, Manager, Information Services, R&D SAIL, Ranchi.
6) Mr. Mukesh Kumar, Dy. Manager, CET, Ranchi.

DEPARTMENT OF MANAGEMENT

In addition to MBA full-time and part-time programmes, the Department conducted the following management development programmes during the year 1994-95.

1) 3 days' workshop co-ordinated by Prof. Awadh Prasad, on Materials Management for Middle level Managers from November 17-19, 1994.

2) 2 days' workshop on "Management Information Systems" jointly coordinated by Prof. Awadh Prasad and Sri. M. K.Jaiswal, for Middle level Managers from January 6-7, 1995.

3) The "Nigerian Executive Development Programme" for 7 practising Nigerian Executives from March 13-29 March, 1995.
4) All India MECON Correspondence Course for Graduate Non Executives for a period of 6 months.

DEPARTMENT OF MECHANICAL ENGINEERING

In addition to U.G & P.G. programmes, the Department has been actively engaged in research activities. During the period under review, about six M.E. Theses have been completed in various fields. Notable amongst them being the development of special type of honey comb solar collectors for rural areas. The project was carried out under the supervision of Prof. A. P. Singh and gave encouraging results. The new type of collectors had 15% higher efficiency than these of the plane type. Honey comb collectors also have heat retaining capacity and are independent of wind velocities.

Two of the faculty members, Mr. Arvind Kumar and Mr. R.P. Sharma are working for their Ph.D. under Dr. M.N. Verma. Mr. Kumar has been working on "Use of hydrogen as an alternative fuel in I.C. Engine. Encouraging results have been obtained by Mr. Kumar. Mr. R.P. Sharma is working on Computer Simulation of Combustion process in fuel-efficient four stroke S.I. Engines". The simulation model is being developed to predict the performance of engine under various operating conditions. An optimum design of the combustion Chamber is also proposed to be evolved. Experiment work is in progress on an Ambassador engine.

The CAD Laboratory of the Department has been strengthened with the addition of new Computer Systems. This has enabled the Department to effectively train the students in Computer Aided Design, analysis and simulation of engineering system.

Number of seminars were held during the period under review. Both U.G. & P.G. students participated in these seminars. Special lectures were delivered by faculty members on various topics. Two lectures are on"Hydrogen Production Firm, Solar energy and its storage in firm of metal hydrides" by Mr. Arbind Kumar and other on "Fuel efficient I.C. Engines" by Mr. R. P. Sharma deserve special mention.

DEPARTMENT OF PHARMACEUTICAL SCIENCES

Research work in the disciplines of Pharmaceutics, Pharmaceutical Chemistry, Pharmacology and Pharmacognosy has been carried in the Department.

The following UGC sponsored research projects have been completed :

1) Synthesis & Pharmacological studies of Pseudopelletierine analogues.
2) Role of crystal habits in the formulation of Cotrimoazole suspensions.

Work on following sponsored research projects is in progress :

1) UGC : Studies on synthesis & pharmacological actions of Indian analogues.
2) CSIR : Synthesis & study of newer Imidazole analogues.
3) MHRD : An integrated approach towards pollution control and energy conservation through spirulina cultivation.

In the area of pharmaceutics, the utility of Differential Scanning Calorimetry (DSC) as a rapid screening tool for Drug-Adjuvant interactions was explored with a view of incorporating vitamin C in cosmetic preparations, in the light of its recently discovered skin nutrient and skin fairing properties. The DSC studies demonstrated that thermograms which could be generated within hours of initiation of the investigation are able to pinpoint potential interactors, thereby indicating a promising future of DSC for the prediction of Drug-Adjuvant interactions.

In further extension of work on controlled release formulations, transdermal patches of Flurbiprofen, a potent non-steroidal anti-inflammatory drug were prepared using water soluble and water insoluble polymers. Under another project on sustained release dosage forms, albumin micro-spheres were employed for dispensing of Nifedepin, an anti-anginal agent. The slow and more controlled release of the drugs as compared to market formulations, both from polymer and a microsphere reservoirs indicate their promising utility as drug delivery systems.

In continuation of work on dissolution-dialysis techniques as a substitute for cumbersome in vivo bioavailability studies, excellent results have also been obtained with anti-inflammatory drug piroxicam, in addition to analgin, paracetamol, phenylbutazone and ibuprofen tablet formulations studied earlier.

In the field of herbal medicines and phytochemistry, studies on various antidiabetic herbs namely Corallocarpus spp. are in progress. Efforts are also going on for developing evaluation methods for ayurvedic formulations.

Research in Medicinal Chemistry has resulted in synthesis of number of newer analogues of azabicyclanes, indanes and peptides. Some of the synthetic peptides have exhibited anti-inflammatory and hepatoprotective activities. Pharmacological studies of other compounds are in progress.

In the division Pharmacology, the preliminay screening, Toxicological and Biochemical studies of synthetic and natural medicinals are being carried out.

During the period under review Mr. Tansif Monif was awarded Ph.D. on his work "Formulation and Studies of Transdermal Therapeutic Systems of some drugs", under the guidance of Dr. B.K. Razdan.

The following Extension Lectures were held in the Department during 1994-95:

1. Dr. S.C. Jain, Senior Cardiologist, Ranchi - Hypertension and its Management.
2. Dr. K. Sambamurthy, Andhra University, Waltair -
   a) Pharmaceutical Biotechnology - an overview
   b) Liposomal Delivery of Antibiotics.

Dr. Jain gave an educative account of recent advances in courses and management of Hypertension.

Dr. Sambamurthy in his first seminar discussed the applications of Biotechnology in the field of Pharmaceutical Sciences. The second seminar dealt with drug-targetting using liposomes as carriers for antibiotics.

The Department has been enriched with Fermentor Bioflo III, a highly sophisticated equipment received under M/HRD project "An integrated approach towards pollution Control and energy conservation through Spirulina cultivation".

The Department has been collaborating with central Drug Research Institute Lucknow on number of research projects in Pharmaceutics and Medicinal Chemistry.

Two of the faculty members - Dr. A.K. Sharma and Prof. S. Samanta were invited by Dibrugarh University as Visiting Professor under Guest Lecture programme of U.G.C.

Prof. B. N. Sinha has been elected Fellow of Institute of Chemists (FIC).

DEPARTMENT OF PRODUCTION ENGINEERING

The Department of Production Engineering is actively engaged in research in the following areas :

1) Ergonomics of Systems/Work station design
2) Skill based flexible Automation
3) Forging of sintered preforms
4) Manufacturing Tribology
5) Plant layout & Manufacturing Resource Planning.
6) TQM & ISO 9000 Quality Systems
7) Reverse Engineering

The Department held a five day continuing education Course on "Flexible Manufacturing Automation during February 6-10, 1995. There was an overwhelming response from Industry. Dr. Yuri P. Samarin, Academician, Engg. Academy of Russia & Rector, Samara State Technical University, Russia was in the Chair. Dr. Anatoly N. Maliarov, Vice-Rector on Foreign Affairs, Samara State University, Russia delivered Keynote address highlighting the importance of Computers & flexible Automation in automobile Industry.

Dr. S. R. Deb, Professor of Production Engg., Jadavpur University, Calcutta delivered two extension lectures on "Flexible Manufacturing Automation" and "Grippers and Sensors" on February 9 & 10, 1995.

Two seminars on "Product Development" and "Changing face of Manufacturing" were held by the Department on Sept. 24, 1994 & January 24, 1995 respectively. In the seminar on "Product Development" there were two invited papers from Prof. G. Sutradhar, NIFFT, Ranchi and Prof. S. Bhaumik, B.I.T., Ranchi and five contributory papers.

In the seminar on "Changing face of Manufacturing Engineering", a lecture was delivered by Dr. A. K. Jha, B.H.U. and there were four contributory papers from students

The work on the establishment of the following laborato-ries is in progress :

1) Machine Tool Automation Laboratory
2) Manufacturing Tribology Laboratory
3) Forming Process Laboratory
4) Tool Room.

DEPARTMENT OF SPACE ENGINEERING & ROCKETRY

During the year under review the following research work was carried out in different division.

Aerodynamics Division

1. Unsteady Flowfield Measurements

a) High Speed Flows

There is a growing experimental evidence showing that high speed turbulence separation and re-attachment is, in general, a grossly unsteady process. The observations made by several researchers prompted re-examination of flow field structures over on expansion surface which presents a mixed shock-wave-boundary layer-expansion wave interaction. More so, the validity of mechanical probings, practically unmentioned, for such studies, need to be examined. The unsteadiness in surface static and total pressures has been measured by respective taps in tanden over circular 'arc' convex surface of a nominal Mach No. 2.25. The study evidenced r.m.s. deviations in surface static pressure upto 300% in certain pockets. The unsteadiness in total pressure generates turbulence intensities upto 1400% on certain model and demonstrates adequately the validity of mechanical probings.

b) Low Speed Flows

In natural winds and more so, in the wake of high-rise blocks, the velocity fluctuations manifest themselves in the form of squalliness attaining a magnitude of 50 percent and even higher of the mean wind speeds. A visual observation of such unsteadiness can be had by watching the eddying of wheat and corn fields. The flow unsteadiness of this magnitude, however, falls outside the measuring range of a hotwire anemometer system.

A newly devised, mechanical Add/Sub, probe system has been effectively utilized to obtain unsteady flow field parameters like turbulence intensities and Reynolds stresses in the wake of a high-rise block in earth's type boundary layer. The study, un-claimed so far, reveals promising utilization of mechanical probes in unsteady flowfield parameters measurement where conventional electronic equipment becomes unsuitable.

Propellant and Rocket Propulsion Division

1. Studies on Fuel Rich Propellants for Ramrockets

High Energy Solid Propellant Ramrockets (SPR) are increasingly finding favour in modern missile systems for their ability to meet high velocity, range and manoeuverability requirements. The SPRs require an oxygen deficient solid propellant which burns within a primary combustion chamber and its fuel rich combustion products are exhausted into a secondary combustion where they mix and after burn with ram-air supplied by the air intakes. The SPRs, thus, require a potential fuel rich propellant system for their successful operation. The work in this direction has been initiated to provide state of art fuel systems based on pyrolysable polymers like formalazine and dinitroso penta methylene tetramine (DNPT) pyrolysable polymers. The suitable formalazine fuel has been developed and found to

sustain combustion on its own. The fuel leaves no residue and has a carbon less exhaust. This would be of a particular significance in such operational missiles where no visible signature of exhaust is mandatory.

2. Research on Heterogenous MMH based Propellants

The research and development work in the area of Heterogenous high energy propellants based on MMH (Monomethyl Hydrazine) is being carried out under an ISRO RESPOND project. The liquid rocket fuel MMH, selected for this study is to be used in the future launch vehicles of ISRO. The base fuel has successfully been gelled using suitable chemical gelling agents at appreciably low gellant concentrations. The heterogeneous fuels comprising of metal ingredients like Al and Mg have been formulated. These systems have been found to show excellent storage, ignition and flow characteristics during preliminary investigations.

3. Combustion and Thermal Degradation Studies on Novel Hybrid Fuel

A Hydrazine based novel hybrid fuel was synthesised and characterised. thermal degradation studies have been carried out to assess its performance. The fuel has been found to have a positive heat of formation and the highest value of heat of combustion (1511 Kcal/mole) observed so far for any hubrid fuel. The detailed thermal degradation studies using a high pressure Differential Scanning Calorimeter (DSC) are in progress.

4. Studies of Performance Parameters of PVC-AP Composite Solid

Propellants in presence of Metal Powder

The research work has been done to study the performance parameters of PVC-AP composite solid propellants using Aluminium metal powder, incorporated in varying percentage up to 10 percentage loading by weight. Five compositions of metallized propellant along with the virgin (non-metallized) composition have been chosen for the evaluation of the performance parameters both theoretically and experimentally to study the role of metal additives.

Theoretical flame temperature and equilibrium combustion products have been theoretically computed for each compositions at three different combustion chamber pressures namely 70 ksc, 60 ksc and the pressure actually obtained for the composition during static test firing. The thermodynamic properties of the working substance and the important performance parameters, such as spacific impulse, characteristic velocity, thrust coefficient, weight flow coefficient and nozzle area expansion ratio have been computed for each case.

Experimental study has been conducted using static test motor with fixed geometry and propellant grain with same configurations. Thrust-time and pressure-time histories have been computed using static test firing for each composition. All the performance parameters were calculated from the data taken from the obtained curves.

An effort has been made to compute the theoretical and experimental results, and to find out the extent of deviation in the performance parameters by the two methods. It has

been endeavoured to correlate the discrepancies in terms of propellant and motor variables, and the losses incurred during combustion as well as nozzle flow, based on consideration like two phase flow, heat transfer, and optimum expansion.

5. **Composite Materials Division**

The research work dealing with the buckling behaviour of glass/epoxy composite plates with a central circular hole under different fibre orientations has been carried out. During the experiments, the fibre volume fraction, hole diameter thickness and aspect ratio of the plates were kept constant. It has been observed that the buckling load initially decreases as the fibre orientation is increased from 0 to 45 , but for 45 to 90 , the buckling load again increases.

The experimental results agrees well to the theoretical calculated values.

The work on the following sponsored projects is in progress :

1) "Development Studies on Gelled Monomethyl Hydrazine (MMH) Propellant" sponsored by ISRO under Dr. Mohan Varma and Dr. B. L. Gupta.
2) "Experimental Studies on Fatigue of Carbon Fibre Reinforced Composites under Adverse Environmental Conditions" sponsored by Defence AR & DB under Dr. A. K. Shrivastava.
3) "Experimental Studies on Elastic Buckling of Glass/Epoxy Composites Plates under Thermal Loading " sponsored by Ministry of Human Resource Development under Dr. A. K. Shrivastava.
4) "Modernization of Rocket Propulsion Laboratory" sponsored b Ministry of Human Resource Development under Dr. A.K. Chatterjee, Dr. P. C. Joshi and Dr. Mohan Varma.

During the year 1994-95, the following equipment were added :

N a m e of Equipments

1) Digital Spectrophotometer
2) LQ 1050 plus Dot Matrix Printer
3) Uninterupted Power Supply for Pressure DSC.

DEPARTMENT OF APPLIED CHEMISTRY

During the period under review Dr. B.L. Gupta, Dr.(Mrs.)U. Jha and Dr. B. Verma joined the faculty.

In addition to Undergraduate teaching, the faculty of the Department is engaged in research, consultancy and material testing.Dr.P.K. Shrivastava has been sanctioned the scheme entitled "Environmental Degradation and Stabilization of Plastics" by All India Council for Technical Education. The work is progressing well. The research work of Prof. B.D. Choubey in the field of Chemical oscillation is progressing well.

DEPARTMENT OF APPLIED MATHEMATICS

The Faculty members are actively engaged in research work in the following impressive and potentially explosive areas :

i) Environmental pollution studies
ii) Information/Expert system in health management
iii) Boundary Layer theory
iv) Plasma Physics
v) Elastic dynamics with special emphasis on seismology
vi) History of Science

In environmental studies, mathematical models have been developed to investigate the dispersion of air pollution in the atmosphere as well as on the ground. The pollutants which are toxic in nature are emitted from different types of sources such as point sources, line sources and area sources. These models are capable of quantitative prediction of the level of pollutants downwind from the sources.

The study is made essentially in the Planetary Boundary Layer (PBL). The meteorological parameters such as wind speed, plume rise and eddy diffusivity and the topographical parameters such as wind speed, plume rise and eddy diffusivity and the topographical parameters such as ground roughness, uneven terrain are included in the model. As the theoretical basis is not always available to estimate above parameters, an emperical approach has successfully been adopted and the merit of the results in this approach is significant.

There are three approaches in mathematical modelling :
(i) Numerical, (ii) Analytical and (iii) Gaussian. Amongst these three, the third one, that is, Gaussian model is useful from the point of view of practical applications as it is very easy in implementation. Numerical models which need computer of high speed and huge memory are not feasible for consultancy, but it gives clear picture of the diffusion process while analytical models give elementary results. Studies have been conducted in all these directions with a view to understanding the process in wide spectrum.

Results so far obtained are encouraging from practical point of view and are applied in consultancy job with MECON, Ranchi, yielding satisfactory results.

In the area of information/expert system in health management, efforts are in progress in developing complete indigeneous information system and expert system. Some progress has been made in this direction. Writing software is completed and the same has been tested with the help of data collected from some hospitals.

In boundary layer theory, a significant progress has been made in solving boundary layer problems based on mixing length theory. Efforts are now in progress to extend the theory to atmospheric boundary layer theory.

Besides, a good deal of research work on elastic bodies, plasticity, anisotropic or partly anisotropic eastic bodies, micropolar elasticity, plance MFD flows, rotating MFD flows and hydromagnetic non-Newtonian fluid flows has been carried out in the Department.

The results of findings of the above topics are either published in National/International journals or presented in the Seminars/Conferences/ Symposiums of international repute.

The Department has Research Centre for History of Sciences headed by an internationally renowned figure Dr. R. C. Gupta, who has published about 400 research papers, articles, notes, reports, and reviews in Indian and Foreign Journals. New findings in the field of history of mathematics and astronomy (including transmissions) have been brought to light besides fresh bibliographical materials. A set of 16 popular articles were also published under the series 'Glimpses of Ancient Indian Mathematics'. The processings of the Fourth Conference of the I.S.H.M. (Delhi) 1982 and Datta-Vogel Centenary Volume (Delhi, 1988) were edited. His book entitled 'Historical and Cultural Glimpses of Indian Mathematics' is being published by the N.C.E.R.T. His work on Jaina Mathematics is to be brought out soon.

Future Plan and Programmes :

I) It is planned to make strides into the following areas relevant to the present scenario of national interest :

(1) Weather forecasting
(2) Coastal meteorology
(3) Oceanography

II) In order to complete the above projects successfully, relevants data and scientific expertise to some extent from other sources is required. To achieve this goal, we are exploring the possibility of collaboration with the following Organisations and Institutions :

1) India Mateorological Department, New Delhi.
2) Indian Institute of Technology, New Delhi
(Centre for Atmospheric Sciences)
3) Jawaharlal Nehru University, New Delhi.
4) Indian Institute of Tropical Meteorology, Pune.
5) Calcutta University (Centre for Atmospheric Sciences), Calcutta.
6) Jadavpur University, Calcutta (Deptt. of Maths.).
7) Indian Institute of Sciences, Bangalore
(Centre for Atmospheric Sciences).
8) Andhra University, Waltair
(Deptt. of Occeanography and Meterology).
9) National Institute of Oceanography, Dona Paula, Goa.
10) MECON, Ranchi (Environment Engg. Division).

Sri S.S. Roy, Assistant Professor of the Department of Applied Maths. was awarded Ph.D. Degree of the Institute on the topic 'Deformation of asymmetric elastic medium under magnetic field and thermal loading under the guidance of Dr. S. C. Prasad, Associate Professor of the Department.

Dr. S. Roy has submitted a project entitled 'Inverse Problems in Boundary Layer Flows' under the scheme of Major Research Projects.

Dr. S. Roy has delivered a lecture on the topic 'Numerical Studies of Laminar compressible Boundary Layer Flows with Heat and Mass Transfer' on 18th February, 1995 at B.I.T.

DEPARTMENT OF APPLIED PHYSICS

The Undergraduate laboratories for 1st and 2nd Semester students has been modernised by introducing novel experiments and demonstration of some applications of lasers including holography Fourier optics and interferometric precise measurements.

In collaboration with Departments of Electrical & Electronics Engineering and Electronics & Communication Engineering students of B.E. 7th & 8th Semesters are doing project on

1) Optical computing techniques
2) Optical information processing and holography.
3) Computer simulation of ultra short laser pulses.

Three groups of students are doing projects on laser and their application including fiber optics and holography.

The work on the two projects "Study of Arc Plasma Characteriestics of Cascaded Arc Plasma Generator" and "Metallic Multilayer Surface Coating using Anodic Vacuum Arc"

At the request of NCSTC, Government of India, three polular science books have been written by Dr. Rakesh Popli on

1) "Khoya Hua Janamdin" (on astronomy of Caledars)
2) "Rahu Ketu Ki Khoj" (on eclipses)
3) "Akash Darshan Ka Aanand" (Projects in astronomy)

These books are being published shortly. Dr. Popli has also been requested by NCSTC, Government of India to do the Hindi translation of George Gamow's masterpiece "One Two Three - - - Infinity". The work has already been taken up.

PARTICIPATION OF FACULTY IN NATIONAL AND INTERNATIONAL CONFERENCES/SEMINARS

DEPARTMENT OF CIVIL ENGINEERING

1. Rao, V.C.S. attended a National Seminar on Rural Roach at Andhra University Engineering College, Visakhapatnam, Oct. 1994.
2. Pathak, G. presented a paper on "Promoting Health in Developing Countries" in the International Health Promotion Conference, University of West London, April 1995.
3. Rajeevalochanam, B.S. delivered a lecture on "Modern Civil Engineering Areas of Research", C.M.P.D.I., Ranchi, April, 1995.

4. Rao, V.C.S. attended a Summer School on "Programming Methodology - Modern Trends in Software" held at J.N.T.U Engineering College Kakinada, May, 1995.
5. Pathak, G. presented a paper on "Health Promotion in Developing Countries : How to achieve the goal ? at 4th International Conference on Safe Communities, held at University of Alberta, Edmotyon, Canada, June 1995.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

1. Jha R.C. attended both National Convention of Electrical Engineers on "Energy Require ment for Tomorrow", held by Institution of Engineers (India) at Patna, Sept. 1994.
2. Shrivastava, R. K. attended a workshop held by Electric Power Research Institute, at Bangalore, Sept. 1994.
3. Thakura, P. R. delivered a lecture on "Microprocessor based Machine Electronics" at I.S.T.E. Winter School, held at I.S.M. Dhanbad, Dec. 1994.
4. Karan, B. M. attended a National Conference on "Neural Networks and Fuzzy Systems" held by Anna University at Madras, March 1995.

DEPARTMENT OF MANAGEMENT

1. Jha, A.N. presented a paper on "Status of Indian Consumer with Special reference to Unfair Trade Practices" at XLVII All India Commerce Conference, Kakatiya University, Andhra, Dec. 1994.
2. Bhagat, (Mrs.) M. participated in a training course on "Research Methodology in Labour Economics" held by National Labour Institute, NOIDA (UP), Dec. 1994.
3. Bhagat, (Mrs.) M presented a paper on "Working Class Response to Liberalisation - A Study of Public Section Undertaking in Ranchi Region", at Study of Public Sector Under taking in Ranchi Region", at 36th Annual Conference at Indian Society of Labour Economics, Patiala, Jan. 1995.
4. Bhagat, (Mrs.) M. appointed as a Rapporteur of Technical Session; 36th Annual Conference of Indian Society of Labour Economics, Patiala, Jan. 1995.
5. Munjal, (Mrs.) A. attended a Workshop on "Development of Women Managers", held by Association of Indian Management Schools and Canadian consortium of Management Schools at National School of Bank Management, Pune, Jan. 1995.
6. Bhagat, (Mrs.) M. invited as Rapporteur in the National Seminar on "Rehablitation of Surplus Workers" held by Institute of Economies. (Hyderabad) Jaipur, Feb.1995.
7. Munjal, (Mrs) A. presented a paper at Seminar on "Women in Development", held by British Council Library, Ranchi, Feb. 1995.

DEPARTMENT OF MECHANICAL ENGINEERING

1. Kumar, A presented a paper on "Hydrogen as Futuristic I.C. Engine Fuel - Problems & Prospects" in the Seminar on "I.C. Engines - the State of Art" Conducted by Institution of Engineers (India), Oct. 1994.

2. Kumar, A presented a paper on "Hydrogen as an Environment Friendly Fuel" at the Summer School on "Energy for Sustaniable Development", conducted by Osmania University, Hyderabad, June 1995.
3. Rao, N.R. attended a Summer School on "Finite Element Methods" conducted by IIT Madras, June, 1995.

DEPARTMENT OF PHARMACEUTICAL SCIENCES

1. Sinha B.N., Thanigavelan, J., and Sharma, A.K. presented a poper on "Phytopharmacological Choices on Melothria maderas patna (Linn) Cogn", at 46th Indian Pharmaceutical Congress, Chandigarh, Dec. 1994.
2. Chandrasekha, N., Chaudhary, A., and Bhatnagar, S.P. presented a paper on "Evaluation of an Ayouvedic Autidiabetic Herbal Formulation" at 46th Indian Pharmaceutical Congress, Chandigarh, Dec. 1994.
3. Sasmal, D., Mahli, S.S., Basu, S.P., and Gupta, M. presented a paper on "Toxicological Evaluation of Pure Karanja Seed Oil in Abino Rats" at 46th Indian Pharmaceutical Congress Chandigarh, Dec. 1994.
4. Samanta, S. presented a paper on "Synthesis and Study of the Hepatoprotective Activity of Prodrug of Gluta Thione and Glycine in Paracetamol induced Hepatoxiaty in Rabbits" at 46th Indian Pharmaceutical Congress, Chandigarh, Dec. 1994.
5. Sasmal, D., Patel, R.K., and Jha, S. presented a paper on "Hypoglycemic Activity of Cantharathus roseus 6. Don., Mymordica Charantia L., Nyctanthus Abortristis L. and Oryza Satiya L." at the 46th Indian Pharmaceutical Congress, Chandigarh, Dec. 1994.
6. Verma, P.R.P. and Banu, V. sent a paper which was accepted for presentation on "Sustained release of Theophylline from Endrajit RLPO and RSPO", a the Japanese American Conference on Pharmacokineties & Biopharmaceutics, Hiroshima (Japan), Aug. 1994.

DEPARTMENT OF PRODUCTION ENGINEERING

Kumar, S. presented on Pulling Material in a Factory through KANBAN System" at the Advances in Industrial Engineering and Productivity Improvement Techniques, Allahabad, Feb. 1995.

DEPARTMENT OF SPACE ENGINEERING AND ROCKETRY

1. Shrivastava, A. K. presented a paper on "Carbon Reinforced Composite Materials" at the Annual Symposium of Defence AR & DB held at I.I.T. Kanpur, February, 1995.
2. Shrivastava, A.K. attended National Seminar on Ground Testing of Aerospace Vehicles/ Engines held at I.I.T., Kanpur, February, 1995.

DEPARTMENT OF APPLIED CHEMISTRY

1. Jha,(Mrs.) U. delivered a lecture on "Water Quality Assessment and Testing" at the Work shop for Executives of Public Health Engineering, held by Govt. of India, Ranchi, October 1994.
2. Jha, (Mrs) U. delivered series of lectures under the U.N. sponsored B.P.P. programme on

"Environmental Pollution" conducted by Bihar Institute of Rural Development 1994-1995.

DEPARTMENT OF APPLIED MATHEMATICS

1. Gupta R.C. delivered Presidential Address on "Mathematics as a way of Life" at the 29th Annual Conference of Association of Mathematics Teachers of India, Kancheepuram, Tamil Nadu, Dec. 1994.
2. Mahanti, N. C. and Varshney, B.G. presented a paper on "Initial value problem of waves due to an oscillatory pressure on a fluid of finite depth" at the 60th Annual Conference of Indian Mathematical Society, held at University of Poona, Pune, Dec. 1994.
3. Thakur, C. presented a paper on Geometrization of Magnetohydrostatic Equilibria" at the 60th Annual Conference of Indian Mathematical Society, held at University of Poona, Pune, Dec. 1994.
4. Roy, S. attended instructional conference on "Bio-Fluid Dynamics" held at Bangalore University, Bangalore, Dec. 1994.

DEPARTMENT OF PHYSICAL EDUCATION

Yadav, R.S. participated in Ist Indian Sports Congress at India International Centre, New Delhi, Nov. 1994.

RESEARCH PAPERS, BOOKS PUBLISHED AND PATENTS

DEPARTMENT OF CIVIL ENGINEERING

1. Rao, V.C.S., "Soil Testing Laboratory Manual and Question Bank", Lakshmi Publications, New Delhi, Jan. 1995.
2. Pathak, G., "Coalfield Fires : A Serious Threat to Community and Environment", Proc. 3rd Intern. Conference of Safe Communities, Norway, June 1994.
3. Pathak, G. and Jha, J. "Sustainable Development : A challange for Cities" in Environmen tal Challanges and the Universities", K.B. Powar, Ed., Association of Indian Universities, New Delhi, 1994.

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING

1. Islam, N. et.al. "Effect of perturbed potentials on triangular solutions at critical Mass, "Indian J. Pure Appl. Math. 25, 903 (1994).
2. Mahanti P.K., "Development of an Information Abstraction System to execute Mainte nance", Adv. Modelling Anal., 25, 1 (1995).
3. Mohanti, P. K., "Design Methodologies for B.I.T.'s Distributed Computer Resource System", Adv. Modelling Anal. 25, 33 (1995).
4. Mohanti, P.K., "Epidemology in Computers", Adv. Modelling Anal., 30, 17 (1995).
5. Jena, P.K. et.al., "Fast Parallel Algorithm for Polynomial Interaction", Comp.Math. Appl. 29 85 (1995).
6. Islam, N. et.al. "A short note on Data Driven Machine Learning Algorithm : A henristic search strategy, "Adv. Modelling Anal., 35, 13 (1995).

7. Mohanti, P.K. "Development of an Expert System. An Information Science Approach," Communicated.
8. Jena P.K. et.al., "An efficient parallel Algorithm for Numerical Quadrature," Communicated.
9. Jena, P.K. et.al., "Efficient parallel Algorithm for lagrange and Hermite interpolation," Communicated.
10. Mahanti, P.K. et.al., "An Introduction to P.C. Software", Academic India Publication, New Delhi, May 1995.
11. Mahanti, P.K. et.al., "PC-DOS Work Book", (under print) Academic Press Publication, New Delhi, 1995.
12. Mahanti, P.K. et.al. "Lotus 1-2-3 Work Book," (under print) Academic India Publication, New Delhi, 1995.
14. Mahanti, P.K. et.al., "Word Star Work Book", (under print) Academic India Publication, New Delhi, 1995.
15. Mahanti, P.K., et.al. "Beginers Assembly Language IBM PC-Series", (under print) New Central Book Agency, Calcutta, 1995.

DEPARTMENT OF ELECTRICAL AND ELECTRONICS ENGINEERING

Thakura, P.R., "Modern High Power Devices" Proceedings of National Conference on "Recent Trends in Semiconductors", I.I.T., Delhi, June 1995.

DEPARTMENT OF INFORMATION SCIENCES

Singh U.N., "Evaluation of Information Flow from National and International Journals : A case study of Indian Physics Journals, "Communicated to J. Inform. Sci. (U.K.).

DEPARTMENT OF MANAGEMENT

1. Munjal (Ms) A., "Management audit an overall view", Indian J. Commerce, XLVIII 29 (1994).
2. Bhagat, (Ms) M., "Developing Human Resources Through Discipline and Morale, "Acad. Hosp. Adm. 6, 17 (1994).
3. Jha, A.N., "Receivable Management" Management Prism accepted for publication.
4. Munjal, (Ms) A., "Gender Based Seggregation with special rererence to Indian sivtion, "Management Prism, accepted for publication.
5. Bhagat, (Ms.) M., Review on Book entitled, "Count down - Six Essays for Trade Unionist," by E.A. Ramaswamy, "Friedrich Ebert Stiffing, 1994 published in Indian J. Labour Econ., 30, 154 (1995).
6. Bhagat, (Ms)M., "Identifying Oil & Gas as a progressive major source of National Income in Malasia", Management Prism, accepted for publication.
7. Bhagat, (Ms) M., "Working Class Response to Liberalisation in the Ranchi Industrial Region - An Empirical Study", Indian J. Labour Econ., 37 818 (1994).

DEPARTMENT OF PHARMACEUTICAL SCIENCES

1. Basu, S.P., Mahli, S.S., and Kakde, N.G., "Studies on Structure of Karangin by Spectroscopic Methods," J. Inst. Chem., 66.
2. Verma, P.R.P. and Rajni, (Ms) V., "Diffusion Studies of Ibrprofen from Ointment Bases," Indian J. Pharm. Sci. 57 (1995).
3. Verma, P.R.P. and Prasad, C.M., "Standardisation and Bioavailability of Ayurvedic Drug Lauha Bhasma, I. Physical & Chemical Evaluation". Ancient Science of Life, In Press.
4. Verma, P.R.P. and Prasad, C.M., "Standardisation and Bioavailability of Ayurvedic Drug Lauha Bhasma II. Comparative Bioavailability Studies", Ancient Science of Life, In press.
5. Subramanyam, Ch. and Sharma, A.K., "Studies on Azabicyclo Systems: Synthesis of 6-Phenyl-10-methyl-3,10-diazabicyclo [4.3] decaue analogs," Communicated.
6. Verma, P.R.P., Murthy, T.E.G.K., and Ramesh, V., "Computer Simulation of bioavailability parameter and statistical evaluation." Communicated.
7. Verma, P.R.P., Murthy, T.E.G.K., and Ramesh, V., "Computer Simulation of In-Vitro reease data and its kinetic Interpretation," Communicated.
8. Sasmal, D., Ghosh, S.K., Satyanarayana, K., and Basu, S.P.,"Hemavological Evaluation of cyanolipid and triglycuide fraction of Sapindus mukorossi Geertn seed Oil in mice," Indian J. Hosp. Pharm., in press.

Patents

Basu, S.P., Sasmal, D., and Mahli, S.S., "Preparation of Edible grade Pongamia pinnaba seed oil (Karan) Oil, Patent Application No. 529/Cal/95 dated May 12, 1995.

DEPARTMENT OF PRODUCTION ENGINEERING

1. Prasad, R. and Kumar, S., "Study of the Influence of Determination and Thermal Treat ment on Ultrasonic Behaviour of Steel", J. Maker Process. Tachnol., 42 51 (1994).
2. Kumar, S. and Jha, A.K., "Implementating zero Defect Concept through TQC in Found ries", Proceedings of Seminar on Zero Defect Concepts, India, 1994, p.81.
3. Sutradhar, G., Kumar, S., and Jha, A.K., Cold Forging of Sintered Square Metal Power Plate", Proceedings of Powder Metallurgy word Congress, Paris, 1994, p.765.
4. Jha, A.K. and Kumar, S., "Compatibility of Sintered Materials during Cold Forging, "Intern. J. Maker Prod. Technol., 9, 281 (1994).
5. Kumar, S., "Pulling Material in a Factory through KANBAN System, "Procedings of AIEPT, Allahabad, 1995.
6. Kumar, S., M.S., and Jha, A.K. "Selection of Robot for an Industrial Task," Proceedings of National Conference on CAD/CAM, Coimbatore, 1994, p.2.1.
7. Jha, N and Kumar, S., "Achieving Zero Defect Strategy through self Directed Trans in a Concurrent Engg. Environment", Proceedings of Seminar on Zero Defect Strategies in Iron Foundaries, India, 1994, p.D1.
8. Singh, B.K., "Developing a Human Interface for a Product Development Process", Proceedings of A.I.E.P.T., Allahabad, 1995.

DEPARTMENT OF SPACE ENGINEERING AND ROCKETRY

1. Kumari, (Ms.) P., "Pressure Unsteadiness and Validation of Mechanical Probings over Expansion Surfaces in Supersonic Flows", J. Inst. Engg.(I), 75, (1995).

2. Jain, A. and Mishra, J.N., "Effect of Leading Edge Damages on Flow Parameters of a Finite Wing", J.Inst. Engg. (India), in Press.

3. Gupta, B.L., Verma, M., and Saradhi, K.V.P., "A study on Flow Behaviour of Jelled Unsymmetrical dimethyl hydrazine under extreme shear conditions", Indian J. Tech., communicated.

Patents

Mishra, J.N., "Add/Sub Mechanical Probe to measure flow unreadiness and Reynold stresses in highly unsteady flow fields", Applied for Patent.

DEPARTMENT OF APPLIED CHEMISTRY

1. Srivastava, P.K., "Chemical Chaos in a novel Bromate driven oscillators : Thio-Phenot Bromate - H2SO4 System of Bioscience, Communicated.

2. Jha,(Ms) U., "Privalent metal complexes with Schiff bases derived from benzoyl hydrazide and diketones," Chem. Acta Ture., accepted for publication.

3. Jha,(Ms) U., "Environmental Impact of mining activities in Chotanagpur Region," Indian J. Environ. Health accepted for publication.

DEPARTMENT OF APPLIED MATHEMATICS

1. Gupta R.C., "Six Type of Vedic mathematics, "Ganita Bharati, 16, 5 (1994).
2. Gupta, R.C., "A cariculature Rules from Agni Purna," ibid. 53, 16, 53 (1994).
3. Gupta R.C., "Areas of Regular Polygons in Ancient and Medival Mathematics," ibid 16, 61 (1994).
4. Gupta, R.C., "Marx and his Mathematical Work, "ibid, 16 66 (1994).
5. Gupta, R.C., "An Indian Extension of Ptolemy's Tehorem," ibid, 16, 70 (1994).
6. Gupta, R.C., Review of the book, "Encyclopaedic Dictionary of Mathematics," M.I.T., U.S.A., ibid, 16, 92(1994).
7. Gupta, R.C., Review of J.L. Berggren's paper on "Greek and Islamic Elements in Arabic Mathematics", "Mathematical Rev., 94K, 6157 (1994).
8. Gupta, R.C., "The Last Problem in Lilavati", HPM Newletter, No.34, 11(1995).
9. Gupta, R.C., "The Madhava-Gregory Series for Arc Tan X, Swadeshi Science, 5, 9(1995).
10. Gupta, R.C., Mathematics as a way of Life," Indian J. Math. Educ. 14, (1995)
11. Gupta, R.C., "Ancient Indian Mathematics : Some Highlights," in "Science in west and India : Some Historical Aspects", Bombay, 1995, p.263.

DEPARTMENT OF APPLIED PHYSICS

1. Popli, R., "Some errors in Reputed U.G. Physics Text Book I." I.A.P.T., II, 204 (1994).

2. Keshri, S. and Barhai, P.K., "Studies of Thermodynamic Fluctuations on Thermoelectric Power of I12 Ba2 Ca0.8 Y0.2 Ch2 O8+y Super Conductor," CZee. J.Phys. accepted for Publication.

3. Keshri, S. and Barhai, P.K., "Thermoelectric Power of high Tc Oxide with Phenomenologically modified Hubbard Model, Asian J. Phys., accepted for publication.

4. Popli, R., "Science Orientation of Children in Primary Education, "Communicated to Indian. J. Sci. Commun.

SCHOLARS REGISTERED FOR Ph.D.

During the year 1994-95, three scholars have completed their research qualifying for the award of Ph.D. Seven new scholars have registered for Ph.D. programme in the subjects/ areas of their study as stated below :

	Name of Scholar	Subject/area of Research
1.	Sri B. N. Sinha	Phytochemical and Pharmacological. Studies on some Plants used in indigenous System of medicine.
2.	Sri N. K. Singh	Pharmacological Studies of Pseudopelletierine Analogs.
3.	Sri K. K. Verma	On the Design of some Computer Algorithms to solve second orderordinary Differential equations.
4.	Ms. Deepa Kulkarni	Formulation and studies of Oral Sustained / Controlled release drug drug delivery systems using Polysaccharide Polymers.
5.	Mr. N. V. Nagaraja	Pharmacokinetics of Methyl - N (5-(4-(2-Pyridinyl 1)-1 Piperazinyl) Carbonyl)-1 H - Benzimidazol - 2 - yl) Carbamate (CDRI 81 / 470), a new broad Spectrum Anthelmintic Agent.
6.	Ms. Swastika Ganguly	Syntheses and study of newer Imidazole Analogs.
7.	Sri G. Jagadeesh	Study of solar pumped Lasers for space Applications.

Besides the above, the following 27 scholars were registered for their Ph.D. in the previous year(s); they are continuing the work under the guidance of the respective Doctoral Committees :

1.	Sri Rajendra Prasad	Quality System for Guideo Weapon Systems.
2.	Sri Pramod Kumar Dash	Experimental Studies on Fatigue of Glass and Carbon Fibre Reinforced composites under Adverse Environ - mental Conditions.

3.	Sri B. D. Choubey	Physio-Chemical study of co-ordinaed Malonic Acid and similar Compounds.
4.	Mrs. Sunita Keshri	Study of Oxide Superconductors with high transition temperatures.
5.	Mrs. Aruna Jain	Study of Non-equilibrium Plasmas.
6.	Sri K. R. Roy Choudhary	Buckling of Laminated Composite Plates.
7.	Sri Binay Kr. Singh	Influence of Adverse Environmental Conditions on Elastic Buckling of Composite Columns.
8.	Sri Amit Jana	Theoretical Modelling of Heterounction field Effect Transistor for high speed and Opto-Electronics Applica - tions.
9.	Sri S. K. Datta	Some Theoretical studies on Optically controlled Micro wave Semi-conductor Devices.
10.	Sri A. K. Mishra	Some Experimental Studies on Environmental Pollution due to Diesel Engine Exhaust.
11.	Sri S. N. Thakur	Castability, Forge-ability, Mechinability and Fracture behaviour of Alluminium silicon Alloys.
12.	Sri Sudhir Sharan	Computer based Analysis & Modelling for Integrated Working Capital Management.
13.	Sri R. S. Yadav	Impact of Physical Training on Managerial Effective ness - a case study of some Institutions and Organisations.
14.	Sri Pawan Kumar Rai	Solid Waste Management in Steel Plants for improved Environment.
15.	Sri Taposh Kumar Roy	Problems and Prospects of Marketing of Drug Manufac tured by Small Scale Industries.
16.	Sri Goutam Sutradhar	Development of Forged Components using Sintered Preforms.
17.	Sri M. Adiraj	Synthesis and use of Methyl Phosphonate containing Oligonucleotides for the study of B - Z DNA Transition.
18.	Sri B. K. Mishra	Computer Aided Modelling of SolidState Photodetector.
19.	Sri Durgesh Pant	A complete study of Reconfigurable Computer Systems.
20.	Sri Prasant Kr. Mukherjee	Quadratic Sruds and Methods of Approximating them in Ancient and Mediaeval Mathematics.

21.	Ms.Sandhya Rani	Study of some Chemical aspects of stress induced Magnetic & Electromagnetic Effects in Transition Metals and Intermetallic Compounds.
22.	Sri Arun Kumar	Synthesis and Pharmacological studies of Indan Analogs.
23.	Sri Rabindra Pd. Sharma	Modelling of the Combustion Process for a Fuel Efficient four stroke spark Ignition Engine.
24.	Sri Arbind Kumar	Investigation on Metal Hydrides as carried to run the future vehicle engine on Hydrogen.
25.	Sri T. R. Ranganath	Studies on Honey Comb Stabilised Saltless Solar Pond.
26.	Sri U. S. Prasad	Stress induced magnetic and E.M. effects in Metals.
27.	Sri Girish Pathak	Tribological investigations in Mechanical Processing.

STUDENTS ACTIVITIES

B.I.T. Students once again came to their full form to keep the flag of B.I.T. high during the session 1994-95. They participated in a number of All India and Regional Festivals inspite of their busy academic schedule and brought Laurels for the Institute.

They bagged prizes in I.I.T.'s (Kanpur & Kharagpur) in a number of different literary and cultural events. One of our students got cash awarded by participating in All India Inter University Seminar, 1995 organised by Shiksha Mandal Wardha. At the Indian School of Mines, Dhanbad, one students bagged most of the prizes by participating in their Inter Collegiate Spring Festival, 1995. Students of this Institute continued their prize winning spree by participating in the 'Quest-95' organised by Rotract Club of Sindri, Dist 3250 and sponsored by SAIL, Bokaro. In the local quiz contest organised by Officers Club of H.E.C., Ranchi. Prizes were earned by our boys again.

The session started with a glamourous Independance day celebrations where students for the first time in the recent past organised patriotic songs and a one-act play just after the official programme. This generated a spirit of the patriotism.

This was followed quickly by the celebration of the "Sadbhawna Diwas" on 20th August as a day of National Integration. On this occasion students put their heart and soul to present a befitting programme. The programme achieved tremendous success in conveying the message.

"Oyez-94" - a venture by the fresh students of B.I.T.has effectively projected their talen and potential.

"BITOTSAV" - for the session 1994-95 was a great success. With the blessings of the Vice-Chancellor, students could make the "Open Air Theatre" colourful and lively with their integrated efforts. Students and residents after a long time could comfortably watch the cultural activities.

Students were never hesitant to give a lead to maintain the Institute's prestige and they had shown it during the last Convocation. Apart from their all round effort, they did the volunteer's job and also put up a classical cultural show in the evening. Following the Convocation one western musical show was organised by courtsey of H.M.V.

POOJA COMMITTEE

Named in the Indian traditional type it continues to generate aesthetic sense amongst the students and the residents of the campus. This year also they organised Worshiping festival on the occasion of "Saraswati Pooja" and "Vishwakarma Pooja" with religious spirit and pomp. Of course, Institute Prayer in the morning reminded us to the correct path for life. Students also organised "Guru-ka-Langer" on the occasion of Birthday celebration of Guru Gobind Singh.

SPIC MACAY

The Society for the Promotion of Indian Classical Music and Culture amongst Youth has organised a classical musical and dance programmes through the collective talents of students, and extended their programme to SPIC MACAY debate and essay contests in order to create awarness amongst the youth.

NAPS

It had been a busy year for the News and Publications Society. Activity started with an issue in January for the freshers of 1994 and also published the Engineering Society map-a-zone. They also brought out an issue on Neural Networks Seminar organised by Electrical Engineering Department. They covered efficiently the BITOTSAV right from programme schedule changes, metaphors similies etc. on all societies and clubs. They did show their ability in publishing the cute BITOTSAV Souvenier consisting of detailed report to creative writings on varied topics.

AVEC

Audio Visual Educational Club maintained their tradition in organising about 20 films in technical and general areas. Separate Video shows were arranged in the Girls Hostels to promote objective of the club.

In addition to the above routine performances, the members presented a group competition even (HALOOWOO) during festival and an audio-video show to highlight the relevant portions of the preachings of Bhagwan Rajneesh to infuse thoughts amongst the students.

DRAMATICS SOCIETY

Maintaining the tradition, several activities were organised under the aegis of the Dramatics Society. During this session, this society for the first time presented a "Nukker Natak" on the central lawns on the occasion of Independance day celebration conveying morals amongst the people.

Sadbhawana Diwas celebration was made more meaningful through befitting dramas and other programmes. A play festival "Spandan" was organised and plays were staged. They also organised two full length plays during BITOTSAV adding colour to the festival.

MUSIC CLUB

This club left its mark on every occasions. Their presence were felt much during Independence day celebrations with band and chorus of patriotic songs. Sadbhawana Diwas celebration was made more meaningful with musical extravaganza. Oyes-94 was unforgettable and BITOTSAV was a super success simply because of Eastern and Western Music.

They left the concluding mark of the session on the occasion of Convocation of the Institute. They presented institute prayer and National Anthem with perfection both in tune and tone.

THE BHARTIYA SAHITY PARISHAD

They are the guardians of maintaining Indian traditional Art and Culture. The parishad could maintain its name through various literary and cultural activities during the last session. They organised essay competitions on Independance day, presented Indian folk dances on the occasion of Sadbhawna Diwas, organised debates and quizes regularly. BITOTSAV was again made lively with the touch of Bhartiya Sahitya Parishad.

FINE ARTS SOCIETY

The touch of this society was felt through out the session. They did not only organise painting competition for the children, but also classes and exhibitions. The exhibition during festival unveiled the talents of our students right from colour and oil paints to sculpture and handicraft.

HIGH LANDERS ADVENTURE CLUB

Popularly known HAC with 11 years of standing at this Institute are continuously promoting its ideals like "Trekking", "Rock climbing","River Rafling"' etc. The members made several trips to mountain ranges of Himachal Pradesh, Kumaon and Garhval, Sikkim and Nepal ranges.

Apart from a few local trips, the adventureous students with their Prof-in-Charge made successful trekking to Muchapuchara Annapurna Baso Camp, Pindari glacier, Kedarnath, Basukinath Chourital.

BITIAN'S NATURE CLUB

Being a member of the prestigious World Wildlife Federation for Nature, the members tried to keep its flag high. This time they concentrated to know anix with the gift of nature around them.

UNESCO CLUB

Maintaining the tradition of the Club, members organised debates quizes, JAM, Block and Tackle, Dumb charade etc. They are trying to spread the message of the universal brotherhood.

PHOTOGRAPHIC SOCIETY

This society trains the students in mixing "art and colour", imagination and reality, to the life. They not only train to click but also to print the film in the Institute's dark room providing facilities for black and white and colour printing. As in the previous years they went on documenting all the official and social occasions of the Institute.

THE ENGINEERING SOCIETY

This society encourages students in promotion of their scientific thoughts through a number of scientific seminars and talks by experts.

THE AMATEUR RADIO SOCIETY

A large number of students enjoy the thrills to be in touch with the world through complex communication network under the Radio-HAM Society. The exhibition organised by this society had been interesting and exciting to the students and campus children.

THE INDIAN ASSOCIATION OF COLLEGE GOING SCIENTISTS

This is a society with an objective to help create scientific ideas among the people and to make science and its application more meaningful to mankind. Besides organising lectures, seminars, workshops, and group discussions as well as quizes, essay and debate competitions on scientific topics and software contests, the IACGS published a magazine to encourage student authorship on science related topics.

LEO AND ROTRACT CLUB OF B.I.T.

Inspite of the fact that they are yet to achieve the official status, they are continuously serving the society in various ways. They started their services during the last academic session with an organised effort of helping the freshers to be comfortable in the Campus. They not only concentrate their work in the campus, they stretch their helping hand to the villages around.

GAMES AND SPORTS

The new Tennis Stadium accommodating three Courts of national standard with flood light facilities was opened for matches with inaugural competition of North East Zone Inter University Tennis (Men) Tournament 1994-95 on 7th January, 1995. Twenty Universities including B.I.T., Ranchi participated in this national event. Birla Institute of Technology, Mesra stood 3rd in the North East Zone, and qualified to take part in Inter Zonal Matches held at Madras University from 4th February, 1995.

Since inception, the Institute has placed emphasis on Games and Sports. Earlier this activity was organised as a co-curricular programme but from 1984 the Games and Sports is included in the regular curriculum of the Under-graduate course by treating it as a full course in the 1st and 2nd Semesters of the B.E., B. Pharm. and B. Arch. Degree programmes. Accordingly, the students are exposed to P.T. & Drill, Gymnastics etc. , thrice a week and on other days they are required to play the allotted Games. Suitable arrangements were made for participation of girls. Currently about 50 percent of the students take part in the Games, Sports and Athletics regularly.

To interact, on invitation, three teams of the Institute participated in the All India Inter Technical Institute Meet organised by Institute of Technology, Banaras Hindu University and B.I.T.S., Pilani. Two Institute teams won the Championship in Football and Badminton Games.

Like previous years, the Chetan Dev Raj memorial Inter Technical Institutions Cricket Tournament 1994-95 was organised by B.I.T., Mesra and B.I.T. retained the Trophy. Other than above events, usual activities like Intra Mural Competitions tournaments and Annual Athletic Meet were organised during course of session and students of U.G. & P. G. participated.

N.C.C.

A Unit of the National Cadet Corps was set up in the Institute in 1957 for imparting technical as well as general training to the students. Initially, it functioned as an EME Section with a strength of 60 cadets. In order to encourage students active participation in this programme in 1984 the Institute provided it was included as a regular curriculum with a two unit weightage during theinitial 2 semesters.

At present NCC unit is functioning as a full fledged Composite Technical Company consisting of three sections: viz. (i) Engineers Corps, (ii) EME Corps and (iii) Signal Corps, and its designation is "3 Bihar Comp.(Tech.) Coy., N.C.C., B.I.T., Mesra". It has a sanctioned strength of 200 Cadets.

The 3rd Bihar Comp.(Tech.) Coy of B.I.T., Mesra works under the command of a whole time Army Officer of the rank of Major or Lt. Colonel. In addition, it has on its staff three trained part-time NCC Officers who are Professors of the Institute, five P.I. Staff from the Army, with about 8-10 clerical and other supporting staff who are provided by the State Government. Besides an administrative building on the main Campus the NCC unit has

adequate facilities like Parade Grounds, Firing Range and Armament Stores, Clothing Stores, Library, Staff Quarters etc.

The training programme is designed to pay stress upon the technical aspects of training in the form of Engg. Projects duly supported by lectures and practical classes (6 period/ week); the training for Engineers Corps mainly covers field work, field defence, Military Brigades, Roads and Aerodromes; Water Supply, Demolition etc. The Technical training of EME Corps covers Inspection and repairs of vehicles, Driving practice and maintenance. Acquisition with different components of Automobiles, Mechanism and elementary principles of different class of army vehicles; and for the Signal Corps it covers Wireless equipment operation, Line equipment, Line transmission theory, Acquisition with Morse code and handling or telegraphic instruments etc.

Apart from the technical training the NCC also provides general training to all cadets in order to inculcate the leadership qualities, high morals, unity, discipline etc. The NCC has special arrangement for training of those cadets who appear for 'B' and 'C' Certificate exam. of NCC (Tech.).

During the year 1994-95, total 193 cadets were enrolled in the NCC Coy of the Institute. Out of which 85 in the Engineers Corps, 60 in the EME Corps and 48 in the Signal Corps.

THE STUDENTS' HALLS OF RESIDENCE

The Institute is completely residential and all the students are required to stay in one of the Hostels or Halls of Residence numbered serially - as Hostel 1 to 7. In addition there are two separate Hostels for girls With the assistance from the U.G.C. and the State Government one extension unit for Girls has been constructed and is ready for use from the current academic session.

All the hostels are laid out beautifully to match the serene and pleasant campus with flower beds, bushes and trees encompassing each hostels, besides the well maintained lawns in front. The architecture of the hostel includes central facilities like spacious Dining Halls in the Centre and Common Rooms and reading Rooms, placed symmetrically on both sides of the central entrance and wide varandahs all along the length with air gaps and balconies well set for common use.

Each student is accommodated in a single-seated room, furnished with a steel table and a steel chair. The girl students are kept in two-or-three furnished rooms. Each room is quite spacious with a big size window and a steel door oppositely placed to make the room airy. Each room has a cup-board, wardrobe and a wide and deep rack.

Each hostel has a Common Room, where Indoor Games are available. Each hostel has a Reading Room also where sufficient number of Magazines, Periodicals and Newspapers by consensus are made available to the residents of the hostel. Provision of getting the old magazines and periodicals issued to students are available. Each hostel has also been provided with a Colour Television Set.

Frequent competitions are organised among the inmates of the hostel in a number of indoor games. Inter Hostel Tournaments in the indoor and outdoor games are a regular and very attractive feature of the hostel life.

Once in a year, the inmates organise a Hostel Night, where in the improvised stage, well selected cultural and musical programme, games and special items based on intimate knowledge pack the evening with fun and exciting festive mood.

Each hostel has an independent Mess, completely managed by the students through Mess Committee members elected from among the residents themselves. The Committee looks after the complete management including the Menu, preparation, purchases and billing under the supervision of the Superintendent/Assistant Superintendent of the hostel. The bills are made on 'No profit no loss' basis and the monthly bills of the residents are submitted in Mess Accounts Office, where individual student pays accordingly. The menu and monthly bills of the various hostels are assessed and revised periodically in the Meeting of the Hostel Council under the chairmanship of Chief Warden.

TRAINING & PLACEMENT

The Training & Placement Division of the Institute is involved in the Placement of outgoing students of all disciplines. The Division also arranges industrial training in various organisations all over the country during long vacations.

During the last 13 years about 2100 graduates and Post-graduates have been recruited through Campus Interviews. During the last 10 years, recruitment through Campus Interviews has been continuously increasing. The recruitment has been mostly in the premier private companies, Government Organisations and Defence Services.

During the last academic session i.e. 1994-95 about 42 premier Organisations conducted Campus Interview. By Juné 1995 about 275 firm offers of appointment were made to graduates from different disciplines. This has been the highest number of appointments made via Campus recruitment. About 25 students received offers form more than one Company.

In addition to arranging of Campus Interviews, the Training & Placement Division also sends Bio-Data of students to various Organisations in the country for recruitment. In this process many more of our out-going graduates have received appointments/call for interviews.

During the year under report, over 650 students received training in various Organisations during Puja and Summer Vacations.

The Division has acquired a Personal Computer which is being used to store data bank of Industries. A Placement Brochure has also been prepared, and this is sent to Industries along with invitation to conduct the Campus Interview.

The details of confirmed appointments offered to the out-going students by various Organisations during the year under report is as follows :

DISCIPLINE/BRANCH	NUMBER OF JOBS
B. E. - Mechanical Engineering	66
Production Engineering	23
Electrical & Electronics Engineering	41
Electronics & Comm. Engg.	64
Computer Science	31
Civil Engineering	8
M.B.A.	14
M.C.A.	11
B. Pharm.	05
M.E. Electronics	07
M.E. Electrical	02
M.Sc. Information Science	04
	275

COMPOSITE SUMMARY OF PLACEMENT STATUS 1994-95

ORGANISATION	No. of Placements
Asea Brown Boveri, Delhi	03
Associated Cement Companies Ltd., Bombay	06
Ashok Leyland Information Technology, Bombay	06
Ballarpur Industries Ltd., New Delhi/Daulatabad	02
Blue Star, Calcutta	**
C M C, Calcutta	07
Crompton Greaves, Bombay	08
Eicher Goodearth Ltd., New Delhi	10
Essar Ltd., Bombay	14
Fujitsu ICIM, Pune/Calcutta	03
Greaves Ltd., Ranchi	01
H C L - Hewlett Packard	13
Hindustan Motors, Uttarpara	06
Hindustan Motors EED, Tiruvallur/Hosur	04
Hindustan Motors, New Delhi	03
Hindalco, Renukoot	11
INDOGULF Fertilizers, Jagdishpur	05
ITW SIGNODE, Hyderabad	03
Larsen & Toubro - ECC, Calcutta/Madras	11
Larsen & Toubro Ltd., Powai, Bombay	03
COMFED, Patna.	**

ORGANISATION	No. of Placements
N I I T, New Delhi	08
NIPPON DENRO ISPAT, Nagpur	04
OCTAN Divn. of NATCO Pharma, Calcutta/Hyderabad	05
Orient General Industries Ltd., Calcutta	**
Orissa Cement Ltd., Calcutta	03
PCL Software Exports, MINDWARE, Bangalore	11
RS Software India Ltd., Calcutta	14
Shriram Ball Bearings Ltd., Ranchi	04
Systronics, Ahmedabad	02
T C S, Bombay/Calcutta	39
TELCO, Jamshedpur/Bombay/Lucknow	13
TISCO, Jamshedpur	25
Tata Cummins Ltd., Jamshedpur	04
Tata Robins Fraser, Jamshedpur	01
Tata Telecom, Gandhinagar	03
UBSET, Calcutta	03
Usha Martin Industries Ltd., Ranchi	05
Wesman Engineering Company Ltd., Calcutta	01
Wipro Systems Limited Bangalore	04

N.B. ** Results of final interviews not received.

Other Organisations which planned visit in 1994 and/or asked for resume of candidates include :

A. F. Ferguson, New Delhi
APTECH Computer Education, Patna
Asia Foundations and Constructions Ltd., Bombay
Bihar Caustics amd Chemicals Ltd., Garhwa Road
Birla Growth Fund, Bombay
Comnet Systems and Services Ltd., New Delhi
Grasim Cement, Raipur
Hindustan Development Corporation, Calcutta
ICFAI, Hyderabad
Jaypee Rewa Cement, Jaypee Nagar
J. K. Organisation, New Delhi

Modern Group of Industries, Bombay
National Engineering Industries Ltd., Jaipur
Rajashree Cement, Secunderabad
Siemens, Bombay
Siemens Information Systems Ltd., New Delhi
Somani Iron and Steels Ltd. Kanpur
Small Industries Development Bank of India Ltd., Bombay
S. T. P. Ltd., Calcutta
Subhash Projects and Marketing Ltd., Calcutta
Tata Liebert, Calcutta
The Economic Times, New Delhi
Tinplate Company of India Ltd., Jamshedpur
Virtual windows, Madras
Voltas, Bombay.

Annexure - I

BOARD OF GOVERNORS

Chairman	:	Shri G. P. Birla
Vice-Chairman	:	Dr. H. C. Pande
Members :		
Nominee of the Government of India, Ministry of Human Resource Development	:	Sri S. D. Awale
Nominee of the University Grants Commission	:	Prof. A.K. Ghosh
Nominee of the All India Council for Technical Education	:	Dr. A.K. Chattopadhya
Commissioner & Secretary Sc. & Tech., Govt. of Bihar	:	Dr. Abhimanyu Singh
Commissioner & Secretary Education, Govt. of Bihar	:	Sri K. C. Saha
Commissioner, Chhotanagpur Divn. (South), Bihar, Ranchi	:	Sri R.J.M. Pillai
Nominee of the Chancellor	:	Prof. Muchkund Dubey
Nominee of the Hindusthan Charity Trust	:	Sri C. K. Birla
Nominee of the Hindusthan Charity Trust	:	Sri A. L. Goenka
Nominee of the Hindusthan Charity Trust	:	Dr. H. C. Pande
Vice-Chancellor, BIT, Ranchi	:	Dr. B. Kanta Rao
Member of Institute Faculty	:	Prof. J. S. Ruhela
Member of Institute Faculty	:	Prof.(Smt.) S.G. Panpalia
Member selected by the General Council	:	Sri D. N. Patodia
Member selected by the General Council	:	Sri K.P. Singhi
Member selected by the General Council	:	Sri G.P. Lal
Secretary : Registrar	:	Prof. G. Sahay

Annexure - II

TECHNICAL COUNCIL

Chairman : Vice-Chancellor, BIT, Mesra Ranchi	:	Dr. B. Kanta Rao
Members:-		
Nominee of the Chancellor	:	Prof. M. Haroon
Director of Technical Education, Govt. of Bihar	:	Ex-Officio
Director of Higher Education, Government of Bihar	:	Ex-Officio
Dean of Science Ranchi University	:	Ex-Officio
Dean of Engineering Faculty Ranchi University	:	Ex-Officio
Professors of the Institute	:	Dr. C. B. Mishra Prof. A. K. Aggarwal Prof. K. P. Sinha Dr. B. K. Razdan Prof. G.P.C. Rao Prof. J. S. Ruhela Dr. J. N. Mishra Dr. N. L. Munjal Dr. R. C. Gupta Dr. S. Kumar Prof. R. A. Sharma Prof. S. H. Kekre Prof. S. C. Goel Prof. B. S. Rajeevalochanam Dr. R. K. Shrivastava Dr. Ashok Misra Prof. Awadh Prasad Dr. A. K. Chatterjee Dr. R. C. Prasad Dr. B.B. Mishra Dr. B. G. Varshney Dr. P. K. Mahanti Dr. S. P. Basu Dr. J. Ram Prof. M. K. Saxena Prof. S. P. Bhatnagar Prof. B. P. Roy

Professors of the Institute (Contd.)		Dr. A. K. Sharma
		Dr. N. C. Mahanti
		Prof. K.M. Sirbhaiya
		Prof. A. P. Singh
		Dr. S. N. Mehrotra
		Dr. J. Paul
		Prof. G. Sahay
		Dr. P. K. Barhai
		Prof. S. Sengupta
		Prof. K. R. Roy Chawdhary
		Prof. N. R. Rao
		Prof. B. M. Karan
		Dr. M. N. Lal
		Prof. K.P. Singh
		Dr. B.L. Gupta
		Dr. D. Jairath
Persons appointed by the Chairman vide Clause 4(e) of the Regulations	:	Prof. G. C. Singh
	:	Prof. R. S. Yadav
	:	Prof. R. P. Singh
		Dr. (Mrs.) M.Mukherjee
Librarian (Ex-Officio)	:	Dr. U. N. Singh
Controller of Examinations (Ex-Officio)	:	Dr. P. C. Joshi
Secretary : Actg. Registrar	:	Prof. G. Sahay

Annexure - II
(Continued)

FINANCE COMMITTEE

Chairman	:	Shri G. P. Birla
Members :		
Nomineee of the University Grants Commission	:	Dr. Gurbaksh Singh
Nominee of the Chancellor	:	Shri C.R.Venkatraman
Nominee of the Board of Governors	:	Shri A. L. Goenka
Nominee of the General Council	:	Dr. H. C. Pande
Vice-Chancellor, B.I.T., Ranchi	:	Dr. B. Kanta Rao
Hony. Treasurer, B.I.T., Ranchi	:	Shri S. S. Jajodia
Member-Secretary :		
Registrar (Actg.)	:	Prof. G. Sahay

BUILDING & WORKS COMMITTEE

Chairman		
Vice-Chancellor, B.I.T., Ranchi	:	Dr. B. Kanta Rao
Members :		
Dean, Planning & Campus Development	:	Prof. G. P. C. Rao
Treasurer, B.I.T., Ranchi	:	Shri S. S. Jajodia
Representative of the Architects	:	M/s. Kothari and Associates, Calcutta.
Representative of the State PWD	:	Shri B. K. Verma Supdtg. Engineer, PWD Ranchi.
Head, Dept. of Civil Engg.	:	Prof. B. S. Rajeevalochanam
Member-Secretary :		
Registrar (Actg.)	:	Prof. G. Sahay

Annexure - III

EXECUTIVES AND DEPARTMENTAL HEADS/INCHARGES

Vice-Chancellor	-	Dr. B. Kanta Rao
Treasurer	-	Shri S. S. Jajodia
Actg. Registrar	-	Prof. G. Sahay

DEANS

Administration	-	Prof. J. S. Ruhela
Planning & Budgetary Control	-	Prof. K. P. Sinha
Policy Planning & Faculty Development	-	Dr. C. B. Mishra
Post-Graduate Studies	-	Dr. B. K. Razdan
Industrial Consultancy & Liaison	-	Prof. A. K. Aggarwal
Under-Graduate Studies	-	Prof. G.P.C. Rao
Assistant Treasurer	-	Shri G. S. Chhaochharia

DEPARTMENTAL HEADS/INCHARGES

Architecture	-	Prof. A. K. Aggarwal
Civil Engineering	-	Prof. B. S. Rajeevalochanam
Computer Science & Engineering	-	Dr. P. K. Mahanti
Electrical & Electronics Engg.	-	Prof. S. H. Kekre
Electronics & Comm. Engg.	-	Prof. S. C. Goel
Management	-	Prof. Awadh Prasad
Mechanical Engineering	-	Prof. K. M. Sirbhaiya
Pharmaceutical Science	-	Dr. A. K. Sharma
Polymer Engineering	-	Dr. (Mrs.) M. Mukherjee
Production Engineering	-	Dr. S. Kumar
Space Engineering & Rocketry	-	Dr. N. L. Munjal
Applied Chemistry	-	Dr. J. Paul
Applied Mathematics	-	Dr. B. G. Varshney
Applied Mechanics	-	Prof. N. R. Rao

Applied Physics	-	Dr. J. Ram
Proctor	-	Prof. A. P. Singh
Chief Warden	-	Prof. K. P. Singh
Cultural Co-ordinator	-	Dr. S. P. Basu

INCHARGES

Controller Entrance Examination	-	Dr. B. B. Mishra
Controller Examinations	-	Dr. P. C. Joshi
Co-ordinator Semester Programme	-	Dr. A. K. Chatterjee
Finance (Accounts Officer)	-	Shri B. N. Mishra
Library (Librarian)	-	Dr. U. N. Singh
Medical Officer	-	Dr. (Mrs.) C. Mishra
Prof. Incharge Nodal Centre	-	Prof. M. K. Saxena
Physical Education & Sports	-	Shri R. S. Yadav
Training & Placement	-	Dr. D. Jairath