ANNUAL REPORT

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BIRLA INSTITUTE OF TECHNOLOGY
MESRA, RANCHI (INDIA)

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CONTENTS

VICE-CHANCELLOR'S REPORT (1996-97)

The global integration of economies and fierce competition amongst the technological giants the world over, have changed the perceptions amongst the Planners, Industrialists and Academicians. Today, high standards of quality, best of the technology and professional management are essential in providing edge to an enterprise in the highly competitive climate. After 50 years of Independence, India is now on a threshold of a giant leap and transformation to be a global player with liberalised economy.

In this scenario, the vast pool of scientific and technical manpower of the country has to play a pivotal role. The Birla Institute of Technology has dedicated itself to this national endeavour. The Institute has established modern laboratories, revised its curriculum, introduced new courses, created advanced research and development infrastructure in all the major fields of Science and Technology. The novel academic programmes and innovative methodologies have been widely acclaimed. The Institute-Industry interaction has been productive and mutually beneficial.

The Institute has started a Bachelor of Engineering course in Polymer Engineering and a M. Tech. programme in Remote Sensing recently. To provide a thrust to the education of girl candidates, the B. Sc. courses in Electronics and Computer Applications have been introduced exclusively for them. The courses in the emerging fields like Bio-technology and Food Technology are to be introduced shortly with a view to provide suitable trained personnels for Bio-technology and Food processing based industry.

The new off-Campus programme centres of the Institute are being planned at NOIDA and ALLAHABAD and will offer MCA, MBA and B. Tech. courses respectively.

The International Centre of the Institute at Bahrain is in the advanced stage of planning and implementation. The centre aims to provide education in Engineering, Management and allied areas in the Gulf region.

The Science and Technology Park is promoting entrepreneurship and assisting in the development of Small Scale Industries. Training courses for the Adivasi Artisans have been started, with a view to expose them to the new technologies.

The Laboratories of various Engineering and Science departments have been renovated and modernised. The facilities in the areas of Non-conventional sources of energy, Alternative fuels for engines, Computer Aided Design and Manufacturing have been augmented in the Department of Mechanical Engineering. A X-Ray diffraction unit has been added to the Department of Polymer Engineering to study surface morphology, crystalline nature and imperfections.

The Instrumentation and Control Systems for the static Rocket Test Firings have been redesigned. The new set-up, to remotely control test firings, to have audiovisual access, data acquisition and analysis of performances through computers, is being installed. The modifications in the supersonic wind tunnels are being actively pursued. In the Department of Pharmaceutical Sciences, researches are in progress in the areas of anticonvulsants, mycotoxins and alternative therapy.

Research activities in the field of optoelectronics applications, neural network etc. are being carried out in the Department of Electronics & Communication Engineering. In other departments also several research scholars are actively engaged in their research and development work.

A project on 'Eucalyptus Wood Conversion Technology' aided by World Bank has been initiated with a view to develop environmentally friendly technology and preserve the forest cover.

The Institute has made significant progress in the emerging fields of High Energy Materials, Plasma Research, Composite Materials and Parallel Computing.

The Campus Placement activities have shown a continuously impressive trend. The Industry and primier agencies have offered excellent opportunities to our students in campus interviews. The students graduating in the disciplines, which are introduced recently in the Institute, have also been very well received by the employers.

The student in-take in the Institute has grown in the last few years due to introduction of new courses in various areas. The hostel accommodation and the residential facilities for staff need 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 University Grants Commission, the State Government, the Chancellor, the All India Council for Technical Education, 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 of Governors 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 - III.

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 improving 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 programmes as detailed below :

Course	Intake capacity	Duration of Course	Year of Introduction of the Course
I. Bachelor's Degree Courses			
1. Electrical & Electronics Engg.	45	4 years	1955
2. Mechanical Engg.	90	do	1955
3. Civil Engg.	60	do	1957
4. Electronics & Comm. Engg.	60	do	1964
5. Production Engg.	30	do	1964
6. Pharmacy	30	do	1972
7. Computer Science	30	do	1983
8. Architecture	40	5 years	1993
9. Polymer Engg.	30	4 years	1995
10. B.Sc. (Computer Science)	30	3 years	1996
II. Master's Degree Courses			
1. Electrical	12	1 1/2 years	1964
i. Control Systems			
ii. Power System			
2. Mechanical	6	do	1964
i. Heat Power Engg.			
3. Civil	2	do	1965
i. Soil Mechanics			
ii. Structural & Foundation Engg.			
4. Electronics & Communication	12	do	1965
i. Instrumentation			
ii. Microwave			
5. Space Engg. & Rocketry	10	do	1965
i. Rocket Propulsion			
ii. Aerodynamics			
6. Business Administration	30	2 years	1980
i. Marketing			
ii. Finance			
iii. Systems			
iv. Industrial Management			

7. Pharmacy i. Pharm. 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
11. M. Tech. Remote Sensing	15	1 1/2 years	1996

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, Intake capacity, Duration are :

Course	Intake capacity	Duration of Course	Year of Introduction of the Course
1. M. E. Civil Engineering Electrical Engineering Mechanical Engineering Industrial Automation	-	3 Yrs.	1974
2. Management			
M.B.A.	30	3 Yrs	1980
3. Computer Applications			
M.C.A.	30	4 1/2 Yrs.	1984
D.C.A.	30	1 1/2 Yrs.	1988
4. M. Tech.			
Computer Science	30	2 1/2 Yrs.	1996

In addition to the above, a number of courses in other specialization have been planned.

V. Doctor of Philosophy

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

VI. Off Campus Programmes

Institute also offers some of these programmes at its Extension Centres presently located at Calcutta, Hyderabad, Jaipur and Delhi. Few more such Centres have been planned to be open shortly.

ENROLMENT

There are 1955 students who have been enrolled during the current Academic year 1996-97. The branch-wise enrolment is detailed below. Of these there are 256 girl students and 71 foreign students :

Course	Full-time	Part-time	
B.E	1307	-	
B.Arch.	71	-	
B.Pharm.	111	-	
B. Sc. (Comp. Sc.)	30	-	
M.C.A./D.C.A	134	47	
M.B.A	93	51	
M.Pharm.	19	-	
M.E.	25	26	
Bio-medical Instrumentation	19	-	
Information Science	22	-	
	1831	124	
Total			1955

FACULTY & STAFF

Against the sanctioned strength of 213 Faculty positions, 140 are filled with 73 vacancies. The break-up is as follows :

Category	Sanctioned	In Strength	Vacancies
Professors	57	50	7
Associate Professor	62	27	35
Asstt. Prof./Lecturers/ Associate Lecturers	94	63	31
	213	140	73

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

OUT-TURN OF GRADUATES & POST-GRADUATES

In the Annual Convocation of the Institute held on 6th Feb. '97 Prof. Y. K. Alagh, Minister of State for Planning & Programme Implementation and Science and Technology, New Delhi was invited as the chief guest. His excellency Dr. A. R. Kidwai, Governor of Bihar and Chancellor of the University presided over the function.

During the year 1995-96, 593 students have qualified for the award of Degrees and Diplomas of the Institute; 387 for Under-graduate Degrees (B.E/B.Pharm.) and 205 for Post-graduate Degrees (M.E., M.Pharm., M.B.A., M.C.A. & D.C.A.) and 1 Ph.D. Degree; the break-up is as follows :

		No. of students graduated in 1995-96		Total No. of graduates upto 1996
1.	**Under-Graduate Degree**			
	B.E. (4-Yr.) Degree Course			
	Civil Engineering	33		
	Computer Science	46		
	Electrical & Electronics Engineering	62		
	Electronics & Comm. Engg.	71		
	Mechanical Engineering	95		
	Production Engineering	35		9826
	B.Pharm.(4-Yr.)Degree Course	39		489
	B. Sc. Arch. Sc.	06		
	Total :	387		10315
II.	**Post-Graduate Degree**			
	M.E.			
	Civil Engineering	02		
	Electrical Engineering	05		
	Electronics & Comm. Engg.	11		
	Mechanical Engineering	10		
	Space Engg. & Rocketry	05		
	Automated Mfg. System	03		
			36	514

	M. Pharm.	11	146
	M. B. A.	53	733
	M. C. A.	56	377
	D. C. A.	31	205
	B. M. I.	11	14
	M. I. S.	07	18
	Total	205	2007
III.	Ph.D.	01	39*

*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 accomodates the various research and training laboratories, administrative offices and lecture rooms. The Workshop annexe has a covered area of 5,000 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 & laboratories, Drawing Halls, Staff rooms etc.	9300
iii.	Library Block	2600
iv.	Space Engg. & Rocketry Block including explosive and Rocket Fuel Centre	2472
v.	Workshop Sheds, General Stores, Garage/Godown	5110
vi.	Gymnasium	780
vii.	Animal House	185

Residential Complex		
i.	Staff quarters in different categories	300 Nos.
ii.	Residential Complex for supporting services : Forest Guards, Dairy, Shop Keepers, Washermen etc.	70 Nos.

Hostel Accomodation

i.	Seven Boy's Hostels	1410 Rooms (single)
ii.	Two Girls' Hostel	140 Rooms
iii.	One Foreign Students' Hostel	100 Rooms (single)

Guest Accomodation

The Institute maintains three Guest Houses. 2 General purpose Guest House with 38 furnished rooms and a VIP Guest house with 3 deluxe double bed-rooms to accomodate guests appropriately.

Auditorium

To meet the growing needs of tho 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 which is spacious enough for indoor games. Extensive play grounds are provided to facilitate sports. They are :

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

Canteen Services

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

Dispensary-cum-Health Unit

An eight-bed hospital provides the medical facilities to the large campus community mainly as an outdoor patient unit. This unit is supported by three full time and one part-time doctors and other para medical staff. Excellent rapport exists for acute medical needs with the Government Medical College Hospital at Ranchi.

Marketing Centre

A well run Cooperative Stores provides the daily 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 sold through these outlets of the Campus exceeds Rs. 2 crores mark in value.

Others		Sq. mtrs.
i.	Consumers' Co-operative Stores	613
ii.	N C C Block	970
	Rifle Firing Range	1 No.
	NCC Parade ground	1 No.
iii.	Primary/High School (temporarily housed in Mechanical Engg. Block)	1022

CENTRAL FACILITIES

COMPUTER CENTRE

The computer laboratory is equipped with six high end systems known to be qualified under the super minicomputer category. The details are described below:

- DEIL 5100 from Digital India with RISC CPU, R3000 and the floating point unit R 3010, with a clock speed of 20 MHz, it delivers a SPEC mark 1 of 14.9 and MIPS 2 of 19.4. The primary memory is 40 MB and disc capacity is 1.85 GB. It has 95 MB CTD and 32 terminals. The operating system is ULTRIX and supports C, Pascal, Cobol and FORTRAN compilers alongwith INGRESS RDBMS package.

- TUL U6000/65, a high end system from TATA UNISYS with two i80486 CPU's @50 MHz. It has 64 MB RAM and 1 MB external cache per CPU. Secondary storage is 4.05 GB in the from of SCSI Hard disc, 150 MB CTD and 1.2 MB FDD. There is also a 550 MB CDROM. The system has 47 terminals and runs on AT & T Unix with X windows, Oracle and Scientific subroutines. The languages supported are C, Basic, Fortran 77, Pascal, C++ and Image Processing and vision softwares.

- DEC-Apha-600 has Alpha @ 175 MHz with 2.5 GB Hard disk, 600 MB CDROM, 500 MB CTD and 96 MB RAM. It runs on VMS operating system and has FORTRAN, PASCAL, C, C++ and COBOL compilers, GKS and PHIGS package installed as RDBMS. It is linked with two 8-port terminal server over DECNET.

- DEC-Alpha-300 has Alpha @ 125 MHz with 2.5 GB hard disk, 600 MB CDROM, and 32 MB RAM. It runs on OSF operating system with FORTRAN, PASCAL, C, and COBOL compilers and GKS, Phigs Open-3D, DXML and X-windows are also installed in the system.

- DEL-Alpha-150 is EISA based Alpha @ 150 MHz machine with windows-NT operating system and 600 MB CD-ROM.

- SILICON GRAPHICS INDY R-4600 system for Image processing and multimedia presentation having processor MIPS R4600, 100 MHz, MIPS rating 119, 32 MB RAM, 16 KB data & Instruction cache, video camera, microphone, Speakers, Mouse, 535 MB HDD, CD ROM, IRIX Operating system with C, C++, Pascal, Cobol compilers, Multimedia showcase.

- SUN ULTRA 140 workstation/64MB RAM/2GB HDD/ 17" color monitor/CD ROM Drive/Microphone/Built in Ethernet/Solaris 2.5 operating system/Java workshop/C/C++/ Fortran Compilers installed in July, 1997.

- There are number of Dot Matrix Printers and a line printer with a printing speed of 600 lpm as a common facility to the above mentioned systems.

All these systems are networked on Ethernet with TCP/IP and NFS. Apart from the above there are 20 PC-AT 386/486 range of machines with SVGA, 4 MB or more RAM and 80 MB or more hard discs and a wipro Pentium 90 MHz system.

The micro computer based software packages include the following :

Fox-Pro for windows 3.1, MS Fortran, MS word 6.0 for windows 3.1, MS Visual Basic 1.0, Borland C++, Turbo Pascal 7.0.

There is also a 2 transputer based parallel processing workstation with parallel C, parallel Fortran and one Tektronix 4115B, graphics workstation. Recently, Institute has started E-mail services for students and staffs through dartnet service provider. The department is currently providing computing facilities for 120 students at a time in one slot and is kept open all 7 days from 8 a.m. to 9 p.m. for users.

LIBRARY

The Library subscribes to over 130 Indian and foreign journals annually. During the current year more than 1600 volumes were added to the existing stock of Library. The up-to date stock of the Library comprises of 62,100 books and 16,000 back volumes. Facilities for microfilming, Photocopying are being provided by the Library.

In addition to journals, the Library also subscribes I E L, Ei compendex Plus, International Pharmaceutical Abstracts, Grants and Institute of Management International Database Plus on CDs to meet its user requirements. For the same, Library is equipped with one CDNET (with four drives), one server (WIPRO) and 16 nodes, all in LAN and two Standalones attached with one laser printer for Full Text Images of IEL.

CAD LABORATORY

A central CAD Laboratory has been established with WIPRO 486 system with 820 Mb memory space and Acermate 920 and 486/G with memory space of 1.2 Gb with at least thirty terminals for the use of students. This lab. has many modern software packages for the benefit of students. These packages include the Auto CAD release 12 (drafting package), DOS as well as window version, MCAD, FEM, FLOW and 3D STUDIO. The CAD lab. has compiler of Borland C++, Turbo C, etc., too. The computer terminals are connected through modern plotter (with different pens) and printer for getting hard copy.

The Acermate 920 is the latest work station for the CAD/CAM user with the Intel Pentium processor, PCI-local bus Mach 64 graphics, Fast serial ports and EPP, ECP and it is ideally suited as a server for CAD lab.

The acermate 486/G has a high performance processor, on board local bus graphics controller, ping and plug technology and modular expandibility.

ACADEMIC INNOVATIONS, RESEARCH & DEVELOPMENT

The various departments of the Institute have been actively engaged in developing research and training infrastructure in the frontier areas of Applied Sciences, Engineering and Technology. The focus of research and development has been on the emerging fields of interdisciplinary research. The curriculae in Engineering, Pharmaceutical Sciences and Applied Sciences and Management disciplines have been revised and upgraded with inclusion of new courses. Additional research facilities have been created to take up advanced research work with the support of Government of India during 1996-97.

To keep pace with the demanding technical advances and future trends in industry, the Institute-Industry interaction has been encouraged. Several new programmes are in progress offering consultancy, testing facilities, trouble shooting and technology development.

Off-campus centres presently functioning at DELHI, CALCUTTA, HYDERABAD and JAIPUR are offering courses in Computer Science and Engineering.

Institute has recently started under-graduate (B.Sc.) course exclusively for girls in the areas of Computer Science and Electronics. The M.Tech. programme in Remote Sensing is also being offered from current academic session.

The Institute has submitted the following proposals for approval to the All India Council for Technical Education, New Delhi. These courses shall start soon after receiving such approval.

1. M. Sc. Electronics
2. M. Sc. Applied Sciences
3. M. Pharm. in Pharmacognosy
4. M. Tech. in Bio-Technology
5. M.E. in Automobile Engineering

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 of 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 control 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 Research Center has been expanded to facilitate application programming on fast 32-bit processors, namely :

1. 68020 at 25 MHz programming and real time trigger trace with performance analysis.

2. IMST 414 Transputer system for 32-bit multiprocessor environment, emulation using PC-XT, to yield system throughput up to 10 MIPS, using OCCAM language.

The Hewlett-Packard 9000-350 system has been installed for AI applications with UNIX-OS, C, PROLOG, and LISP and assembly language facility. The system is a state of art machine capable of expansion. The HP 9000 system is networked with two HP64000 Development stations to constitute the HP-Design Center.

The Microprocessor Development Center has provided technical assistance, consultancy and training to Research and Development Center for Iron and Steel of the Steel Authority of India Limited (RDCIS-SAIL), Metallurgical consultants Ltd. (MECON), Coal Mines Planning and Development Institute (CMPDIL) and Heavy Engineering Corporation (HEC) for design and development of instrumentation and control systems

ROBOTICS LABORATORY

An updated intelligent Robotics laboratory consists of three robots :

1. An IEEE Hero Robot with 4 degrees of freedom capable of ultrasonic sensing, dynamic mobile object sensing, speech synthesis etc.

2. Rhino Robot XR-3 and XR-4 are five axis revolute coordinate robot arms with motor driven grippers.

A four wheeled Robot project on Mobile Transfer Vehicle is under progress in collaboration with MECON.

PLASMA ENGINEERING

The plasma facility can produce live plasma for experimental research and training. The Plasma Engineering laboratory is being geared up for industrial plasma applications.

The basic facilities consist of :

1. Cascade Plasma Arc Generator (18 KW, HYPERTHERM, USA.)

2. Monochromator (JOBIN YVON, FRANCE, Resolution 175,000 in single pass and 350,000 in double pass).

3. Computer (DX2 486, 4 MB RAM, 810 MB HD, 60 MHZ).

4. Read out (ORIEL) for voltage output from PMTs in terms of watts, lumens, transimittance etc.

One of the major additions to the basic facilities is the new Coating Unit based on Anodic Deposition Technique which is in the final stage of fabrication at HIND HIGH VACUUM Co. and is to be installed soon. When installed and commissioned, this unit may be the first of its kind in India. This technique is being developed to produce both mono and multilayer coatings which are proved to be superior to coatings developed by conventional method in terms of reflectivity, conductivity, surface morphology etc.

In addition to the above activities both electrical and optical emission spectroscopic techniques are also being developed for Plasma diagonostics.

Two projects entitled, "Study of Arc Plasma Characteristics of a Cascaded Arc Plasma Generator" and "Metallic Multilayer Surface Coating Using Anodic Vacuum Arc", sponsored by DST, New Delhi and ISRO, Govt. of India respectively are at present going on under the Principal Investigatorship of Dr. P. K. Barhai.

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 resolution.
3. A complete FMC comprising of -
   a. TRIAC CNC Milling Machine
   b. ORAC CNC Trainer 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)

To increase the versatility of the laboratory, a Flexible machining cell comprising of

a) Machining Center

b) Linear movement continous path Robot

c) Computing devices

has been added in the above mentioned facility.

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 objective 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 capacity to test 37 parameters at a time. The data system can handle upto 16 channels simultaneously. All channels are displayed on CTR. The data system stores all the raw data for post run manipulations, achieving, 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.

THE BUILDING CENTER (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, 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 entrepreneurs 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 APPLIED MECHANICS

A research laboratory in the emerging field of Engineering Biomechanics is being established by interaction with different institutions like I.I.T., Kharagpur, B.E. College, Sibpur and MNR college, Allahabad. Presently, a modern Dynamic laboratory equipped with latest testing machines and models is being set-up to carry out research and development work.

The research work in the fields of Heat transfer/Vibration and momentum related engineering problems by computational simulation is in progress.

DEPARTMENT OF ARCHITECTURE

The department was established in the year 1993-94. The senior most students are now in the IXth semester and presently under going practical (office) training at reputed Architectural firms in India. The academic programme is progressing smoothly. New faculty members have joined the department and some more are joining shortly. The students of the department had gone for an educational tour (as part of the curriculam to Gujrat and Rajasthan for about 12 days in 1996-97. They studied and did measured drawings of some of the Historical buildings and structures in Ahmedabad, Jaipur, Udaipur, Chittorgarh, Jodhpur, Jaisalmer, Mount Abu etc. The department organized several one day seminars :

1. A Seminar on low cost urban and rural housing by Mr. Alok Dasgupta of HUDCO.
2. Two Seminars on Architectural Illumination by Mr. D. Biswas of Philips India Ltd.
3. A seminar on " Different aspects of Architecture profession" by Mr.M.D. Virnave, one of the well known practicing Architects of Ranchi.

The students of the department have been participating in different Design Competitions, both at National and International level. They are :

1. Annual NASA Design Competetion, SAP, Chennai.
2. College Restaurant Design Competition organized by Commonwealth Association of Architects.
3. Street landscape and furniture design for OSAKA, JAPAN.

Each student has now been provided with Specially designed drafting boards, Lighting and shading conditions in the drawing class rooms. The CAD Lab is being used for graphics, Computer Aided Design and Drafting exercises.

BIO-MEDICAL INSTRUMENTATION

During past three decades most significant advance in Clinical practice has been attributed to interactions between scientists, technologists and medical professionals. Biomedical Scientists have devised necessary tools to meet the challenges and this interdisciplinary field has evolved and grown to the point that it is now accepted as an established discipline. Modern diagnosis as well as therapy has become dependent upon the growth in technology. This is due to concurrent growth in physical and biological sciences.

Considering the need of scientists and technologists in this field a course in Biomedical Instrumentation leading to M.Sc.(BMI) was introduced in 1992. Since the course is interdisciplinary in nature Department of Electrical and Electronics, Department of Electronics and Communication, Department of Pharmacy and B.M. Birla Heart Research Centre at Calcutta and number of leading medical practitioners are participating in this degree program.

All the students who have graduated in this course are well placed in job positions. They are very well received by well known hospitals and Industries which are entering the growing field of Biomedical Instrumentation.

DEPARTMENT OF CIVIL ENGINEERING

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

Under the consultancy programme, the department has been able to estalish rapport with large and small scale industries by undertaking consultancy services in the areas where the department has 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 and off-shore Structures.

Consultancy has been one of the major actitivities. Following projects have been taken up for consultancy :

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 Management, Kanke Road, Ranchi.

4. Sub Soil Investigation for
   1. Usha Martin Industries,
   2. Military Engineering Services, Ranchi and Ramgarh,
   3. Central Coalfields Ltd., Ranchi.
   4. Central Mines Planning and Design Institute, Ranchi.
   5. Rashtriya Pariyojana Nigam, West Bokaro
   6. Bihar Plateau Development Projects Ranchi, and
   7. Bihar Public Health Engineering Department

5. Mix Designs for
   1. Garrison Engineer, Ranchi, Ramgarh,
   2. Uttar Pradesh Bridge Construction Corporation,
   3. Bhasin Construction Company, and
   4. 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. at West Bokaro.

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

1. Effect of detergents and Soap on Soil characteristics - with department of Pharmacy.

2. Experimental investigation on the vibroviscosity of fine grained soil - with Applied Mechanics department.

DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

The department has organised one module of College Teachers Training Programme under University Grants Commission Scheme for College teachers of Bihar during July-August, 1996. A computer training programme was also arranged for St. Columbas College, Hazaribagh.

A national level Technofest was organised by the students of Computer Science alongwith sister departments under the banner of IEEE Computer Society in Feb. 1997.

Dr. P. K. Mahanti has been appointed as a Member of Editorial Board of Int. Journal of Association of modelling and Simulation Enterprises, Lyon, France in 1997. He has also been guiding research work in the area of Fault Tolerant Computing with Mr. G. K. Saha as research scholar.

Several students of the department have received full financial assistance for study at prestigious Universities abroad.

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGG.

Theoretical Modelling and simulation of Solid State devices for high speed and optoelectronic applications have been an active area of research in the department.

During the year under report, a number of novel solid-state source detector structures for integrated optoelectronic applications have been introduced. These include Double-Hetrostructure InAs/InAs Sb light emitting diode for application in 2 mm to 6 mm wave-length region, High Electron-Mobility-phototransistors and ION implanted optically controlled field effect transistors.

A number of laboratories in the department have either been upgraded or newly introduced. Some of these are :

a. Upgraded Optical Fibre Communication Laboratory where facilities like Monochromator, videolink, Data links, Wavelength Divisions, Multiplexers and Demultiplexers (0.5 mw x to 25 mw) and Optical powermeters have been added.

b. New laboratories for

i. PCB Circuit Design and Testing and

ii. Digital Image processing and Voice Synthesis Area

have been added.

As a result of these newly acquired facilities, the department is able to introduce new courses in Digital Image Processing, Speech Synthesis, Microelectronic Engineering, Mobile Communication, Telecomunication, Switching Circuits, Process Control Instrumentation, Computer Comunication Architecture, Data Communication, Bioelectronic Instrumentation both at Under - graduate and Post-graduate level.

The Research Project entitled, "Development of Optical Fibre Communication System for Underground Mines" has been completed.

Research project in Optical Fibre gas Sensor particularly for monitoring CO_2, NO_2, and CH_4 gas and useful in environmental pollution monitoring is in progress.

Research and Development of Laser Security Systems which have wide application in Defence is in progress.

Projects on Adaptive control of Flight control System and Efficient Way of handling the power factor lagging or leading loads with the help of thyristorised as controller have been initiated.

Research work is going on in Fibre Communication Area. Sensors are being developed for measurement of various parameters. Some work is going on in the area of Infrared Image System for multiuser applications like railways and defence. Microprocessor based systems are being developed for various users.

The department has the following well equipped laboratories which are used for the training and research by the Electrical & Electronics and Computer Science departments also :

1. Basic Electronics Lab.
2. Integrated Circuits
3. Logic Desigh Lab.
4. Digital Circuits Lab., and
5. Microprocessor Lab.

DEPARTMENT OF ELECTRICAL & ELECTRONICS ENGG.

The department is well equipped to impart courses both at Under-graduate and Post-graduate levels. The laboratories and courses offered are constantly up-dated to keep pace with the development in the field. A new Post-graduate course in "Machine learning process" had been introduced to build up a suitable base in neural networks & Fuzzy logic areas. During the year under report, new courses on "Estimation & Identification Techniques" and "Advanced Power System Protection" have been introduced. The modern Microprocessor & Artificial Intelligence laboratories of the department offer facility to progress various industrial projects.

A short laboratory course in "Electrical Machines" was arranged for "Manufacturing Engg." Students of National Institute of Foundary & Forge Technology, Ranchi.

The IEEE student branch organised a national level technofest in February, 1997 with Dr. B. M. Karan as its counseller.

Mr. R. C. Jha, a faculty member of the department attended a training programme on Mini-hydro projects at Itanagar during February-March, 1997. This was organised by AHEC, Roorkee and Sponsored by UNDP, GEF.

Several seminars were arranged during 96-97 for the benefit of final year B.E. students and staff :

1. Asic Design by Dr. Aloke K. Das, Manager, Termic Usha, Gurgaon (Sept. 24, 1996).

2. Emerging Trends in Information Technology by Mr. A. R. Jha of Comprehensive Consultancy, Calcutta (Sept. 25, 1996)
3. Holography - a modern tool for industrial applications by Dr. J. S. Rao of MECON, Ranchi (Oct. 14, 1996).
4. Parallel Processing & Super Computers by Dr. M. M. Sharma of CDAC, Pune (Jan. 24, 1997)
5. Present power scenario in India by Mr. Mata Prasad, Adviser (Power Transmission), to Asea Brown Boveri (Feb.22, 1997).
6. Industrial Instrumentation by Mr. M. Balasubramanian of MECON, Ranchi (March 12, 1997).

During the year under report, the following testing works were taken up and completed :

1. Calibration of Techometer	:	Mahabir Cement Works, Ramgarh, Steel & Casting Pvt. Ltd., Hazaribagh.
2. Testing of Welding Transformer	:	CPC Equipment Pvt. Ltd., Hatia, Ranchi.
3. Testing of ICDP Switch	:	Central Coalfields Ltd., Kuju Area, Hazaribagh.
4. Repairing & Testing of Thyristor Cards	:	Kathara Colliery, Giridih & Sirka Colliery, Argada, Hazaribagh.

Consultancy, testing & software development work of Mobile Transfer Vehicle (MTV) in collaboration with MECON, Ranchi is being actively pursed by Prof. R. Sukesh Kumar.

The work of repair & rectification of defects in the Mobile Mine winder of Eastern Coalfields Ltd. is to be completed shortly.

DEPARTMENT OF INFORMATION SCIENCE

The department has acquired a high place in the field of Information Science and is committed towards its objectives of imparting quality education and training.

The following subject experts were invited to give seminars for the benefit of students and faculty members :

a) Prof. R.K. Raut, Head, Department of Library and Information Science, Sambalpur University, Sambalpur, Orissa.

b) Dr. A.K. Sinha, Manager, Information Services, TELCO,Jamshedpur, Bihar.

c) Prof. S.K.Sen, Department of Library and Information Science, Calcutta University, Calcutta, and

d) Dr. S.K. Gan, National Sample Survey, Calcutta.

Dr. U.N.Singh, Head of the Department was invited as a resource person in the UGC sponsored refresher course at Jadavpur University, Calcutta during 26-30 January, 1997. He also attended Board of Studies Meetings as an External Expert at Sambalpur University, Sambalpur in the Dept. of Library and Information Science and Babasahab Bhimrao Ambedkar University, Lucknow in the Dept. of Information Science.

Number of projects have been completed by the students of the department in the field of Information Science.

DEPARTMENT OF MANAGEMENT

In addition to the M.B.A.programme offered by the department, it is imparting necessary training in the discipline to the graduate and post-graduate students of the Institute. Department is also offering tailor made courses to the Executives of nearby organisations.

A correspondence course for Non-Executives & Non-Technical staffs of MECON was organised for 6 months during the period October, 1996 to April, 1997.

The following equipments have been added for instruction and Audio-visual aid to the student and enhancing academic activity of faculty :

i) P.C. with Printer

ii) CD-ROM for providing secondary data for the research purpose of management.

iii) Various Audio Visual Management training cassettes.

Prof. Alka Munjal was appointed on the Governing Body of Ranchi Management Association for the year 1996-97.

Mr. Tushar Jain a student of IV semester participated and presented a paper on corporate Governance, on the occasion of 'Interface 97' organised by BITS, Pilani on February 10, 1997.

The M.B.A students have also participated in programme on Selection techniques, organised by SAIL at MTI, Ranchi on March 14, 1997.

DEPARTMENT OF MECHANICAL ENGG.

The department has been imparting training at Graduate and Post-graduate level. Research activity in the laboratories of the department was also being carried out and Quality Improvement of faculty members by organising seminars, lectures, Short duration courses etc. was actively pursued. To keep pace with the modern development in the field number of courses, both for graduate and post-graduate students were updated. Similarly several laboratories of the department have been modernized, notably the CAD Lab & the I.C. Engine Lab.

The research in the field of alternative fuels is in progress. Indimeter - 617, a PC based monitoring device for I.C. Engines variables has been acquired. This instrument is helpful in stydying the performance of both petrol and diesel engines.

A project on Design and Development of Diesel Engines for Power Generation and for Marine Propulsion is being finalised in collaboration with the Marine Diesel Engine Plant of the Garden Reach Ship Builders and Engineering Ltd.

Department has undertaken massive repair work of many systems and some of them have already been repaired, e.g. Central Air Conditioning System, Francis turbine and no of engines in I.C. Lab.

DEPARTMENT OF PHARMACEUTICAL SCIENCES

There have significant progress in the alround development of the department including Research and Development during the session 1996-97.

In addition to the ongoing projects as reported earlier the following new projects have been awarded to the department :

1. U.G.C : Isolation and identification of Mycotoxins and Mycotoxin producing Fungi in Food or Agriculture products and their Pharmacological Studies.
2. AICTE : An Alternative Therapy of KALAAZAR by Herbo-Mineral Sources.
3. ICFRE : Utilisation of Eucalyptus wood, a World Bank aided project.

Research in almost all the disciplines of Pharmaceutical Sciences have shown significant advances from Natural sources. A few new molecules have been isolated, identified and structures have been established. These new molecules have shown promise as anticonvulsant, antibacterial and antifungal agents. Some other groups have shown remarkable antiinflammatory activity as well. Total synthesis of some of these compounds have been done with a view to get these useful compounds in bulk. A number of derivatives of such compounds have been prepared and evaluated; based on the data quantitative structure activity relationship have been established through Computer Simulation.

Work has also been done on synthesis of dipeptides, tripeptides, etc. for their hepatoprotective activity. Synthesis of Piperidine and study on Imidazole analogs are also in progress.

Product Development and Formulation of the basic drugs is very vital for the manufacturing and R&D work. Innovations are going on to get stable and efficacious formulations using instruments like UV. Spectrometer, Rheo-Viscometer, DSC and HPLC. Considering the pain of administration and sustained action of drug substances, novel drug delivery system has also been devised and tested.

Pharmacological evaluation of durg substances are done in the division of Pharmacology using Polyrite, research kymograph, etc.

Weedicidal activity of Bambusa bamboos leaf extract has been successfully carried out in the garden adjacent to the department. Work is on to study the weedicidal activity on weeds like Perthanium & Lantana.

Ph.D. Degree was awarded to Shri. Sheo Sankar Mahli in the last Annual convocation of the Institute. Shri. A.K. Tiwari has completed all the formalities for the

award of the Ph. D degree.

Extention lecture was organised for the benefit and exposure of the students in the field of tissue Culture.

Collaborative work with other institutions continued in order to cover multidisciplinary areas. So far the department has collaborated with Jadavpur University, CDRI,Lucknow, R.R.L., Jammu, Indian Lac Research Institute, Namkum, Birsa Agricultural University and collaboration with I.C.F.R.E., Dehradun is in progress.

Dr. S.P.Basu applied for patent No.529/Cal/95 with the Patent Office (Govt. of India); this has been notified in the Govt. Gazette. He also delivered a lecture on Entrepreneurship Awareness during the camp organised by BIT-STEP, Mesra, 1996-97.

Biographical note of Dr. S.P. Basu has been included in the Reference Asia, Asia's who's who of Men &Women of Achievements printed on page 256 Vol. X (1997).

The department is providing consultancy to the Pharmaceutical Industries in the Industrial estate and also to some of the industries in Ranchi. The STANCERT Laboratory is also run by the staff of the department efficienty.

DEPARTMENT OF POLYMER ENGINEERING

During the period 1996-97, the activities of the Department of Polymer Engineering were directed towards laboratory and workshop development.

One fully automatic WINDSOR Injection moulding machine was added to the existing facilities of Polymer Engineering Workshop which include compression moulding, Blow moulder, Thermo forming and FRP fabrication units. Department has also procured a desktop X-Ray Diffractometer. The workshop facility was availed of by under-graduate engineering students as a part of workshop practice.

In collaboration with BIT-STEP, Department of Polymer Engineering completed a DST, Govt. of India Sponsored project entitled, " Skill and Entrepreneurship Development in Plastics Processing". Under this scheme, four short-term courses, of three months duration each, were conducted. During the period, February, 1996 to January, 1997, a total of 38 candidates were trained in the field of Plastic Processing.

The department has also participated in an Entrepreneurship Development Programme conducted by Small Industries Service Institute.

DEPARTMENT OF PRODUCTION ENGINEERING

In addition to UG and PG programmes, the department has been actively engaged in the research and development activities.

The following are the research areas of interest :

1. Erogonomics of system/ workstation design.
2. Skill based flexible automation.

3. Forging of Sintered Performs.

4. Manufacturing Tribology.

5. Plant layout and Manufacturing - Resource Planning.

6. Information Technology/systems.

7. Process Automation.

The equipment added during the period 1996-97 is :

A Flexible manufacturing cell comprising of

a) Vertical machining center,

b) Linear movement continuous path Robot, and

c) Computing devices.

The following scholars have completed/pursued actively their Ph. D work :

1. Sri. Alok Verma, "New Strategies for Improving Industrial Productivity", under the guidance of Dr. S. Kumar.

2. Sri. G. Sutradhar, "Forging of Sintered Preforms",under the guidance of Dr. S. Kumar.

3. Sri. R. Prasad, "Quality Evaluation of Foundry Forge Products by Ultrasonic Technique", under the guidance of Dr.S. Kumar.

4. Sri. S.A. Siddiqui, "Technologycal Aspects for Improving Productivity of a Forge Industry", under the guidance of Dr. S. Kumar (continuing).

5. Sri. B.K. Singh in the area of "Ergonomics", under the guidance of Prof. K. P. Sinha (continuing).

The students of Production Engineering department organised a seminar on "Managing Manufacturing Technologies" in Sept. 1996 in which about 10 papers were presented.

During the session 1996-97, the department has organised tours to TELCO and IISCO, Jamshedpur in Sept. 1996 and Mar. 1997 respectively for students.

The following Research/Industrial projects are in progress :

a) Mathematical Modelling for optimal cutting tool replacement and control of Tool wear.

b) Optimal flow path design for automated guided vehicles.

c) Technological upgradation in small scale industries.

d) Robot applications.

e) Robot vision systems.

f) Tribological properties of engg. materials.

The seminars delivered during 1996-97 are :

i) Dimension chains for economical design concept and application by Dr. S. Kumar

in October, 1996.

ii) Recent developments in forge technology, by Dr. N.M.Jha, Professor & Head, NIFFT, Ranchi on March 8, 1997.

DEPARTMENT OF SPACE ENGG. & ROCKETRY

The department has established good experimental facilities which are used to carry out R&D work related to post- graduate curriculum, sponsored R&D projects and for research of other departments of the Institute. The newly developed laboratories are :

i) Rheology Laboratory

ii) Combustion Laboratory

iii) Composite Materials Laboratory

iv) Advanced Aerodynamics Laboratory.

The research work done during the year under report has been in the advanced areas of Aerodynamics, Composite materials, Propellant Technology, Combustion and Rocket Propulsion. The highlights in the different field are summarised below :

1. Aerodynamics Section

i) Studies on Mean Pressure Variations and Flow Deviations due to Protuberances.

Under the broader head of unsteady high speed aerodynamics, the effect of protuberance on R.M.S. deviations in wall total and static pressures has been studied at flow Mach Numbers of 0.8,1.20 and 2.20.

ii) Pressure Distribution and R.M.S. Deviations in Pressures on Deflector Surfaces.

As a step to obtain pressure oscillations and load variations on a "deflector surface", the studies have been carried out in presence of an exit jet impinging on a right circular cyclinder at different locations from the jet exit. The finding of the study are helpful in selection of pockets for installations of sensitive equipments as also in reducing servo power requirement, if the deflector is replaced by a control surface.

2. Composite Material section

Efforts has been done to study the effect of environment on the flexural fatigue behaviour of carbon/ Epoxy Composite matetials. The specimens were fabricated with the help of vacuum bag technique. The specimens were exposed to tap water, saline water, acidic water, organic fuel, low and high temperature prior to fatigue tests. The specimens were subjected to fatigue tests on a rotary bend test with complete reversal of cyclic loading. The thickness of the specimen and frequency of load application on test machine were kept constant.

The results have been obtained both for notched and un-notched specimens. The fatigue life of composites is determined in terms of S-N curves and life prediction has been calculated through deflection increment model which is solely developed

from experimental observations. Microcrack propagation of these specimens have been observed through travelling microscope with several interval of number of cycles. The microscope photography has been done for the specimens tested under different loading environmental conditions.

It has been revealed from results that the environment does affect the fatigue life as well as the fatigue strength of composites.

3. Propellant and Rocket Propulsion Division

i) Research on Heterogeneous Gelled Propellants

The research and development work in the area of high energy gelled propellant systems carried out at this department has received wide appreciation and attention. The Indian Space Research Organisation and Ministry of Defence have started the application projects in this area in view of the several advantages and technological feasibility demons-trated by our R&D work. An ISRO sponsored research project utilizing Monomethyl Hydrazine(MMH)- a fuel being used in the upper stage of ISRO'S launch vehicles, in gelled state has successfully been completed. The newly developed heterogeneous fuel systems have shown a significant increase in their propulsion potential in terms of specific impulse and spontaneity of ignition.

ii) Research on Novel Pyrotechnic Devices

The pyrotechnic devices find extensive application in space research in areas like igniters for rocket motors, space ordnance, initiator applications and smoke generators etc. A collaborative effort in this area has been initiated with High Energy Material Research Laboratory, Pune. The thermal studies on basic ingredients and anthracene based pyrotechnic devices have been initiated to optimise suitable formulations which may find future application as an Infrared countermeasure to high technology weapons using IR sensors / guidance systems.

iii) Development of fuel Rich Propellant System

The development of dinitroso pentamethylene tetramine (DNPT) which is found to be a pyrolysable fuel polymer and supports sustainable combustion at very low oxidizer loadings has been reported earlier. This promising fuel for integral rocket ramjet engine application, has been studied for its combustion characteristics in conjunction with Ammonium perchlorate, Hydroxy terminated polybutadiene, Magnesium metal powder and burnrate modifiers. Efforts have also been made to find out the necessary operating conditions, Air-fuel ratio and formulation details for optimum thrust levels. DNPT has also been found to show enormous exothermicity when burnt in inert atmosphere.

iv) Research on Eco-Friendly Propellants

The demand for smokeless, insensitive and less hazardous combustion products emitting propellants has intensified the research and development effort for the production of the so called Eco-friendly propellants. With the modern booster stages of launch vehicles using tons of conventional solid propellants, it is desirable to curb the damage by obnoxious nozzle exhausts to the extent possible. Keeping this in view, a program has been initiated to investigate eco-friendly propellant formulations

using ammonium nitrate oxidiser, a fuel binder and an energetic plasticizer with desirable ballistic properties.

v) Renovation of Rocket Propulsion Laboratory

The control room used for static solid and hybrid rocket test firings is being renovated with the help of funds received from AICTE under MODROBS programme. The new facility will have the provision for sound and video recordings during firings.

Three students have submitted their M.E Theses and two research scholars are working for their Ph.D. degree in the areas of Quality System for Guided Weapon System and Composite Materials.

Four sponsored projects from agencies like ISRO, Ministry of HRD and AICTE are being actively progressed and four new projects are under active consideration of the sponsoring agencies.

ONGOING PROJECTS

1. Name of the Project	-	Development Studies on Gelled Monomethyl Hydrazine (MMH) Propellant.
Agency	-	ISRO
Name of Investigators	-	Dr.Mohan Varma and Dr. B.L. Gupta
2. Name of the Project	-	Modernization of Rocket Propulsion Laboratory
Agency	-	Min. of H.R.D. (AICTE)
Name of Investigator	-	Dr. A. K. Chatterjee and Dr. Mohan Varma
3. Name of the Project	-	Transonic Buffeting Shock Boundary Layer Interaction
Agency	-	ISRO
Name of Investigator	-	Dr. J. N. Mishra
4. Name of the Project	-	Experimental Studies on Creep of Glass and Carbon Fibre Composite Under Adverse Environmental Conditions
Agency	-	AICTE
Name of Investigator	-	Dr. A. K. Shrivastava

New Project Proposals

1. Name of the Project	-	Development of Fast Burning HTPB Based Composite Solid Propellants
Agency	-	Defence, AR & DB
Name of Investigators	-	Dr. B. L. Gupta and Dr. Mohan Varma

2.	Name of the Project	-	Fatigue Behaviour of Adhesive Lap Joints
	Agency		Defence, ARDB
	Name of Investigator	-	Dr. A. K. Shrivastava
3.	Name of the Project	-	Development of Thermoplastic Matrix Composite Sheets
	Agency	-	DST
	Name of Investigator	-	Dr. A. K. Shrivastava
4.	Name of the Project	-	Combustion Studies on Eco-friendly Composite Solid Propellants
	Agency	-	UGC
	Name of Investigator	-	Dr. Mohan Varma

Faculty members and students of the department also delivered Seminars/ Talks.

Dr. A. K. Chatterjee, Professor of this department is also Executive Director, BIT-STEP. He has conducted 3-day "Enterpreneurship Awareness Camp" at Birla Institute of Technology, Women Polytechnic, Government Polytechnic and Birsa Agriculture University, between Sept., 1996 to March,1997.

He has also conducted 6-week " Enterpreneurship Development Programme" from 18 Feb. 1997 to 29 March, 1997 at Birla Institute of Technology -Science & Technology Enterpreneurs' Park, Mesra, Ranchi.

Dr. Chatterjee has delivered the following Talks/ Lectures :

1. A talk on " Need of Enterpreneurship Awareness", EAC :BIT, Mesra Ranchi, Sept. 21, 1996.

2. A talk on "Small Industries & Women Entrepreneurship", EAC : Women Polytechnic, Ranchi, Nov. 23, 1996.

3. A talk on "Social and Economical State and Entrepreneurship" in Hindi" EAC : Govt. Polytechnic, Ranchi, Jan. 11, 1997.

4. A lecture on "Entrepreneur and Entrepreneurship", EDP : BIT-STEP, Mesra, Ranchi, Feb. 18, 1997.

A seminar on "Nozzles for Rockets" was delivered by Shri Deva Arul Daniel, on March 20, 1997.

DEPARTMENT OF REMOTE SENSING

The increasing application of Remote Sensing techniques in various activities including resource evaluation, environmental monitoring, land use/ land cover mapping etc. has grown considerably during the last two decades and the R 5 data products are being increasingly used for generation of accurate information system for plan formulation at all levels. This has led to a spurt in the demand for qualified man power. Keeping this in view, a one and a half year duration M.Tech. programme in Remote Sensing is designed and offered from the ensuing academic session.

The department has developed Image Processing-cum-visual Interpretation lab and photogrammetry-cum-Cartography lab. The Remotely Sensed data Archieve is being developed containing Satellite Photo-prints, FCC's, Cartridges etc. of Southern Bihar.

A project proposal entitled, " Assessment of Flood Hazard in Northern Bihar using multi-date satellite Imagery" is under active consideration of DST, Govt. of India for funding with Dr. S.S. Dhabriya as Principal Investigator and Shri C. Subhash and Dr.A.K.Singh as co-investigators.

DEPARTMENT OF APPLIED CHEMISTRY

The department has been participating in academic programmes, consultancy and material testing work. A new course on "Environmental Science" has been introduced in the Under-graduate course structure to educate and train the students in this vital area. New laboratory experiments are incorporated in the sessional routine. The research work on Redox-System in Co-ordinated Manganese Complexes is being pursued by Prof. B.D.Choubey.

A sponsored research project on polymer degradation is progressing well under Dr. P. K. Shrivastava as principal Investigator. A research Scholar has also been working for Ph.D.programme.

The faculty members have taken up consultancy and testing work on water samples, fuels, building materials etc. obtained from various industries and other rural and urban concerns.

DEPARTMENT OF APPLIED MATHEMATICS

Besides participating in Under-graduate and Post-graduate programme of Engineering and Science discipline, the department is actively engaged in Research work in various impressive and potentially emergent areas like Boundary Layer theory, Plasma Physics, Environment pollution, Mathematical Modelling, Elasto-Plastic dynamics with special reference to Seismology and non-conventional forging of sintered metal powder.

The members of the department are contributing in the following thrust areas :

i) Non-conventional forging of Sintered metal or powder disc :

Investigations are under way by Dr.S.C.Prasad to study the various technological aspects of sintered forging process. Metal powder technology is currently

arousing global interest as an economic method of producing components from metal powders. In this new technology sintered porous metal preforms are used as the starting material in bulk forming processes. The mechanical properties of the metal powder products compare favourably with that of wrought metals.

Analysis is being carried out for the calculation of pressure distribution and die load by using upper bound energy method in progressive deformation of disc taking barrelling into consideration for axial symmetric and plane strain sinter Forging conditions.

ii) The study of Symmetric Vibrations of Circular Plates and Asymmetric buckling of circular plates is being careied out by Dr. S. K. Jain.

The problems have been solved numerically by the Investigator and successfully employed in solving vibration of plates problem.

iii) A study of unsteady second grade MHD flows and steady plane compressible EMFD flows is being pursued by Dr. C. Thakur.

On going Research Projects :

i) In the area of Boundary Layer study - a project entitled, "Inverse Problems in Boundary Layer Flows" was approved by the U.G.C. (Major Research Project Scheme) under Dr. Satyajit Roy. The investigation will have potential ability to compute separating and reattaching flows. The results are expected to contribute significantly to the field of Computational Fluid Dynamics.

ii) In Environmental studies, the mathematical models have been developed to investigate the dispersion of air pollution in the atmosphere as well as on the ground. The meteorological and topographical parameters have been incorporated in the model by considering their empirical relations. Gaussian model has been considered and the results so far obtained are encouraging from practical point of view and are applied in consultancy job with MECON, Ranchi yielding satisfactory results. The project has been completed under Dr. N. C. Mohanty.

A Ph.D. Scholar is currently working on "Numerical Study on Unsteady Compressible Boundary Layer Flows".

DEPARTMENT OF APPLIED PHYSICS

In addition to participation in U.G. programme, the department encourages students of U.G. and P.G. to undertake projects on modern topics like Fourier Optical data Processing, Fiber optics and Laser Interferometry. The research work on study of Cascaded Arc Plasma and metallic multilayer surface coating using anodic vacuum arc is in progress. A thesis on "Study of Oxide Super Conductors with High Transition Temperatures" has been submitted by Smt. S. Keshri for the award of Ph.D. Degree.

The department has the following special facilities for advanced studies and research

1. THR Monochromator.
2. Cascaded Arc generator.
3. He-Ne laser with 4' x 5' Breadboard and components like beam splitter, beam expander etc.

4. Mossbauer spectrometer.

5. Alomic absorption/emission spectrophotometer.

Two books are being prepared at the request of Deptt. of Science and Technology, Govt. of India on the subjects :

1. Special therory of Relativity.
2. Science of Atoms and Subatomic Particles.

PARTICIPATION OF FACULTY IN NATIONAL/ INTERNATIONAL SEMINARS/ CONFERENCES/ WORKSHOPS

DEPARTMENT OF COMPUTER SCIENCE & ENGG.

1. Prof. P. K. Jana :
Conference on Graph Theory & Application at Uinversity of Bombay, April 23-26, 1997.

DEPARTMENT OF ELECTRONICS & COMMUNICATION ENGG.

1. Prof. M. Puri :
Seminar on ATM Networks at Indian Institute of Technology, Kanpur, December 1996.

2. Prof. S. K. Ghorai :
Seminar on Laser and their Applications at Indian Institute of Technology, Kanpur, December 9-20. 1996.

DEPARTMENT OF PRODUCTION ENGINEERING

1. Prof. Atul Anand :
Seminar on Information Technology Vision 2000, organised by Computer Society of India and TISCO at Jamshedpur, September 1996.

2. Dr. S. Kumar :
International Conference on CAD, CAM, Robotic and Factories of Future, Jamia Islamia University, Delhi, December,1996.

DEPARTMENT OF SPACE ENGG. & ROCKETRY

1. Dr. Mohan Varma :
International Seminar on High Energy Materials, High Energy Material Research Laboratory, Pune, November 19-21, 1996.

DEPARTMENT OF PHARMACEUTICAL SCIENCES

1. Dr. S. P. Basu :
(a) 48th Indian Pharmaceutical Congress, Chennai, December, 1996.
(b) 6th International Symposium on Molecular Aspects of Chemotherapy under the auspices of the International Society of Chemotherapy, European Federation for Medicinal Chemistry and International Union Against Cancer, Polish Academy of Science and Technical University of Gdan'sk, Poland 9th to 12th July, 1997.

2. Prof. B. N. Sinha :
National Conference on Phytomedicines, New Delhi, February 1997.

3. Prof. N. K. Singh :
Patent Awareness Workshop organised by TIFEC, Govt. of India and Bihar Council of Science & Technology, Patna, 20th December, 1996.

4. Prof. P. R. P. Verma :
Workshop on "Oral Controlled Drug Delivery", 3rd International Symposium on Innovation in Pharmaceutical Sciences and Technology at BVP-PERD Centre, Ahmedabad, 5th & 6th February, 1997.

DEPARTMENT OF REMOTE SENSING

1. Dr. S. S. Dhabriya :
Commission on Applications of Remote Sensing Meeting, Shillong (as Chairman), October 29-31, 1996.

DEPARTMENT OF INFORMATION SCIENCE

1. Dr. U. N. Singh :
XVII All India IASLIC Seminar at Calcutta, December 10-13, 1996 and Chaired the SIG Informetrics Session.

2. Ms. Rita Sinha :
XVII All India IASLIC Seminar at Calcutta, December 10-13, 1996.

DEPARTMENT OF MANAGEMENT

1. Dr. Amar Nath Jha :
a) Attended a faculty development program on "An Integrated approach to knowledge and information for University & College Teachers" organised at National Institute of Advance Studies; Indian Institute of Science campus, Bangalore/ Sponsored by the University Grants Commission & the Jawaharlal Centre for Advance Scientific Research during the period 7th October, 1996 to 2nd November, 1996.
b) Presented Seminar on "A Blueprint for Effective Undergraduate Education" and "Role of Finance in Service Industry with special Reference to NIAS" on 23rd October, 1996 and 16th October, 1996.

RESEARCH PAPERS, BOOKS, ARTICLES PUBLISHED OR ACCEPTED FOR PUBLICATIONS

DEPARTMENT OF COMPUTER SCIENCE

1. P. K. Mahanti "Java Programming : an Introduction" accepted for presentation in the International Conference on Modelling & Simulation, Victoria, Univ. of Tech. Melbourne, Australia, October. 29-31, 1997.
2. P. K. Mahanti, "Behaviour of Predator - Prey Interactives : A simulation Study", International Journal System Analysis Modelling Simulation, Gorden & Breach Science Pub., Amsterdam, Netherland, pp. I-8, July, 1997.
3. P. K. Mahanti, : Application of Databases in Discrete Simulation Data Modelling" accepted for publication in journal of Information & Optimization Science, 1997.

4. P. K.Mahanti " Development of a Knowledge Based Multimedia DBMS Schema Architecture". Acceped for publication in Journal of Information & Optimization Science, 1997.
5. P. K. Mahanti, " A Step by Step Analysis Reconfigurable Computer System" accepted for presentation in International Conference on Educational Computing, March, 1997.
6. P. K. Mahanti, " Laboratory Teaching of Data & File Structure ", International Journal in Modelling & Analysis, 1997, Vol-31, 1&2, pp 29-35, 1997.
7. P.K.Mahanti, " Implementation of Information Opstraction System with Task Maintenance", International Journal in Modelling & Simulation, Vol-31, 1 & 2 pp. 37-43, 1997.
8. P. K. Jana, " First Parallel Algorithm for Forecasting" accepted for Computers Math Application, USA, 1997.
9. P. K. Jana, " Efficiency Parallel Algorithm for Language & Hermite Interpolation, in Journal of Applied Science & Computation. USA, 1997.

Book

1. P. K. Mahanti, et.al " Beginers Assembly Language —— IBM PC -Series (Under Print), New Central Book Agency, Calcutta, 1997.

DEPARTMENT OF PRODUCTION ENGINEERING

1. Sidqui, S. and Kumar, Surender, " Robotisation of Forge Industries for Survival in the Competitive Environment". Proc. National Conference on Machines and Mechanisms, CMERI, pp-B53 to B-60, January. 1996.
2. Kumar, Surender and Jha, A.K., "Dynamic Effects during High Speed Sinter - Forging Process", Int. Journal of Machine Tool and Manufacture, Vol. 36, 15, pp.1109-1122, 1996, Great Britain.
3. Kumar, Surender, " Imagineering TQM-The Manufacturer's Future", Proc. National Seminar on TQM, Varanasi, India, 1996.
4. Sidque, S. and Kumar, S., :Robotics and Flexible Automation in Indian Forge Industries : Present Scenario and Future Prospects", Proc. Int. Conf. on CAD/ CAM, Automation and Robotics, pp-867-874, December, 1996.
5. Kumar, S. and Abdula A., "Mechatronic Aspects of A Automated Manufacturing System", Proc. INCARF-96, pp.329-336, Dec. 1996, India.
6. Surender Kumar and Sidique, S.A., " Feature Based Automated Process Planning System for Forged Parts," Proc. Int. Conf. on Advances in Mech. and Industrial Engg., Feb.97, Roorkee, India.
7. Prasad, R and Kumar, Surender, " Study of Correlation between Ultrasonic Flow Indications and Types of Defects", Proc. 14th World Conference on NDT, pp. 977-980, 1996, New Delhi, India.

DEPARTMENT OF MANAGAMENT

1. Awadh Prasad, et.al. " Ideal Marketing Model for Small Scale Pharmaceutical Industries", published in 48th Indian Pharmaceutical Congress Proceedings, held at Chennai, December, 1996.

2. Alka Munjal, " New Organisations from Old : Corporate Restructuring in the Post Liberalised Indian Environment", published in Growth (The Journal of MTI, an ISO 9000 Institute), Vol.24. No.4, Jan-March, 1997.

DEPARTMENT OF APPLIED PHYSICS

1. Rakesh Popli, " Scientific Literacy for All Citizens : different Concepts and Ideologies", Public Understanding of Science, London (Communicated).
2. Rakesh Popli, " One Two Three —— Infinity : A Critical Appraisal", `Resonance' (Accepted).
3. S. Keshri and P.K. Barhai., " Thermoelectric Power of High -Tc oxides with Phenomenologically Modified Hubbard Model", Asian Journal of Physics, Vol.5, No.4, 423-430, 1996.
4. S. Keshri and P.K.Barhai, " Studies of Thermoelectric Fluctuations of Thermo-electric Power of $Tl_2Ba_2Ca_{0.8}Y_{0.2}Cu_2O_{8+y}$ superconductors", Czech. J. Physics, 47, 249-254 (1997).
5. P. K. Barhai and S.Keshri, " Thermoelectric Power of High - Tc Samples Extended Hubbard Model ", in proceedings of Department of Atomic Energy Solid State Physics Symposium, Bombay, India, Dec. 27-31, 1996.
6. S. Keshri and P.K. Barhai, " Thermoelectric Power of High superconductors using Extended Hubbard Model", submitted to Czech. J. Physics; in proceedings of International Workshop on High Temperature Superconductivity, Jaipur, India, 16-21 Dec.,1996.

DEPARTMENT OF PHARMACEUTICAL SCIENCES

1. B.N. Sinha, D. Sasmal, S.P. Basu, " Pharmacological Studies on Melothria maderaspatana", FITOTERAPIA, LXVIII (1) 75-78 (1997).
2. D. Sasmal, S.S. Mahli, S.P. Basu, M.Gupta," Preliminary Study on the Effect of Purified Pongamia oil on Liver and Kidney Functions in Rats", FITOTERAPIA (ITALY), LXVIII (1), 35-38 (1997).
3. S. P. Basu, D. Sasmal, S. S. Mahli, R. S. Gulhane, " Quantitative Structure Activity Relationship of Analogues of 5- (1',3'-Dione-3'-;phenyl propyl)-4-methoxy benzo furan (Pongamol) as Anticonvulsant Agents", paper presented at the 48th Indian Pharmaceutical Congress, Chennai, 25_{th}-27_{th} Dec.,1996.
4. A. A. Napoleon, Sanchit Sinha, S. Jha, S. P. Basu, " Allelopathic Effect of Matured Leaves of Bambusa arundinacea on the Growth of Arachis hypogaea plant ", paper presented at the 48th IPC, Chennai, 25-27 Dec. 1996.
5. A.A. Napoleon, Kumari Seema, K.P.Yadav, R.C.P. Singh, S.P.Basu, "Studies on the Hypothermic Activity of Bambusa arundinacea", paper presented at the 48th IPC, Chennai, 25-27 Dec., 1996.
6. Tapas Roy Chowdhary, J. Mahapatra, Awadh Prasad and S.P. Basu, " Ideal Marketing Model for Small Scale Pharmaceutical Industries", paper presented at the 48th IPC, Chennai, 25-27 Dec., 1996.

7. S.P. Basu and S.S. Mahli, "Antibacterial Activity of Pongamia pinnata Crude Oil, Karanjin and Pongamol", paper presented at the 6th International Symposium on Molecular Aspects of Chemotherapy organised by Committee of Drug Research Polish Academy of Sciences and Technical University of Gdan'sk, Gdan'sk, PO LAND,9-12 July, 1997.
8. P.R.P. Verma and R.K.Patel, " Transdermal delivery of Verapamil using mixed grades of Eudragit : Design, in-vitro and in-vivo evaluation", Pharmaceutical Sciences, (U.K.), 2 (6), 269-273 (June 1996).
9. P.R.P. Verma, A. Keshri and C. M. Prasad, "Further Studies on Chemical Evaluation of Lauha Bhasma III", Ancient Science of Life, XVI (1), 26-33 (July 1996).
10. P.R.P. Verma, A. Srivastava and A. Pathria, " In-Vitro Evaluation of some Ayurvedic Antacids", " Ancient Science of Life, XVI (2), 152-155 (Oct.1996).
11. P. R. P. Verma and R.K. Patel, "Verapamil- releasing transdermal durg delivery using Hydroxy propyl methyl cellulose matrices : design, in-vitro and in-vivo evaluation", Pharmaceutical Sciences (U.K), 2 (10), 461-465 (Oct. 1996).
12. P.R.P. Verma and V. Banu, "Sustained Release of Theophylline from Eudragit RLPO and RSPO tablets", Drug Dev. Ind. Pharmacy (U.S.A.), 22 (12), 1243-1247 (Dec. 1996).
13. P.R.P. Verma and T.E.G.K. Murthy, "Transdermal Flurbiprofen delivery using HPMC matrices : Design, in-vitro and in-vivo evaluation", Drug Dev.Ind. Pharmacy (USA),23 (7), 633-638 (1997).
14. P.R.P.Verma and R. K. Patel, " Controlled Transdermal Verapamil Delivery System", presented at the 48th IPC, Chennai, Dec., 1996.
15. P. R. P. Verma, T.E.G.K. Murthy, R. K. Patel and V. Ramesh, " Computer Simulation of Bioavailability parameter and statistical parameter", presented at the 48th IPC, Chennai, Dec., 1996.
16. K. Chandrashekhar and G.M. Panpalia, " The Drug- Excipient Interactions of Piroxicam in Solid-State using Differential Scanning Calorimetry Vs. Isothermal Stress Studies, presented at the 48th session of IPC,Chennai, 27-30 Dec.,1996.
17. M.V.Dasture and G.M. Panpalia, " Criticalness about the concentration of Disodium Edetate for Vitamin C formulations, presented at the 48th session of IPC, Chennai, 27-30 Dec., 1996.
18. K. Chandrashekhar and G.M. Panpalia, "Studies Exploring the utility of DSC as an Instantaneous preformulation stability screening technique for candidate Adjutants for solid - state formulations of piroxicam", presented at the 48th session of IPC, Chennai, 27-30 Dec., 1996.
19. S.G.Panpalia, S.N. Bathusha, V. Sunil, S.K. Aggarwal and N.Srinivas,"Influence of method of Preparation on the Release of Atenolol from Albumin Microsphere", presented at the 48th session of IPC, Chennai, Dec.,1996.

DEPARTMENT OF INFORMATION SCIENCE

1. U. N. Singh, K. N. Jha and Rita Sinha, " Intellectual property rights in the post industrial society : An India Perspective, paper presented in the XVII All India IASLIC Seminar held at Calcutta, 10-13 December, 1996.
2. U. N. Singh and Rita Sinha : Pharmaceutical Research in India : A Preliminary Bibliometric Analysis, paper presented in the All India IASLIC Seminar held at Calcutta 10-13 Decmber, 1996.

DEPARTMENT OF SPACE ENGG. & ROCKETRY

1. Varma, Mohan, Gupta, B. L. and Pandey, M., "Formulation & Storage Studies on Hydrazine Based Gelled propellants", Defence Sci. Journal, Vol. 46, No. 5, 1996, pp. 435-442.
2. Shrivastava, A. K. and Singh, R. K., "Experimental Studies on Buckling of Unidirecional GFRP Composite Plates in the Presence of Cutouts", J. of Inst. of Engrs. (India), Vol. 77, March 1997, pp. 46-52.
3. Shrivastava, A. K. and Singh, R. K., "Effect of Fibre Orientation on Buckling of Composite Plates", J. of Composite Structure, UK, 1996 (Communicated.)
4. Shrivastava, A. K. and Singh, R. K., " Effect of Aspect Ratio on Bukling of Composite Plates ", J. of JSME, Japan, 1996 (Communicated).
5. Shrivastava, A. K. and Singh, R. K., " Effect of thickness on Buckling of Composite Plates ", J. of Aeronautical Soc. of India, 1996 (Communicated).
6. Shrivastava, A. K. and Singh, R. K., "Effect of Fibre Volume Fraction on Buckling of Composite Plates", J. of Fibre and Textile Research, 1996 (Communicated).

SCHOLARS REGISTERED FOR Ph.D.

During the year 1996-97, one scholar has completed his research qualifying for the award of Ph.D. degree. Three new scholars have registered for Ph.D. programme in the subjects/ areas of their study as stated below :

S.No.	Name of Scholar	Title of Thesis
1.	Gautam Kumar Saha	Transient Fault Control by Software
2.	Manoranjan Pandey	Catalytic Influence on Thermal Degradation and Burn rate of Composite Solid Propellants and their ingredients.
3.	Balram Singh	A Theoretical Study on Magneto-Fluid Dynamic Flows.

Besides the above, the following 42 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.	Shri S. A. Siddiqui	Technological Aspects for Improving Productivity of a Forge Industry.

2.	Shri M. Gopal Krishna	Artificial Neural Networks applied to Rolling Mills.
3.	Shri. K. S. Madanpuri	Application of Fuzzy and Expert Systems to Telecommunication.
4.	Shri. D. N. Prasad	Studies on some indegenous seed oil for possible utilization in pharmacy.
5.	Shri S. Samanta	Synthesis & studies on piperidine Analogs.
6.	Shri P. R. P. Verma	Studies on Pharmaceutical uses of some seed Gums.
7.	Shri Deepak M.	Standarization of Herbal Drugs.
8.	Smt. S. V. Subhashini (Left in 1995-96 ?)	Numerical Study of Unsteady Compressible Boundry Layer Flows.
9.	Shri Rajendra Prasad	Quality System for Guideo Weapon Systems.
10.	Shri Pramod Kumar Dash	Experimental Studies on Fatigue of Glass and Carbon Fibre Reinforced composites under Adverse Environ - mental Conditions.
11.	Shri B. D. Choubey	Physio-Chemical study of co-ordinaed Malonic Acid and similar Compounds.
12.	Mrs. Sunita Keshri	Study of Oxide Superconductors with high transition temperatures.
13.	Mrs. Aruna Jain	Study of Non-equilibrium Plasmas.
14.	Shri K. R. Roy Choudhary	Buckling of Laminated Composite Plates.
15.	Shri Binay Kr. Singh	Influence of Adverse Environmental Conditions on Elastic Buckling of Composite Columns.
16.	Shri Amit Jana	Theoretical Modelling of Heterofunction field Effect Transistor for high speed and Opto-Electronics Applications.
17.	Shri S. K. Datta	Some Theoretical Studies on Optically Controlled Microwave Semi-conductor Devices.
18.	Shri A. K. Mishra	Some Experimental Studies on Environ mental Pollution due to Diesel Engine Exhaust.
19.	Shri S. N. Thakur	Castability, Forge-ability, Mechinability and Fracture behaviour of Aluminium silicon Alloys.

20.	Shri Sudhir Sharan	Computer based Analysis & Modelling for Integrated Working Capital Management.
21.	Shri R. S. Yadav	Impact of Physical Training on Managerial Effectiveness - a case study of some Institutions and Organisations.
22.	Shri Pawan Kumar Rai	Solid Waste Management in Steel Plants for Improved Environment.
23.	Shri Taposh Kumar Roy	Problems and Prospects of Marketing of Drug Manufactured by Small Scale Industries.
24.	Shri Goutam Sutradhar	Development of Forged Components using Sintered Preforms.
25.	Shri M. Adiraj	Synthesis and use of Methyl Phosphonate containing Oligonucleotides for the study of B - Z DNA Transition.
26.	Shri B. K. Mishra	Computer Aided Modelling of Solid State Photodetector.
27.	Shri Durgesh Pant	A complete study of Reconfigurable Computer Systems.
28.	Shri Prasant Kr. Mukherjee	Quadratic Sruds and Methods of Approximating them in Ancient and Medeval Mathematics.
29.	Ms. Sandhya Rani	Study of some Chemical aspects of stress induced Magnetic & Electromagnetic Effects in Transition Metals and Intermetallic Compounds.
30.	Shri Arun Kumar	Synthesis and Pharmacological Studies of Indan Analogs.
31.	Shri Rabindra Pd. Sharma	Modelling of the Combustion Process for a Fuel Efficient Four Stroke Spark Ignition Engine.
32.	Shri Arbind Kumar	Investigation on Metal Hydrides as carrier to run the future vehicle engine on Hydrogen.
33.	Shri T. R. Ranganath	Studies on Honey Comb Stabilised Saltless Solar Pond.
34.	Shri U. S. Prasad	Stress Induced Magnetic and E. M. Effects in Metals.
35.	Shri Girish Pathak	Tribological Investigations in Mechanical Processing.

36.	Shri B. N. Sinha	Phytochemical and Pharmacological. Studies on some Plants used in Indigenous System of Medicine.
37.	Shri N. K. Singh	Pharmacological Studies of Pseudopelletierine Analogs.
38.	Shri K. K. Verma	On the Design of some Computer Algorithms to solve Second order - ordinary Differential Equations.
39.	Ms. Deepa Kulkarni	Formulation and studies of Oral Sustained / Controlled release drug delivery systems using Polysaccharide Polymers.
40.	Shri 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.
41.	Ms Swastika Ganguly	Syntheses and study of newer Imidazole Analogs.
42.	Shri G. Jagadeesh	Study of Solar Pumped Lasers for Space Applications.

STUDENTS ACTIVITIES

Students' Activities of our Institute are traditionally organised through different students clubs and societies. Presently there are 17 recognised clubs and societies in this Institute. Each one is supervised by a senior Professor as its In-charge. The Cultural Co-ordinator controls over all student activities of various societies.

The students' body in each society under the guidance of respective Professor-In-charges, actively organised different literary and cultural programmes throughout the year. They helped the newly admitted students from the very day of counselling, in adjusting with the new environment.

This year the students' activity started with the Independence Day celebrations on 15th of August, 1996. The programme apart from disciplined parade by the N. C. C. cadets, was marked by patriotic songs by the Music club members. This was followed by drawing competitions organised by the Fine Arts Society.

SADBHAVANA DIWAS and inaugural of the National Intergration Week celebrations were observed on 20th of August, 1996 and the week followed with usual spirit and enthusiasm.

A number of activities were organised by the different clubs/societies from time to time. Some of these were :

POOJA COMMITTEE

This committee highlighted the religious and aesthetic part of life by organising "Saraswati Pooja" and "Vishwakarma Pooja" relevent to learning and Engineering education. The birth anniversary of Shri Guru Gobind Singhji was also celebrated. "Guru-Ka-Langer" was organised on this occasion. This festival is very popular amongst the campus residents and local people.

SPIC MACAY

This society for the promotion of Indian Classical Music and Culture amongst the youths maintained the tradition in organising programmes by artists of national fame and also by staff and students of this Institution.

NAPS

The News and Publications Society was prompt in bringing out Publications, containing the necessary informations to the newly admitted students. Apart from organising talks and quizes, they brought out a nice souvenir during BITOTSAV-96.

AVEC

The Audio Visual Educational Club did wonderful job by screening Scientific and Technical movies in addition to their usual routine pictures. They also organised one Exhibition of Musical Cassettes of 100 years of Indian Cinema. The club, for the first time, organised AVEC-Quiz which was quite a success.

DRAMATICS SOCIETY

The Artists always believed in innovations and the members wrote the scripts, directed the plays and also performed on stage a wide range from Bhojpuri to English dramas. This year in addition to "Nukkar Nataks" they organised the one act play competition "SPANDAN" and also staged six shows during BITOTSAV-96.

MUSIC CLUB

This club had been very popular amongst the student community. The students had put up scintillating performance on the occasion of Independence Day, Sadhbhawna Diwas and Institute's Annual Convocation. In the cultural extravaganza, "BITOTSAV", a grand "Music Nite" with rhythmic and thrilling music, was appreciated by one and all.

BHARTIYA SAHITYA PARISHAD

Being the guardians of maintaining and promoting Indian traditional Art and Culture among the youths, the BSP organised various literary and cultural activities. They organised several types of competitions on various occasions.

FINE ARTS SOCIETY

As the name indicates, this particular society had always been in limelight. This society, like earlier times, had been at the height of its success during this year. They organised painting competitions for the campus children of different age groups and senior members of the society conducted training programmes for junior members and others..

HIGH LANDERS ADVENTURE CLUB

Since inception of the club the students had been organising local Trekking on foot and bicycle in the nearby hills and forests. A trip to 'Mani Mahesh' in Himachal Pradesh (height : 14,500 ft.) was successfully completed.

BITIAN'S NATURE CLUB

This Institute being situated in a green environment, students feel happy to protect the 'Nature' around them. They also made a trip to Hazaribagh Sanctuary to have more thrill and adventure.

UNESCO CLUB

The club following the tradition organised Mock 'GD' for the '93 batch students and a debate on 'CTBT' as well. The students held a three day minifest, "COMMUNIQUE", a novel event of its kind.

PHOTOGRAPHIC SOCIETY

The society covers all major official sports and social events of the Institute. The society trains students in various aspects of photography and has started a studio also. The society also made video coverage of the BITOTSAV-97.

ENGG. SOCIETY

The activity of this session was started with guest lecture in the month of August '96. This was followed by Engineer's Day celebrations on 15th Sept., 1996. An industrial visit to TELCO, Jamshedpur was organised on 24th Sept., 1996. During BITOTSAV-97, they organised Technical Group Discussion and Technical writing competition.

In addition to above mentioned societies, Indian Association of College Going Scientists, Amateur Radio Society, Leo and Rotract Clubs of Birla Institute of Technology remained very active in organising events in their respective domains.

GAMES, SPORTS & N. C. C.

Games & Sports (Physical Education)

The activities of Games, Sports and Physical Training programmes are pursued with vigour and enthusiasm by the under-graduate and Post-graduate students. With the start of the Monsoon session, games and sports activity was initiated with renewed zeal and interest in the healthy spirit of participation and competition. The Gymnasium attracted a large number of keen fitness enthusiasts. The girls students also had a mandatory participation in P.T. and Games.

The following intramural tournaments were organised and very positive response was obtained. New records were established by participating Athletes and players in various tournaments and Sports Meet. The following events took place in 1996-97 :

1. Athletic Meet 2. Hockey Tournament 3. Cricket Tournament 4. Badminton Tournament 5. Volleyball match 6. Football match 7. Basketball match 8. Tennis match 9. T.T. and other Indoor Games' Tournaments.

North & East zone Inter University Tennis Tournament sponsored by Association of Indian Universities, New Delhi was organised and conducted very successfully.

One of the Regional Tournaments, Inter Technical Institutes Cricket Tournament which is hosted by the Institute in the memory of a late student - Chetan Devraj, concluded with participation of more number of teams than previous years.

The Physical Training programme for I and II Semester B.E., B. Ph., B. Arch. students is a part of curricular activity. The expansion and development plans of infrastructure for games and sports are in progress.

N. C. C.

A unit of 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 EME Section with a strength of 60 cadets. In order to encourage students' active participation, it was included in a regular curriculum with two unit weightage during the first 2 semesters of B.E. course.

The 3rd Bihar Comp. (Tech.) Coy of B.I.T. Mesra is under the command of a whole time Army Officer and 3 Associate NCC officers, who are Professors of the Institute. 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 as pects of training in the form of Engineering Projects duly supported by lectures and parctical classes (6 periods/week); the traning for Engineers corps mainly covers field work, field defence, Military Bridges, Roads and Aerodromes; Water Supply, Demolition etc. The Technical Training of EME Corps covers inspection and repairs of vehicles, Driving practice and maintenance. A cquaintance with different components of Automobiles, Mechanism and elementry principles of different class of army vehicles; and for the signal corps it covers wireless equipment operation, Line equipment, Line transmission theory, familiarity with morse code and handling of 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 moral, unity. discipline etc. The NCC has special arrangement for training for those cadtes who appear for 'B' and 'C' Certificate examination of NCC (Tech.). Impressive ceremonial parades are organised on Independence Day and Republic Day.

During the year 1996-97, total 17B cadets were enrolled in the NCC coy. of the Institute. Out of which 26 in the Engineers corps, 58 in the EME corps and 97 in the Signal Corps.

STUDENT WELFARE SCHEME

The Institute provides full freeship/half freeship in Tuition fee to the poor and needy students. The number of students availing this benefit during 1996-97 was 77.

The provision has also been made of a 50% waiver of Tuion fee for employees of the Institute persuing higher education.

Book Bank.: Books are given on loan to the deserving students through Book Bank Scheme.

THE STUDENTS' HALLS OF RESIDENCE

The Institute is completely residential and all the students are provided with a room in one of the Hostels or Halls of Residence. The campus has seven hostels for boys and two sperate hostels for girls.

All the hostels are spacious and beautifully laid out in the serene and pleasant campus. The front portion has well maintained lawns with flower beds,elegant bushes and strategically planted ornamental trees. The interior of the hostel includes spacious Dining Halls, Common Rooms, Reading Rooms, Recreation Halls, Photography Dark Rooms located on both the sides of the main entrance. The rooms are constructed in a row with a wide varandah all along the length with air gaps and balconies well set for common use.

The students are provided with a single-seated room furnished with steel cot, table and chair and a built-in almirah. The girl students avail a shared furnished room which is quite spacious and airy. Each room has a cup-board, wardrobe and a sizeable rack.

Indoor games like Table Tennis, Carrom and Chess etc. are available in each hostel in the common room. The Reading room subscribes to a large No. of Magazines, Periodicals and Newspapers covering wide taste of reading of residents. The Entertainment Hall has also been provided with Colour Television set in each hostel.

Inter-hostel tournaments in indoor and outer games, quizes, competitions and adventure trips are a ragular and very attractive feature of the hostel life.

The Hostel Night organised by the inmates is a memorable yearly event where students interact with the faculty members amidst cultural and music programmes, fun and frolic, in festive mood. The Halls are tastefully decorated to mark the occasion.

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.

TRAINING AND PLACEMENT

The Training and Placement division interacts with potential employing Organisations, the eligible students, Departments and faculty to try and best fulfil the aspirations of the students and the requirements of the organisations.

Apart from arranging Placement services, this division also encourages and tries to arrange industrial training for students during their vacations, at organisations spread over the country.

During the academic session, 1996-97, 36 premier organisations visited the Institute. Most of these companies have now intimated their final selections, offering 277 appointments to graduates from different disciplines.Some organisations are expected to finalise or increase their selections later, bringing the total number of appointments to about 300.

Further, biodatas/ profiles of willing students of various disciplines- M.Sc. Bio-Medical Instrumentation, M.Sc. Information Science, D.C.A have been despatched to potential employers. It is expected that applicants would be called for interviews by these companies.

During the year under report over 650 students received vacation training at various organisations during the Pooja and Summer vacations.

The summary and details of confirmed appointments offered to the outgoing students by the various organisations during the year under report is as follows :

DISCIPLINE / BRANCH		NO. OF JOBS
BE	MECHANICAL	68
	PRODUCTION	09
	ELECTRONICS & COMMUNICATION	61
	ELECTRICAL & ELECTRONICS	42
	COMPUTER SCIENCE	34
	CIVIL	02
MBA		05
MCA		32
ME	ELECTRONICS	08
	ELECTRICAL	06
	MECHANICAL	01
	CIVIL	01
	SER	01
MIS		02
B.PHARM		05
M. PHARM		—
	TOTAL NO. OF APPOINTMENTS	277

COMPOSITE CAMPUS PLACEMENT STATUS 1996-97

ORGANISATION	APPOINTMENTS
01. TATA CONSULTANCY SERVICES, CALCUTTA	79
02. WIPRO SYSTEM LTD. CALCUTTA	14
03. HCL HEWLETT PACKARD LTD., NOIDA / CALCUTTA	08
04. RAMCO SYSTEM, MADRAS	02

05.	ASIAN PAINTS, BOMBAY	03
06.	DUN & BRADSTREET SATYAM SOFTWARE, MADRAS	08
07.	SATYAM COMPUTERS, SECUNDERABAD	17
08.	HINDUSTAN MOTORS - EED, MADRAS	03
09.	TATA UNISYS, NEW DELHI	14
10.	CROMPTON GREAVES LTD., BOMBAY	06
11.	TATA ENGG. & LOCOMOTIVE CO. LTD., JAMSHEDPUR	07
12.	PCL - MINDWARE, CALCUTTA	06
13.	UBEST, CALCUTTA	04
14.	LARSEN& TOUBRO - ECC, CALCUTTA	18
15	LARSEN & TOUBRO, BOMBAY	05
16.	THE TATA IRON & STEEL CO. LTD., JAMSHEDPUR	23
17.	HINDUSTAN MOTORS, CALCUTTA	07
18.	USHA (INDIA) LTD., NEW DELHI	01
19.	ACC, BOMBAY	07
20.	TRF., JAMSHEDPUR	01
21.	INDORAMA, NAGPUR	02
22.	TATA TELECOM LTD., CALCUTTA	03
23.	ITC, CALCUTTA	02
24.	ASEA BROWN BOVERI LTD., BANGALORE	**
25.	HINDALCO INDUSTRIES LTD., RENUKOT	07
26.	ICIL-FUJITSU ICIM, PUNE	08
27.	CMC LIMITED, CALCUTTA	06
28.	X-TEC, CALCUTTA	04
29.	KOSHIKA TELECOM, NEW DELHI	02
30.	USHA MARTIN TELECOM, CALCUTTA	01
31.	ELI-LILLY RANBAXY, PATNA	03
32.	GRASIM CEMENT, RAIPUR	**
33.	LUPIN LABORATORIES, PATNA	02
34.	NATIONAL ENGG. INDUSTRIES, JAIPUR	04
35.	BHARAT REFRACTORIES LTD., BOKARO	**
36.	BHARAT PETROLEUM CORPN. LTD., BOMBAY	**
	TOTAL NO. OF APPOINTMENTS	277

** (final selections/ results of final interviews are awaited in the case of those organisations marked with **).

The other organisations which have planned to visit are :

01. APTECH, BHAGALPUR
02. ASIAN CABLES, BOMBAY
03. BHARAT HEAVY ELECTRICALS LTD., NEW DELHI
04. BATLIBOI, CALCUTTA
05. C-DOT, NEW DELHI
06. CEAT FINANCIAL SERVICES LTD., JAMSHEDPUR
07. CIPLA PHARMACEUTICALS LTD. CALCUTTA
08. COOKSON, CALCUTTA
09. ESSAR TELECOM, NEW DELHI
10. HCL- PICKER LTD., NEW DELHI
11. NETWORK PROGRAMS (INDIA) LTD., NOIDA
12. SATYAM ENTERPRISES, SECUNDERABAD
13. S G S THOMSON, NEW DELHI
14. STEX SOFTWARE, CALCUTTA
15. TATA LIBERT LTD., BOMBAY
16. TECHNA, CALCUTTA
17. UNICORN INDUSTRIES LTD., SECUNDERABAD

BOARD OF GOVERNORS

(As On 01-08-1997)

Chairman	:	Shri G. P. Birla
Vice-Chairman	:	Shri C. K. Birla
Members :		
Nominee of the Government of India, Ministry of Human Resource Development	:	Shri S. D. Awale
Nominee of the University Grants Commission	:	Prof. A. K. Ghosh
Nominee of the All India Council for Technical Education	:	Dr. C. P. Srivastava
Commissioner & Secretary Sc. & Tech., Govt. of Bihar (Ex-officio)	:	Shri A. K. Upadhyay
Commissioner & Secretary Education, Govt. of Bihar (Ex-officio)	:	Shri Chintu Nayak
Commissioner, Chhotanagpur Divn. (South), Bihar, Ranchi (Ex-officio)	:	Shri U. K. Sangma
Nominee of the Chancellor	:	Shri F. Ahmed
Nominee of the Hindustan Charity Trust	:	Shri C. K. Birla Shri Deepak Chatterjee Dr. H. C. Pande
Vice-Chancellor, BIT, Ranchi (Ex-officio)	:	Prof. A. K. Aggarwal
Member of Institute Faculty	:	Prof. S. H. Kekre Shri Harish Pathak
Member selected by the General Council	:	Shri D. N. Patodia Shri K. P. Singhi Shri G. P. Lal
Secretary : Registrar (Actg.)	:	Prof. G. Sahay

Annexure - II

TECHNICAL COUNCIL

(As On 01-08-1997)

Chairman : Vice-Chancellor, BIT, Ranchi (Ex-officio)	:	Prof. A. K. Aggarwal
Members :		
Nominee of the Chancellor	:	Shri G. P. Lal Nomination awaited Nomination awaited
Director of Technical Education, Govt. of Bihar (Ex-Officio)	:	Dr. Bharat Bhushan
Director of Higher Education, Government of Bihar (Ex-Officio)	:	Dr. Vidyasagar Yadav
Professors of the Institute	:	Dr. C. B. Mishra Prof. K. P. Sinha Dr. B. K. Razdan Dr. J. N. Mishra Dr. N. L. Munjal Dr. S. Kumar 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. G. Varshney Dr. P. K. Mahanti Dr. S. P. Basu Dr. J. Ram Prof. M. K. Saxena Prof. S. P. Bhatnagar

Professors of the Institute	:	Prof. B. P. Roy
		Dr. N. C. Mahanti
		Prof. A. P. Singh
		Dr. S. N. Mehrotra
		Dr. P. K. Barhai
		Prof. S. Sengupta
		Prof. K. R. Roy Chowdhary
		Prof. N. R. Rao
		Prof. B. M. Karan
		Prof. K.P. Singh
		Dr. B.L. Gupta
		Dr. D. Jairath
		Prof. R. K. Narayan
		Dr. Mohan Varma
		Dr. G. M. Panpalia
		Prof. K. V. Krishnamurthy
		Dr. D. Sasmal
		Dr. S. S. Dhabriya
		Prof. Ram Pal Singh
		Prof. N. Sengupta
		Prof. G. C. Singh
		Prof. R. S. Yadav
		Prof. B. K. Verma
		Dr. R. K. Popli
		Dr. B. N. Das
		Dr. S. C. Prasad
Persons appointed by the Chairman vide Clause 4 of the Regulations	:	Dr. (Mrs.) M. Mukherjee
Librarian	:	Dr. U. N. Singh
Controller of Examinations	:	Dr. P. C. Joshi
Secretary : Registrar (Actg.)	:	Prof. G. Sahay

Annexure - III

FINANCE COMMITTEE

(As on 01-08-97)

Chairman	:	Shri G. P. Birla
Members :		
Nomineee of the University Grants Commission	:	Shri P. Bhatia
Nominee of the Chancellor	:	Shri S. Vijayaraghawan
Nominee of the Board of Governors	:	Shri C. K. Birla
Nominee of the General Council	:	Dr. H. C. Pande
Vice-Chancellor, B.I.T., Ranchi	:	Prof. A. K. Aggarwal
Hony. Treasurer, B.I.T., Ranchi	:	Shri S. S. Jajodia
Secretary :		
Registrar (Actg.)	:	Prof. G. Sahay

BUILDING & WORKS COMMITTEE

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

EXECUTIVES AND DEPARTMENTAL HEADS/INCHARGES

(As on 01-08-97)

Vice-Chancellor	-	Prof. A. K. Aggarwal
Treasurer	-	Shri S. S. Jajodia
Registrar (Actg.)	-	Prof. G. Sahay

DEANS

Policy Planning & Faculty Development and Industrial Consultancy & Liaison	-	Dr. C. B. Mishra
Planning & Budgetary Control	-	Prof. K. P. Sinha
Post-Graduate Studies	-	Dr. B. K. Razdan
Under-Graduate Studies	-	Prof. S. H. Kekre
Administration	-	Dr. B. G. Varshney
Assistant Treasurer	-	Shri G. S. Chhaochharia

DEPARTMENTAL HEADS/INCHARGES

Architecture	-	Prof. N. Sengupta
Applied Chemistry	-	Dr. B. L. Gupta
Applied Mathematics	-	Dr. B. G. Varshney
Applied Mechanics	-	Prof. N. R. Rao
Applied Physics	-	Dr. J. Ram
Civil Engineering	-	Prof. B.S.Rajeevalochanam
Computer Science & Engineering	-	Dr. P. K. Mahanti
Electrical & Electronics Engg.	-	Dr. R. K. Shrivastava
Electronics & Comm. Engg.	-	Prof. S. C. Goel
Management	-	Prof. Awadh Prasad
Mechanical Engineering	-	Prof. A. P. Singh
Pharmaceutical Sciences	-	Prof. S. P. Bhatnagar
Polymer Engineering	-	Dr. (Mrs.) M. Mukherjee
Production Engineering	-	Dr. S. Kumar

DEPARTMENTAL HEADS/INCHARGES

Physical Education & Sports	-	Shri R. S. Yadav
Remote Sensing	-	Dr. S. S. Dhabriya
Space Engineering & Rocketry	-	Dr. N. L. Munjal
Controller Entrance Examination	-	Prof. S. P. Bhatnagar
Controller of Examinations	-	Dr. P. C. Joshi
Co-ordinator Semester Programme	-	Dr. D. Sasmal
Finance	-	Shri M. L. Verma
Library	-	Dr. U. N. Singh
Medical Officer	-	Dr. (Mrs.) C. Mishra
Nodal Centre	-	Prof. M. K. Saxena
Training & Placement	-	Dr. D. Jairath
Proctor	-	Prof. A. P. Singh
Chief Warden	-	Dr. B. N. Das
Cultural Co-ordinator	-	Dr. S. P. Basu

Annexure - V

Detailed Break up of Candidates Qualified for Award of Degree / Diploma / Certificate, from 1st October 1996 to 20th August 1997

Branch	Total
1. Under Graduates	
B.E. Civil	27
B.E. Computer Sc.	48
B.E. Electrical	63
B.E. Electronics	79
B.E. Mechanical	102
B.E. Production	27
B. Pharm.	23
B. Sc. (Architectural Sc.) Assistantship D.E.*	47
	416
2. Post Graduate	
Master of Business Administration	35
Master of Computer Applications	43
M.E. Civil	09
M.E. Electrical	12
M.E. Electronics	14
M.E. Mechanical	05
M.E. Space Engineering & Rocketry	03
M. Pharm.	10
M. Sc. B.M.I.	07
M.Sc. Information Sciences	09
Diploma in Computer Applications	52
Diploma in Engineering (Civil-1, Mechanical-1, Electrical-6, Electronics-1)	09
	208
3. Ph.D.	
Pharmaceutical Sciences	01
Grand Total :	**625**

* Distance Education / Off-Campus Programme.

Published by :

Prof. A. K. Aggarwal
Vice Chancellor
B. I. T. Mesra : 835 215, Ranchi.

Compiled and Edited by :

Dr. Mohan Varma
Professor,
Deptt. of Space Engg. & Rocketry

Word Processing and D. T. P. Work :

Shri Bimalendu Pathak
Assistant Programmer

Shri N. K. Sinha
Technician

Shri N. Kutty
Steno-typist