Proposal for
Modernization of State Engineering Colleges under XI Five Year Plan

Programme Duration

2007-2012

Proposed Starting Year
2008-09

Name of the Institute

GOVERNMENT COLLEGE OF ENGINEERING, AMRAVATI

EXECUTIVE SUMMARY

Government College of Engineering, Amravati, established in the year 1964, is one of the six engineering colleges in the state run by Govt. of Maharashtra. The institute started with undergraduate programs in basic disciplines i.e. Civil, Electrical and Mechanical Engg. Later on two more UG programs in Electronics and Telecommunication and Computer Science and Engineering were introduced in 1986. Subsequently Instrumentation Engg. and Information Technology are introduced in 1996 and 2001 respectively. The institute is affiliated to Sant Gadge Baba Amravati University, Amravati. Four full time M.Tech Programs in Electrical Power System (1996), Structural Engg. (2004), Thermal Engg. (2004) and Environmental Engg. (2006) were started. The present annual intake for UG is 390 and for PG 52. Out of these programs six UG and one PG program are accreditated by National Board of Accreditation, AICTE, New Delhi till the year 2011. The total strength of students during 2008-09 is 1896. The Institute has been a part of TEQIP as a networking institution and has successfully implemented the program in its true sprit. The major achievements in TEQIP include Campus Networking, separate Library Building with latest facilities, a strong power back up, Academic Excellence through autonomy, Language Laboratory, Excellent students performance in examinations and placement, and creating awareness of community and society amongst faculty and students.

Technology changes very rapidly and therefore, the facilities in every technical Institute become obsolete vary fast. Therefore, it is always necessary to support technical institutes regularly by providing assistance to develop infrastructure, physical facilities, library and faculty training.

Need of the program

The institution, though greatly benefited by TEQIP, is still striving hard to be amongst reputed institutions in the country. Due to incorporation of latest technology in curricula and because many of the equipments are quite old, modernization of few laboratories in every discipline is utmost necessary. Being oldest and reputed institution in the region the society expects to generate technical teachers from the institutes. Hence expanding and strengthening the PG education is essential. In order to create facility for e-learning the present campus wide networking of the institute is required to be strengthened / extended further to increase band width and speed. The National Knowledge Commission Report speaks much about the laboratory work and library facility. Therefore, both the areas are required to be addressed on urgent basis.

The present black board teaching is inadequate to visualize the technical systems in reality. Recent development in various field are available on multimedia technologies. Therefore it is essential to use modern teaching aids in classroom. National Knowledge Commission has also highlighted on the serious issue of faculty shortage. In order to fulfill this requirement to some extent the capacity of existing faculty and staff should be enhanced by appropriate training.

The present students' strength of the institute is 1900 which, as per AICTE norms require 21000 m^2 built up area for academic and instruction purposes. However, at present institute has about 12000 m^2 area for this purpose. Therefore institute has submitted the proposal of 3 new buildings and under consideration of state government. Due the basic requirement of building for academic purposes, other requirement like girls hostel and guest accommodation have become secondary. However, these are essential for every role model

technical education. The residential complex is need of hour and helps to motivate students and faculties to spend maximum time for education in the campus. National Knowledge Commission has strongly recommended to increase the quantity and quality of PG education. It is therefore proposed to have separate PG complex for conducting instructional activity for all PG courses.

Therefore, the institute proposes following five major areas to be developed under the scheme of modernization of state engineering colleges in XI plan.

1. Academic Infrastructure
2. Equipments & furniture
3. Library
4. Infrastructure for Accommodation
5. Development of Physical Facility

The requirements of funds for above different components are given below.

Component	**No of sub activities**	**Total requirement in Rs. crores**
Academic Infrastructure	Strengthening of Campus Wide Network	2.4294
	Up gradation of teaching methodology	0.59
Equipment / furniture	Modernization of the laboratories	19.18
	Strengthening and expanding PG education	0.3755
	Computational facility at Hostel	0.35
	Furniture	0.56
Library	Security System	0.20
	e-journals	0.72
Faculty	Faculty / staff training	0.9285
	Student competitions	0.06
	Industry academia interaction	0.132
Accommodation	Girls Accommodation	5.20
	Guest Accommodation	1.05
	Extension of Instrumentation	3.36
	Basic Science building	3.80
	Extension of Electrical	0.90
	Extension of Mechanical	1.59
	Class rooms for Electronics	1.39
	Computer Center	2.31
Physical Facilities	PG education complex	1.70
	Library Extension	1.50
Grand Total		48.3254

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1.0 Current Institutional Information:

1.1 Name of the Institution: Govt. College of Engineering, Amravati

1.2 Status of the Institute: An Autonomous Institute of Govt. of Maharashtra

1.3 Engineering Programs offered in 2008-09

S. No	Title of Program	Level [1]	Duration[2] (Years)	Year of starting	Sanctioned Annual Intake [3]	Total Student strength	Accreditation status
Undergraduate Courses							
1	Civil Engg.	UG	4	1964	60	297	2008-11
2	Mechanical Engg.	UG	4	1964	60	283	2008-11
3	Electrical Engg	UG	4	1964	60	283	2008-11
4	Electronics & Telecommunication	UG	4	1986	60	283	2008-11
5	Computer Science & Engg.	UG	4	1986	60	283	2008-11
6	Instrumentation	UG	4	1996	30	138	2008-11
7	Information Technology	UG	4	2001	60	288	NA
Postgraduate Courses							
8	Electrical Power Systems	PG	2	1996	13	14	2008-11
9	Thermal Engineering	PG	2	2004	13	07	NA
10	Structural Engineering	PG	2	2004	13	13	NA
11	Environmental Engg.	PG	2	2006	13	07	NA

A. Total strength of students in all courses and all years of study in 2008-2009 : 1896

B. Total women students in all courses and all years of study in 2008-2009 : 531

C. Total ST students in all courses and all years of study in 2008-2009 : 53

D. Total SC students in all courses and all years of study in 2008-2009 : 232

E. Total OBC students in all courses and all years of study in 2008-2009 : 697

F. Total SC/ST women in all courses and all years of study in 2008-09: 94

2.0 Background of the Institute:

The institute is one of the premier institutions in Vidarbha region, and oldest engineering college affiliated to Amravati University. The college has set up a great tradition and has produced eminent engineers who are competent and committed to the highest professional standards in the field of engineering and technology.

The Government College of Engineering, Amravati, established in the year 1964, was initially affiliated to Nagpur University. Later on the establishment of new University, the institute shifted its affiliation in 1983 to Sant Gadge Baba Amravati University. The institution is one of the six engineering colleges in the state run by Govt. of Maharashtra under the Directorate of Technical Education (DTE). The institute is currently offering 7 B. Tech. and 4 full time M. Tech. programs with an annual intake of 390 and 52 respectively. In order to accommodate more number of students, the institute has recently started 'tuition fee waiver scheme' and admitted 39 students more than its intake. Out of these programs 6 UG and one PG programme are accredited by National Board of Accreditation, AICTE, New Delhi till the year 2011. The institute has more than 40 years of standing and has produced as many as 8020 UG's, 175 PG's and 10 Ph.D's. The alumni of this institution occupy top positions in many Govt. organizations, private sectors besides successful entrepreneurs. The institute was a part of Canada India Industry Institute Linkage Project (CIIILP) implemented by Govt. of India during 2001-04. The Institute has also participated as a networking institution in Technical Education Quality Improvement Programme (TEQIP) of Govt. of India. The institution has young and dedicated faculty, who are enthusiastic to face the challenges of the technical education in the 21st century through its active and wholehearted participation in development of institution.

The institute is located on the out skirts of Amravati city with a spacious campus of 105 Acres and has reasonably good infrastructure (buildings, hostels, play ground, auditorium etc.) facilities. The Institute has separate laboratories and classrooms in all the departments with sufficient space. The building area for Academic & Administration is 19887sq.m. and for hostel accommodation 9093sq.m. The Institute has excellent library facilities which include Internet, Library Automation, Eklavya Channel, Book Bank (Set of 5-7 Books for 71% of Students), Digital Library (20 Nodes). The resources available in library are shared with the near by industries, PWD, Electricity Boards, Water works, Transportation and other institutions / organizations. Books and periodicals in electronic form are also available in the library. A collection of 68175 books (including book bank) is available for the users. The library has 70 National & international journals along with on-line journals for IEEE, Science Direct, ASCE, ASME etc. The library is a member of INDEST consortium, through which online national and international journals are available to the users.

The Institute has maintained its academic reputation since its establishment. To achieve the academic excellence, every possible step in maintaining overall discipline, are taken. Some of them are: 75% attendance compulsory and continuous performance evaluation of the students.

It is our strong belief that the extra-curricular and co-curricular activities are indispensable and are as important as academics. With this view in mind the institute provides all kinds of facilities, under different platforms to motivate and guide the students in a conducive atmosphere where the natural talent of the students is nurtured and flourishes.

Engineering education in Maharashtra had seen the major reforms when the private institutes came up in 1983. This institute shouldered the responsibility of establishment of the private engineering institutes. Central admission process and campus selections at the regional level are some of the important activities, which are being conducted by this institute.

The faculty members are encouraged to participate in Short Term Training Programmes and Quality Improvement Programmes. The faculty also actively participates in consultancy and testing services, thereby generating much needed revenue for the institute.

The institute has started implementation of autonomy since academic session 2005-06 and prepared entire new curricula for both, UG and PG courses. Alumni Association of institute has been registered on 1st March 2001. Institute involves the alumni directly or indirectly in its activities such as placement, curriculum revision etc.

The teaching learning scheme has been made interesting with the use of software packages (Matlab, Maple, Scilab, Visual Electromagnetic, MathCAD, Power World Simulator, Electronics Workbench, ORCAD, PSPICE, Virtual Professor etc.), Educational GUI's (150), Educational CD ROMs, CBTs, and presentations with LCD/ OHP etc.

The performance of the students is increasing remarkably in examinations, competitive examination like GATE, CAT, GRE etc and also in campus placement. The placement of 41%, 68%, 75%, 94% during last four years indicates tremendous improvement. The major companies that visit the campus include Cognizant, Wipro, IBM, Geometric Software Solutions, Infosys, TCS, Tech-Mahindra, Persistent Systems, Syntel, Satyam, L & T, Siemens, Reliance Energy, Tata Power, ESSAR, Mahindra & Mahindra group, Kirloskar Group of Companies, Hindustan Construction, Shapurji & Pallonji etc.

Achievements in TEQIP:

The institution has been inducted in Technical Education Improvement Program (TEQIP) by Govt. of India as a Networking Institution under World Bank Assistance Scheme. The institute has drawn maximum benefits in a very short span. The benefits include:

- The institute has become autonomous academically since the academic session 2006-07.
- All statutory bodies like Senate, BoS, Examination Committee, etc. have been formed and the entire curriculum has been revamped. Also APEC, Academic monitoring, student grievance committees are available.
- Campus wide Networking of entire institute for 750 nodes
- Establishment of language laboratory for development of general proficiency.
- Construction of building for Central Library in-housing the latest facilities
- Faculty Training through Ten short term training programs, One National conference, 10 faculty deputed for industrial training in the industries like Forbes Marshall, KGL

Systems, L & T, Crompton, etc. Total 219, 383, and 313 deputations of faculty during 2005-06, 2006-07, and 2007-08 respectively.

- 5 in-house training programs for faculty on contents from IIT faculty.
- 14 training program for staff. Total 324, 198, and 246 deputations of supporting staff during 2005-06, 2006-07, and 2007-08 respectively.
- Three National Technical Competitions for students during last three years, 7 training programs from reputed trainers like Asia Institute of Quality Management, Krish Engineers PUNE, EDAS Technology, Sun Microsystem etc. Last three years 28 expert lectures and five workshops have been arranged for the students.
- Community services program for technology transfer to society is made a part of curriculum.
- 24 program conducted by faculty for the community and society.
- Research publication during last three years (2004-05, 2005-06, 2006-07) has been 67, 77, and 85 respectively in journals / conferences.
- The institute has signed MoU's with NIIT @ CAMPUS for computer instructional programmes, with Cognizant technology Solutions, Wipro and L & T InfoTech for better relation; sponsoring special programs, student workshop, Guest lectures, subject experts, FDP, Awards to student / faculty, IIT Bombay for high quality education through C-DEEP, Remote centre at GCoEA Interactive Teaching & Virtual Classroom.
- Major laboratories developed are Heat transfer, CAD/CAM, Environmental Engineering, Geotechnical Engineering, Computer, Computer network, Embedded system, soft computing, EDC, DSP, Power electronics, Control system, Switch Gear & Protection, Process Instrumentation and Electronics Instrumentation
- Major equipments procured includes Digital Storage Oscilloscope, EHV AC transmission line simulation panel, Robot arm, Power supply multimeter function generator, Spectrophotometer, Embedded and real time system, CNC milling trainer, etc.

2.1 Vision, mission of Institue

The policies and practices of imparting quality education need to be revised, altered and made competitive not only to meet National standards but also to meet standards globally. So keeping this objective in mind the institute has arrived at the following Vision Statement.

To provide competent technical manpower to cater to the needs of the industry, R & D institutions for the overall upliftment of society
and
To become center of excellence in the country imparting quality technical education meeting Global Standards.

The mission statement of the institute is as follows

"To strive for excellence in academic and research programs to inculcate proficiency in students by adopting continually improving standards to the teaching-learning process"

2.2 Strengths and Weaknesses

The strengths and weaknesses of the institutes are identified in order to implement the XI plan effectively.

Strengths:

- A Premier Autonomous Engineering College of Govt. of Maharashtra
- Meritorious entrants to the degree programmes
- Excellent academic result & campus placement
- Disciplined students
- Average age of the faculty is 37 years.
- Dedicated faculty and supporting technical staff
- Illustrious alumni
- Adequate land at prime location

Weaknesses:

- Limited faculty at Higher Position.
- Limited residential facilities for teaching and supporting staff
- Transfer of staff
- Limited administrative powers at institute level
- Maintenance of building
- Limited Administrative/ Financial Powers at Institute level
- Rigid Government Procedures

2.3 Goals set by institute for next 5 years

The institute has prepared itself for implementation of the project. As a part of planning the institute has identified and set short term and long term goals as follows.

Long-range goals:

- To establish center of excellence in thrust areas of engineering programs
- Develop an environment which is conducive for R & D activities
- Enhanced Revenue Generation through better Industry-Institute Interaction
- To become financially self reliant

Short-range goals:

- To impart better education through continuing education program.
- Academic and sponsored research leading to Masters' and Doctoral degrees.
- To enhance industry institute interaction for mutual benefit.
- To develop audio-video rooms
- Improve in-house research
- To start 2 new PG programs and strengthen existing programs
- To improve testing facilities
- Acquire administrative and financial autonomy
- Increase intake in B. Tech. instrumentation from 30 to 60

3.0 Indicate key activities in order of priority to achieve your pragmatic future

Component	No of subactivites	Total requirement in Rs. crores	2009-10	2010-11	2011-12	2012-13
Academic Infrastructure	Strengthening of Campus Wide Network	2.4294	1.0	0.6	0.5	0.3294
	Up gradation of teaching methodology	0.59	0.3	0.29	-	-
Equipment/ furniture	Modernization of the laboratories	19.18	5.44	5.62	3.78	4.34
	Strengthening and expanding PG education	0.3755	-	-	0.2	0.1755
	Computational facility at Hostel	0.35	-	-	0.2	0.15
	furniture	0.56	0.24	0.13	0.12	.07
Library	e-journals	0.72	0.18	0.18	0.18	0.18
	Security System	0.20	-	-	0.2	-
Faculty	Faculty / staff training	0.9285	-	-	0.5	0.4285
	Student competitions	0.06	0.03	0.03	-	-
	Industry academia interaction	0.132	-	-	0.07	0.062
Accommodation	Girls Accommodation	5.20	3.55	1.65	-	-
	Guest Accommodation	1.05	0.75	0.30	-	-
	Extension of Instrumentation	3.36	1.50	1.50	0.36	-
	Basic Science building	3.80	1.60	1.60	0.60	-
	Extension of Electrical	0.90	0.45	0.45	-	-
	Extension of Mechanical	1.59	0.80	0.79	-	-
	Class rooms for Electronics	1.38	0.70	0.68	-	-
	Computer Center	2.31	1.10	1.10	0.11	-
Physical Facilities	PG education complex	1.70	-	-	0.8	0.9
	Library Extension	1.50	0.7	0.8	0	0
Grand Total		48.3154	18.34	15.32	7.62	6.6354

3.1 Activity wise Detailing

3.1.1 Academic Infrastructure

Looking toward present technical education trend, internet and intranet facilities are very essential from the point of view of students and faculty. Campus wide networking has been recently established with 750 internet nodes and band width of 2 MBPS leased line. Due to insufficient funds, most of the optical fiber cables, switches and servers were used from old network which are frequently succumbing due to non-compatibility. As per the changing need in information technology, facilities like MIS, e-journals, WEB-OPEC, server based software's, video courses, intranet etc. are very essential. To fulfill the requirement it is necessary to strengthen existing campus wide networking. As per the present requirement minimum 1200 internet nodes, band width of 10 MBPS, FTP servers, terminal servers, server for antivirus, mail servers, data base storage servers are required.

The teachers are required to encourage using audio visual aids including computer in classroom to increase communication between them and students. Therefore, few modern classrooms are planned to setup in each department. It is also proposed to provide video taped feed back to help faculty improved their teaching methodology.

Therefore, Institute proposes the strengthening of Campus Wide Network and Up-gradation of Teaching Methodology for providing competent educational environment.

3.1.1.1 Strengthening of Campus Wide Networking:

The present campus wide networking of the institute is required to be strengthen / extended further due to increase demand of band width , speed, e-learning software and different online processes. The equipments available in the existing network are given below,

Sr. No.	Description	Quantity
1	Cisco catalyst 4503	1
2	Cisco catalyst 4507R	1
3	Access Point AIR-AP1231G-A-K9	10
4	CiscoSwitch2950	3
5	Cisco ASA 5520 Series	1
6	Content Engine 500	1
7	CP-7920-AP-K-9	2
8	CVT-ADV-E1	2
9	Cisco 2800	1

10	Cisco IP Phone	2
11	CP-7912G-A	2
12	CP-7970G	2
13	AIR-ANT4941	
14	CP-PWR-CUBE-3	
15	AIR-BR1310G-A-K9-R	2
16	Cisco MCS 7800 Series IBM Server X series 206	1
17	AIR-ANT 24120	1
18	CiscoSwitch500 Series	11
20	HP Servers	6
21	LL Modem, WT card & V.35 cable1	1
22	Aeithra Video Conf Unit 2	2

The students are not able to get download facility for free software as well as expert lecture series available on NPTL websites. Once, the speed and bandwidth is enhanced, new equipments / devises shall be required to competitive enough to carry the speed. The existing software's are network based and hence required to be stored on central server. Considering these needs a comprehensive list of equipments is as given below,

Sr. No.	**Name of Equipment with brief Description**	**Unit Cost**	**Quantity**	**Aprox. Cost in lakh**
1.	Cisco 2950 Switches (48 port) with fiber ports	2.675	25	68.75
2.	Cisco layer 3 Cisco 4507 switch	15.0	1	15.0
3.	Uninterrupted power supply (UPS) 10KVA	2.5	2	5.0
4.	Leased line 10 MBPS	20.	1	20.0
5.	Cisco Access points for wireless connectivity	0.6	10	6.0

6.	Racks (6U)	0.25	15	3.75
7.	Patch Panels 48 ports	2.0	15	30.0
8.	IO Boxes	0.007	500	3.5
9.	Patch cords (3 meters and 1 meters)	0.005	1000	5.0
10.	Cat 5 and cat 6 Cable	0.065	10	0.65
11.	Fiber Modules, Fiber Cables, Fiber Patch cords	10.0	1	10.0
12.	Ftp server with integrated software	6.75	1	6.75
13.	Terminal server for all customize software's	2.75	1	2.75
14.	server for antivirus	2.75	1	2.75
15.	Corporate antivirus software	0.03	1000	30.0
16.	Web sense Security	0.02	1000	20.0
17.	Mail server	3.25	1	3.25
18.	Ram for existing servers (1 GB module)	0.09	6	0.54
19.	Laptops with wireless	0.5	2	1.0
20.	Cisco Ip Phones	0.55	15	8.25
			Total	242.94

3.1.1.2: Up gradation of teaching methodology:

The present black board teaching is insufficient to explain & visualize the concept in technical education. Recent development in various field are available on multimedia technologies. Therefore it is essential to use modern teaching aids in classroom. To encourage the use of these tools, infrastructure should be made available in each class room. The infrastructure required is listed below.

Sr. No.	Description	Quantity	Aprox. Cost in lakhs
1.	Interactive Board	10	7.0
2.	LCD Projector	10	5.5
3.	OHP	07	1.5
4.	Laptops	20	10.0
5.	Furniture for modified classroom	07	28.0
6.	Tapping	07	7.0
		Total	59.00

3.1.2 Equipment

3.1.2.1 Modernization of Laboratories

Undergraduate laboratories are perhaps the weakest chain in engineering education. The students feel it boring and not intellectually challenging. Laboratory teaching is a second rated job for the teachers. The laboratory training provide technical competence in usage of machine, experimental research skill, creativity and design skill, decision making skill, team work etc. The major problem with the laboratory equipment is that they fail to attract students and staff. The laboratory courses need to be revamp to include standard equipment and measuring technique. Moreover, the laboratories of departments are equipped with the equipments which are quite old. Due to rapid change in the technology, these equipments become outdated. To meet the challenges of the rapidly changing technologies it is extremely essential to give thrust upon the modernization of existing facilities in the laboratories.

The grants are available to the institute from MODROB / RPS / TAPTECH / DST schemes of the central government are insufficient to modernize the concerned laboratory upto required level.

The institute received academic autonomy in 2006. In view of rapid changing trend and development in the technology, new laboratory course are introduced in the autonomous curriculum. The National Knowledge Commission has emphasized on more laboratory work as compared to class room teaching. Therefore, Institute proposes the modernization of major laboratories.

The equipment to be procured for modernization of laboratory in various department are given below,

CIVIL ENGINEERING DEPARTMENT

COMPUTER LABORATORY
YEAR -2009-10

Sr. No.	Name of equipment	Brief specifications	Quantity required	Approximate total cost in Lakhs
1	Desktop computers	Desktop computers of latest configuration with 19" TFT monitors	10	4.00
2	Laptops	Note book Computers – Centrino 2, latest configuration	15	6.00
3	Laser Printers	Laser Printer A4 size	05	0.25
4	Colour laser Printers	Colour Laser Printers	02	0.25
5	Plotter	Ink jet Pltter A0 size	01	1.00
6	Scanner	Scanner A4 size	15	0.75
7	D.L.P. Projector	D.L.P. Projector with ceiling mounting kit and remote control Projection screen	03	1.50
8	Windows Vista	Windows Vista operating system for Desktop Computers	20	2.00
9	Norton Antivirus/Quick Heal software	Norton antivirus/ Quick Heal software (single user)	20	0.25
10	3ds Max Software	Autodesk 3dsMax 2009 software educational version 10 user	1	3.0
11	Architectural Desktop software	Autodesk Architectural Desktop 2008 software educational version 10 user	1	2.0
12	M.S. office software	M.S. office Xp software, Professional edition Single user	20	4.00
13	Primavera Software	Primavera Contractor deluxe (5 user)	1	3.50
			total	**28.5**

YEAR -2010-11

Sr. No.	Name of equipment	Brief specifications	Quantity required	Approximate total cost in Lakhs
14	Surfer Software	Surfer 8 software suite (5 user)	1	2.00
15	Ansys 8 software	Ansys 8 software (5 user)	1	8.00
16	Over Head Projector	Over Head Projectors Compact size, light weight	08	2.00
17	Desktop computers	Desktop computers of latest configuration with 19" TFT monitors	05	2.00
18	Laser Printers	Laser printer, High speed Heavy duty	01	3.00
19	Colour laser Printers	Colour Laser Printers	01	0.10
			total	**17.1**

COMPUTER LABORATORY
YEAR OF 2011-12

Sr. No.	Name of equipment	Brief specifications	Quantity required	Approximate total cost in Lakhs
20	Split Air conditioner	Split Air conditioner Capacity – 1.5 tonne Digital display on indoor unit and infrared cordless remote control with LCD display	2	0.50
			Total	**0.50**

COMPUTER LABORATORY
YEAR - 2012-13

Sr. No.	Name of equipment	Brief specifications	Quantity required	Approx.total cost in Lakhs
21	Desktop computers	Desktop computers of latest configuration with 19" TFT monitors	05	2.00
22	U.P.S.	U.P.S. 5 KVA with dry sealed maintenance free batteries	01	4.00
			Total	**6.0**

FLUID MECHANIC LAB.
YEAR - 2009-10

Sr. No.	Name of equipment	Brief specifications	Quantity required	Approximate total cost in lakhs
1	Orifice apparatus	Close circuit laboratory experimental set up for determining hydraulic coefficients of orifice along with measuring tank (recirculating type)	01	0.50
2	Mouthpiece apparatus	Close circuit laboratory experimental set up for determining hydraulic coefficients of mouth piece along measuring tank (recirculating type)	01	0.50
3	Flow over notches apparatus	Close circuit laboratory experimental set up consisting of tilting flume alongwith arrangement for fitting notches, along with point gauge and measuring tank (recirculating type)	01	0.50
3	Tilting Flume	Close circuit laboratory experimental set up consisting of tilting flume alongwith arrangement for fitting broad crested weir, spillway along with point gauge and measuring tank (recirculating type)	01	0.75
4	Friction factor apparatus	Close circuit laboratory experimental set up for determining friction factors of pipes along with manometer and measuring tank (recirculating type)	01	0.50
			Total	**2.75**

FLUID MECHANIC LAB.
YEAR - 2010-11

Sr. No.	Name of equipment	Brief specifications	Quantity required	Approximate total cost in Lakhs
5	Francis turbine test rig	Close circuit laboratory experimental set up for study of Francis Turbine along with manometer, digital tachometer and measuring tank (recirculating type)	01	1.00
6	Pelton wheel test rig	Close circuit laboratory experimental set up for study of Pelton wheel along with manometer, digital tachometer and measuring tank (recirculating type)	01	1.00
7	Reciprocating pump test rig	Close circuit laboratory experimental set up for study of reciprocating pump along with pressure gauges and measuring tank (recirculating type)	01	0.75
			Total	**2.75**

FLUID MECHANIC LAB.
YEAR - 2012-13

Sr. No.	Name of equipment	Brief specifications	Quantity required	Approximate total cost in Lakhs
8	Centrifugal pump test rig	Close circuit laboratory experimental set up for study of Centrifugal pump along with pressure gauges, discharge measuring arrangement, manometer (recirculating type)	01	0.75
9	Bernoullis Theorem apparatus	Close circuit laboratory experimental set up for verification of Bernoullis Theorem along with discharge measuring tank (recirculating type)	01	0.50
10	Reynolds apparatus	Close circuit laboratory experimental set up for conducting Reynolds experiment along with discharge measuring tank (recirculating type)	01	0.50
11	Metacentric height apparatus	Metacentric height apparatus	01	0.20
12	Current meter	Cable suspended mini current meter, digital output	01	0.20
			Total	**2.15**

SURVEYING LAB.
YEAR - 2009-10

Sr. No.	Name of equipment	Brief specifications	Quantity required	Approximate total cost in lakhs
1.	Bus	Traveling Luxury Bus, 50 seater	01	40.00
2	GPS System	GPS receiver with handheld controller and software	01	15.00
3	GPS Receiver	Hand held GPS receiver with software	01	0.30
			Total	**55.3**

SURVEYING LAB.
YEAR - 2010-11

Sr. No.	Name of equipment	Brief specifications	Quantity required	Approximate total cost in lakhs
4	Total station	Reflector less Total Station having 1" least count and 2" accuracy, 30X magnification, Dual axis compensator, in-built laser plummet, Built in LCD Graphic display, Two nos. of display units, Alphanumeric character keyboard, Along with one Single range pole prism, range pole, range pole level and range pole tripod, Tubular compass, Aluminum telescopic tripod, Data transfer cable, Window based Data downloading software,	01	5.00
5	Digital level	Digital Level – Telescope magnification 30x , along with, Internal battery, Quick charger, Carrying case, Aluminum telescopic tripod, Data downloading cable with level book software, 5 m aluminum staff with bar code	01	1.50
6	Electronic Theodolite	Electronic Theodolite	01	1.50
			Total	**8.0**

SURVEYING LAB.
YEAR - 2011-12

Sr. No.	Name of equipment	Brief specifications	Quantity required	Approximate total cost IN Lakhs
7	Auto level	Auto level: Magnification 20 x, Image erect, Magnetic damping system compensator, provided with double sided endless horizontal fine motion screw, along with aluminium telescopic tripod & carrying case	05	1.75

8	Theodolites	Transit theodolite: Magnification 20 x, Image erect, optical plummet, along with aluminium telescopic tripod, plumb bob, tabular compass	05	1.25
			Total	**3.0**

SURVEYING LAB.
YEAR - 2012-13

Sr. No.	Name of equipment	Brief specifications	Quantity required	Approximate total cost
9	Total station	Reflector less Total Station having 1" least count and 2" accuracy, 30X magnification, Dual axis compensator, in-built laser plummet, Built in LCD Graphic display, Two nos. of display units, Alphanumeric character keyboard, Along with one Single range pole prism, range pole, range pole level and range pole tripod, Tubular compass, Aluminum telescopic tripod, Data transfer cable, Window based Data downloading software,	01	5.00
10	Digital level	Digital Level – Telescope magnification 30x , along with, Internal battery, Quick charger, Carrying case, Aluminum telescopic tripod, Data downloading cable with level book software, 5 m aluminum staff with bar code	01	1.50
11	GPS Receiver	Hand held GPS receiver with software	01	0.30
			Total	**6.8**

TRANSPORTATION ENGINEERING LABORATORY
YEAR - 2009-10

Sr. No.	Name of equipment	Brief specifications	Quantity required	Approximate total cost
1	Digital Compression Testing Machine	Digital compression Testing Machine 1000 KN	01	2.50
2	Flash point apparatus	Flash point and fire point apparatus (closed)	01	0.25
3	Tar Viscometer	Standard Tar Viscometer, electrically heated, with cup	01	0.10
4	Marshall Apparatus	Marshall Stability test apparatus with digital display, single spped, Bench top load frame 50 KN, geared screw jack and motor drive, front panel control for platch movement, load transducers, limit switch protection	01	2.00
5	Ductility Testing Machine	Ductility Testing Machine, electrically operated, stepper motor, digital along with ductility mould	01	1.25
			Total	**6.1**

TRANSPORTATION ENGINEERING LABORATORY
YEAR - 2011-12

Sr. No.	Name of equipment	Brief specifications	Quantity required	Approximate total cost
6	Los Angeles Abrasion Testing Machine	Los Angeles Abrasion Testing Machine with abrasive charges (12 no. steel balls of 48 mm dia.) along with digital counter	01	1.00
7	NCAT Asphalt Content Tester	NCAT Asphalt Content Tester, complies with AASHTO and ASTM Standards	01	2.00
			Total	**3.0**

GEOTECHNICAL ENGINEERING LABORATORY
YEAR - 2009-10

Sr. No.	Name with Specification of Equipments	Qty.	Approx. Expenditure in Lakhs Rs.
1	Computerized Triaxial Testing machine	1	7.0
2	GEOCAL software	1	0.7
3	24 channel data logger & Computer Card with Software for recording data	1	6.0
4	Computerized multi stand consolidated test set up	1	3.5
		Total	**17.2**

GEOTECHNICAL ENGINEERING LABORATORY
YEAR - 2010-11

Sr. No.	Name with Specification of Equipments	Qty.	Approx. Expenditure in Lakhs Rs.
5	Truck mounted Rock core drilling machine with SPT test facility	1	15.0
6	PLAXIS software for FEM analysis of Earth Structure (5 User)	1	7.0
		Total	**22.0**

GEOTECHNICAL ENGINEERING ABORATORY
YEAR - 2011-12

Sr. No.	Name with Specification of Equipments	Qty.	Approx. Expenditure in Lakhs Rs.
7	Universal Testing System For Geotextile, 100 KN Digital	1	5.0
8	Drop Test (Cone Puncture Test Apparatus for Geotextiles	1	0.4
9	Cross Permeability Test Apparatus for Geotextiles	1	0.25
10	Dry Sieve Test Apparatus for Geotextiles	1	0.2

11	Gradient Ratio Test Apparatus for Geotextiles	1	0.4
12	In-Plane Permeability Test Apparatus for Geotextiles	1	0.25
13	Thickness Gauge for Geotextiles	1	0.25
14	Long Term Flow test Appratus	1	0.4
15	Hydradynamic Dieve test Appratus for Geotextiles	1	0.5
		Total	**7.65**

ENVIRONMENTAL ENGINEERING LABORATORY
YEAR - 2009-10

Sr. No.	Name of Equipment	Brief Specification	Qty. Required	Approximate Cost
1	Gas Chromatograph	With 24 bit Microcontroller ¼" VGA Touch Screen ,Good Colours, with external system control	1 No.	8.50
2	Automatic Absorption Spectrophotometer	Automatic Absorption Spectrophotometer Along with Compaq Presario Pentium IV PC, HP Laser Jet Printer Model 1022 APC 500 VA UPS etc.	1 NO.	5.00
			Total	**13.5**

ENVIRONMENTAL ENGINEERING LABORATORY
YEAR - 2010-11

Sr. No.	Name of Equipment	Brief Specification	Qty. Required	Approximate Cost
3	High Performance Liquid Chromatograph	High Performance Liquid Chromatograph	1 No.	14.00
4	Peristaltic Pump Vertical Flow Type	Peristaltic pump with Microprocessor based controls, for flow range of 2 ml/hour to 3 liters/hour, $\pm$ 1% accuracy, 1400 steps, provided with following features Four-digit bright LED display of flow rate and time parameters, Built in Timer -Programmable from 1 minute to 24 hours, Auto stop function with audible alarm, battery back-up to store memory	1 No.	1.20
			Total	**15.2**

ENVIRONMENTAL ENGINEERING LABORATORY
YEAR - 2011-12

Sr. No.	Name of Equipment	Brief Specification	Qty. Required	Approximate Cost
5	Weather Monitoring Station	Which gives complete meteorological data bout weather including Wind Speed/Direction ,Air Temperature, RH, Solar Radiation, Rainfall and Pressure etc.	1 No.	2.50
6	KANAL++ Software	KANAL++ Software 5 user	1 No.	3.00
			Total	**5.5**

1. CIVIL ENGINEERING DEPARTMENT -GEOLOGY LABORATORY
YEAR OF PURCHASE - 2009-10

Sr. No	Name of equipment	Brief Specification	quantity required	Approx. Total cost	Year of purchase
1	Petrological Microscope	Dcm company, Bharat company,kalkatta	01	0.20	2009-10
2	Lamp with magnifying Lense	Dcm company, Bharat company, kalkatta	05	0.10	2009-10
3	Stereo pairs	Pair of aerial photographs of same area but differs in angle of photography by 30-60□. NRSA Hyderabad, Bharat company dehradun	10 **Total**	0.20 **0.50**	2009-10

FURNITURE

Sr.No.	Name of the Furniture/Specification	Quantity	Approx. cost in Rs. For each	Total Approx. cost in Rs.	Year of purchase
1	Tables for Teaching Staff Members	15	4000/-	60,000/-	2009-10
2	Chairs for Teaching Staff Members	15	2000/-	30,000/-	2009-10
3	Executive Chairs for HOD's Cabin	10	3000/-	30,000/-	2009-10
4	Revolving Chairs	05	2000/-	10,000/-	2009-10
5	Computer Tables	10	3000/-	30,000/-	2009-10
6	Class Rooms Chairs for Teaching Staff	06	1500/-	9000/-	2009-10
7	Canning Chairs for laboratory	05	1000/-	5000/-	2009-10
8	Cupboard Steel Big Size	06	10,000/-	60,000/-	2009-10
9	Cupboard Steel Small Size	06	5,000/-	30,000/-	2009-10
10	Plastic Stools for laboratory	30	200/-	6,000/-	2009-10
		Total Rs.		**2,70,000/-**	

APPLIED MECHANICS DEPARTMENT

CONCRETE LABORATORY:-

Year 2008-09			
Sr. No	Name of Equipment with Brief Specifications	Quantity Required	Unit Price (Rs. In Lakh)
1	Air Entrainment Apparatus Capacity 0.1 cu.m(100 Lit) as per IS 9799	01	0.8
2	Volume Change Apparatus as per IS 9459	01	0.5
3	Crack Measuring Apparatus	01	1.5
4	Creep Measuring Device	01	2.0
5	Bond Tester	01	3.5
6	Flexural Strength Apparatus 100 KN Electrically operated 3 point loads IS 516	01	0.8
7	Moisture Meter	01	1.5
8	Temperature and Humidity Controlled Curing Tank with accelerated curing and cooling system for 36 moulds of 150 mm sizes	01	2.75
9	Sony's Handicam for video recording	1	0.35
10	Digital Camera (10 Megapixle)	1	0.2
		Total	Rs. 13.9 Lakhs
Year 2009-10			
1	Compression and tension Proving Ring: 50 T & 100 T capacity	01	1.2
2	TORRENT Permeability Tester for Concrete along with resistance probe & vacuum pump	01	12.00
3	Flow Table electrically operated 100 rpm for mortar as per IS 5512	01	0.25
4	Jaw Crusher for aggregate, minerals etc.: Lab. Type with standard motor	01	0.5
5	Pulvariser	01	0.5
6	Concrete Flow Table : As per IS:1119-1959:76.2 cm dia. Plate with steel top	01	0.55
7	Vibrating Table: 100 x 100 cm with standard motor	01	0.4
		Total	Rs. 15.4 Lakhs
Year 2010-11			
8	Concrete Test Hammer NR type: Measuring range 10 to 70 N/mm^2 compression, Standard rebound values are recorded as a bar chart on paper strip.	01	1.75
9	Accessories of Path Finder for instant corrosion check- single wheeled, four wheeled , eight wheeled electrode	01	8.0

10	CAPO TEST (on site pullout system to measure compressive strength of existing structures) along with accessories	01	10.00
11	Resistivity Meter RESI (for measurement of corrosion status of reinforcement , proceq / RESI)	01	5.5
		Total	Rs. 25.25 Lakhs
Year 2011-12			
12	Concrete Maturity Meter (COMA-Meter) Germann, Denmark Catalog No. CS-100 For measuring maturity of concrete	01	0.15
13	LOK-TEST, a pullout system which accurately measures the early age strength of structures)along with accessories	01	8.0
14	DYNA Extraction Tester for measuring the extraction force on anchor bolts & dowels along with accessories	01	8.0
15	ERUDITE MK 4(Resonant Frequency Tester) to measure longitudinal resonant frequency testing along with accessories	01	10.00
16	German's Gas permeation Test for on site evaluation of CO2 permeability of cover layer of new or existing structures along with accessories	01	4.0
17	Loading Frame with loading cells (100 Tonne Capacity) strain gauge	01	15.00
18	Mobile Van/ Maruti Omni for field visits/ consultancy testing	1	3.5 Lakhs
		Total	Rs. 48.65 Lakhs
		Grand Total	**Rs. 103.10 Lakhs**

STRENGTH OF MATERIALS LABORATORY:-

Year 2008-09			
Sr. No.	Name of Equipments	Quantity Required	Approx. Cost
1	Buckling of column apparatus	1	10000.00/-
2	Rockwell hardness testing machine	1	50000.00/-
		Total	60000.00/-
Year 2009-10			
1	Torsion testing Machine	1	175000.00/-
		Total	175000.00/-
Year 2010-11			
1	Fatigue Testing Machine	1	250000.00/-
		Total	250000.00/-
		Grand Total	***485000.00/-***

ENGINEERING MECHANICS LABORATORY:-

Year 2008-09				
Sr. No.	*Name of Equipments*	**Quantity Required**	Unit Price	Total Cost
1	Pulleys for coil Friction	6	100	600.00/-
2	Pulleys for law of polygon of forces	8	100.00	800.00/-
3	Jib crane apparatus	2	10000.00/-	20000.00/-
			Grand Total	**21400.00/-**

FOR STRUCTURES LABORATORY:-

S.No.	Name of Equipment/Facilities to be procured	Make and Model of the Equipment	Total Cost (in lakhs)
	Year 2008-09		
1.	Bending Moments in a Beam	RCG,RCG Instruments TQ Ltd,U.K.	.943
2	Shear Force in a Beam	-Ditto-	1.007
			1.95
	Year 2009-10		
3.	Bending Stress in a beam	-Ditto-	2.51
4.	Torsion of a circular sections	-Ditto-	1.75
	Year 2010-11		
5.	Three Pinned Arch	-Ditto-	1.55
6.	Two Pinned Arch	-Ditto-	1.27
		Total	2.82
	Year 2011-12		
7.	Fixed Arch	-Ditto-	2.08
8.	Curved Bars & Davits		1.10
		Total	3.18
		Grand Total	**12.21 Lakhs**

STRUCTURAL DYNAMICS LABORATORY:-

Year 2008-09				
Sr. No.	Name of Equipments	**Quantity Required**	Unit Price	Total Cost
Year 2009-10				
1	Accelerometers (Current type) with 4 channel data logging system	**1**	15,00,000	15,00,000
2	Exciter (Electrodynamics) and shake table	**1**	50,00,000/-	50,00,000/-
			Total	6500000.00/-
Year 2010-11				
1	Accelerometers (Voltage type)	1	25000	25000.00/-
3	Charge amplifier	1	100000	100000
5.	Dynamic actuator with servo valve 1000 kN , 250 mm stroke	1	20,00,000	20,00,000
6	Computer system with data logging card , software , printer and scanner	1	120000	120000
7	Data Acquisition system 8 channels (expandable to 56 channels)	1	20,00,000	20,00,000
8	Air conditioner	02	15000.00/-	30000/-
9	Strain gauges	50	300	15000/-
10	Loading jack with motorized pumping unit with travel of 150 mm 250 kN capacity 500 kN capacity 1000 kN capacity	 2 2 2	 20000 20000 30000	 40000.00/- 40000.00/- 60000.00/-
11	Load cells with indicator of accuracy up to two decimal points with analogue output to connect computer 250 kN capacity 500 kN capacity 1000 kN capacity	 2 2 2	 20000 20000 30000	 40000.00/- 40000.00/-

		2		60000.00/-
12	Dynamic rated load cells 250 kN capacity	1	4,00,000	4,00,000
13	Strong floor with holes pipe cased at every 500mm to carry 1000 kN load each 1 meter dip and 5 m x 5m	1	120000	120000
14	Loading frame 5000 kN capacity	1	10,00,000/-	10,00,000/-
15	LCD	1	1,00,000	1,00,000
			Total	6190000.00/-
Year 2011-12				
16	UTM digitally controlled with facilty of fatigue testing	1	50,00,000	50,00,000
			Total	5000000.00/-
			Grand Total	**17690000.00/-**

COMPUTER LABORATORY:-

S.N.	Name of Equipment/Facilities to be procured	Make and Model of the Equipment	Qty.	Total Cost (in Lakhs of Rs.)
Year-2009-10				
01	Project Server	HP ProLiant DL380 G4 Intel® Xeon™ Processor 3.0GHz/800 MHz, 2MB L2 Cache) 2GB PC2-3200R DDR2 ECC memory Hot Plug Redundant Power Supplies	01	2.5
Year-2010-11				
02	Plotter	HP Plotter A0 size Multicolor fully automatic , High resolution	01	1.8
03	UPS 600 volt	With 1 hours backup and maintenance free batteries	06	0.18
		Total		**1.98**
Year-2011-12				
04	Laptop	High end ; P5 ; Blue tooth enabled	06	1.8
Year-2012-13				
05	FORTRAN	Intel Visual Fortran version 9.0 Standard Edition 5 Users Desktop License	01	1.15
06	AC	Split Air Conditioners 2T Capacity Normal cooling capacity – 18,000 BTU/hr,Air flow volume – 800 m^3 /hr (Indoor	02	0.50
		Total		**1.65**
		Grand Total		**7.93**

MECHANICAL ENGINEERING DEPARTMENT

Year 2009 – 10

SN	Name of Equipment	Specification	No. of Units	Total Cost Rs.	Name of Laboratory.
1.	ANSYS CFX (11.0) Academic Teaching Introductory	ANSYS CFX Version 11.0, (32,000 nodes) 5- licenses Perpetual	01	225000	Heat Transfer
2.	Cut section models for Flow Transducers:	Cut section models for Flow Transducers: Industrial grade realistic machined sensor cut section models of Orifice, Venturi, Pitot tube flow sensors with necessary fittings and accessories. MS fabricated powder painted inclined mounting frame. Cut section edges are highlighted by red paint. Flow sensor: Size - 1"BSP (F) screw end connections, ¼" BSP (F) differential pressure port connections.	01	20000	Mechanical Measurement
3.	Cut section models for Pressure Transducers:	Cut section models for Pressure Transducers: Industrial grade realistic sensor cut section models of Diaphragm, Bellows, Bourdon tube pressure gauges. Working models of Bourdon tube & bellow with necessary air fittings and accessories. MS fabricated powder painted inclined mounting frame. Cut section edges are highlighted by red paint Pressure sensor: panel mount, bottom connection, 4" dial size, cut dial.	01	30000	
4.	Centrifugal pump Test rig (data acquisition type)	3 hp motor .storage tank flow measurement control device and data acquisition system with analysis	01	200000	Fluid Mechanics And Fluid Machine
5.	Notch apparatus (recirculating type)	1 hp motor , notches of all types, storage tank	01	70000	
6.	Orifice and mouth apparatus (recirculating type)	1 hp motor , mouth pieces of all types, storage tank	01	80000	
7.	MANUAL COORDINATE MEASURING MACHINE	Operation manual Structure moving bridge Guide method air bearing Measuring range X=500mm, Y=500mm, Z=400mm Accuracy single axis MPEE1=(3.0+L/250)µm (L is the	01	273000	Metrology and Industrial Inspection

		overall measuring length, unit: mm) space MPEE=(3.5+L/250)μm (L is the overall measuring length, unit: mm) Digital measuring system RENISHAW linear measuring system Probing system RENISHAW probe system Resolution 0.5μm Max. measuring speed 300mm/s Workpiece loading 200kg Power supply AC 220V 50HZ(standard) AC 110V 60HZ(option) Air supply 0.4 - 0.5Mpa Air consumption 120L/min(0.4Mpa) Working circumstance temperature: (20±2)□ humidity: 55% ~ 65% Dimension 1000×1100×2200mm Weight 700kg			
8.		Display 4 digits, 10 mm LCD, with blue backlight Parameters Ra, Rz, Rq, Rt Measuring range Ra, Rq 0.005-16.00μm Rz, Rt 0.020-160.0μm Accuracy ≤±10% Repeatability ≤6% Sensor test principle inductance type radius of probe pin 5μm material of probe pin Diamond measuring force of probe 4mN(0.4gf) probe angle 90° vertical radius of guiding head 48mm Maximum stroke 17.5mm Sampling length 0.25mm / 0.8mm / 2.5mm Evaluation length Ln=5L Speed sampling length = 0.25mm Vt=0.135mm/s	01	270000	
9.	Parkinson Gear Tester	With all accessories	01	300000	
10.	Mechanical Comparator	With all accessories	01	300000	
11.	Software AMESIM Package	10 User Version	01	550000	IC Engine
12.	1 iBOT proV 2.1 8051	iBOARD (8051 series μc board), 12 number sensor modules, mechanical items, power source and a proprietary	15	362000	CAD/ CAM

	Microcontroller based programmable robot	software triC			
13.	iRAT Ver 1.1 AVR based micromouse platform	The iRAT Ver 1.1 comprises of an AVR series microcontroller board, customized sensors for the micromouse problem statement, mechanical items, power source and triSIM a proprietary software on simulation	03	60000	
14.	iARM Ver 1.1 Didactic Robotic Arm	The iARM Ver 1.1 comprises of a 5 degree of freedom robotics arm, embedded processor with built in firmware, and GUI proprietary software.	03	160000	
15.	vizBOT proV 1.1 (pair) vision based robotic platform	ATMega 32 RISC microcontroller • 2 Stepper motor driver with current chopping • LCD interface • In system programmable • Rechargeable AAA battery pack • Sensors • Top Down Digital sensors • Analog side wall sensors	2	12000	
16.	MECHATRONICS Controller (Servo Motion Controller with I/O's)	• 4 Axis Servo Motion Controller for DC Servo motors with encoder feedback capable of expansion upto 12 axis	01	750000	Mechatronics
		MECHATRONICS Software drivers	01		
		Programmable Logic Controller with Ladder Diagram software	01		
		DC Servo motors with Optical Incremental Encoders	02		
		Non-Servo AC motor (synchronous)	02		
		PWM 4 quadrant Servo motor drives	03		
		Power supply for drive	01		
		Pneumatic Double Acting Cylinder	01		
		5/2 Sol – Sol Valve	01		
		Pneumatic Single Acting Cylinder	01		
		5/2 Sol-Spring Valve	01		
		Filter Unit	01		
		Pneumatic Tube	5 Mts.		
		Flow Control Valve	03		
		Inductive proximity sensors	05		
		Capacitive Proximity Sensors	04		
		Required Cables	01 set		
17.	SIMULATION SOFTWARES	PSimulator (Pneumatic and Electro Pneumatic Simulation Software with User Manual & Activity Book)	10 Lab License	200000	
		HSimulator (Hydraulic and Electro Hydraulic Simulation Software with			

		User Manual & Activity Book)			
18.	Vibration Meter	Measuring vibration velocity, Displacement and acceleration. » Small size, transducer included, battery powered, no other component required. » 3 1/2 LCD digital display, sampling per second. » One button control both power and measurement. Very easy for use. » Optional for inner or external Accelerometer. » Automatic power off. » Holding function. » Suitable for monitoring machinery vibration caused by out-of-balance, misalignment, gear damage, bearing faults and etc	01	120000	Theory Of Machine
19.	Mass balancing equipment	Revolving mass balancing equipment to demonstrate static and dynamic balancing	01	60000	
20.	Whirling Shaft	With all accessories	01	75000	
21.	GT- Suite consisting of sub packages as mentioned	GT-POWER Engine simulation for performance and acoustics analysis, with full control capabilities GT-DRIVE Vehicle performance and cycle analysis for fuel economy and emissions, and driveline component dynamics GT-VTRAIN Valvetrain kinematics, dynamics and tribology; camshaft vibrations, cam design GT-FUEL Injection system pressure and flow dynamics, hydraulic system analysis GT-COOL Engine heat management and cooling system analysis GT-CRANK Crankshaft dynamics and torsional vibrations, engine balance, block vibrations, mounts, bearing oil films GT-LUBE Lubrication System Analysis	10 users	500000	IC Engine
22.	1.Temperature Measurement Module	a. Thermocouple Module b. Thermistor Module c. R.T.D. Module	01	36000	Measure metnt System
23.	Demo/Cut section models for Temperature Transducers:	Sensor elements for RTD PT100, J & K thermocouple, Disc type, Bid type, Glass type Thermistor, integrated sensor for study. SS sensor tube assembly, Head assembly, insertion	01	10000	

		assembly, SS breaded cable, Teflon cable assembly. MS fabricated powder painted inclined mounting frame. Cut section edges are highlighted by red paint			
24.	Cut section models for Flow Transducers:	Industrial grade realistic machined sensor cut section models of Orifice, Venturi, Pitot tube flow sensors with necessary fittings and accessories. MS fabricated powder painted inclined mounting frame. Cut section edges are highlighted by red paint Flow sensor : Size - 1"BSP (F) screw end connections, ¼" BSP (F) differential pressure port connections.	01	10000	
25.	Displacement Measurement Trainer Using LVRT	This trainer consists of LVRT sensor, which is mounted on a fine powder coated metallic base and a 3½ digit digital indicator to display the voltage LVRT sensor (Resistive Type), Displacement calibrated Range from (0-50)mm OR 0 – 100mm,Output Voltage (0-5) V, Built-in Instrumentation Power Supply, Detailed Documentation A 3½ Digit Digital Indicator to display the voltage or displacementTransducer output: 0 – 5V or 4- 20Ma	01	15000	
26.	Potentiometer Characteristics Trainer:	Standalone study setup. Potentiometer sensor transducer. Set up to characterize potentiometer set up to study change in resistance with respect to angular position. 0- 5V out put on banana sockets. Angular displacement measurement in ^{O} on angle graduated disk. In built DC regulated power supply. 230 V AC mains operations	01	15000	
27.	Micro EDM	EDM With all accessories	01	2000000	Micromachining
28.	Micro Hardness tester	Micro Hardness tester with all accessories	01	350000	Material science
29.	Specimen preparation Machine	Specimen preparation Machine with all accessories	01	500000	
TOTAL Amount in Rs.				**7553000**	

Year 2010 – 11

SN	Name of Equipment	Specification	No. of Units	Total Cost Rs.	Name of Laboratory.
1.	Two Stage Air Compressor Test Rig	Air Compressor – Double Cylinder, Two Stage type, Derived by a 2 HP, 3 phase motor mounted on air receiver. Provided with delivery valve. Pressure gauges at outlet air flow. Air tank and orifice with water manometer for air intake measurement. Digital temperature Indicator. Energy meter for measurement of input power.	01	100000	Energy Conversion
2.	Film and Drop wise Condensation Unit	Panel---High quality glass reinforced plastic Stem Chamber—Thick walled glass Cylinder Condenser—(Two) Water cooled (12.7 mmExt dia and 90mm effective dia) fabrication with copper and brass incorporating Heat Exchanger Heating Element--- Coiled 3 KW Heater Control—Triac Control (app0.4to 3.0 KW) Air Extraction System- Air cooler, Separator, and Jet Vacuum Pump Temperature—Multipoint Electronic Thermometers Pressure Gugage – 100 mm dia (-100to +100 KNM-2) Flow Meters – Variable area type with control Valve	01	700000	Heat Transfer
3.	Cut section models for Pressure and Flow Transducers:	Cut section models for Pressure and Flow Transducers: Industrial grade realistic machined sensor cut section models of Orifice, Venturi, Pitot tube flow sensors and Diaphragm, Bellows, Bourdon tube pressure gauges. Working models of Bourdon tube & bellow with necessary air fittings and accessories. MS fabricated powder painted inclined frame. Flow sensor: Size - 1”BSP (F) screw end connections, ¼” BSP (F) differential pressure port connections. Pressure sensor: panel mount, bottom connection, 4” dial size, cut dial, working.	01	45000	Mechanical Measurement
4.	Cut section	Cut section models for Control Valve:	01	25000	Mechanical

	models for Control Valve:	Pneumatically actuated diaphragm type, Air to open/ close, 1/2" control valve. Cut sections to expose internal details like valve seat & plug arrangement, stem assembly, gland packing, flow adjuster block, actuator assembly and diaphragm. Simence gray powder painted mounting tray. Cut section edges are highlighted by red paint. Eq % or Linear or quick opening control valve.			Measurement
5.	Impact jet apparatus	3 hp motor .storage tank flow measurement control device, pressure indicator flow measuring device	01	60000	Fluid Mechanics And Fluid Machine
6.	Free And Forced Vortex Flow	cylindrical vessel, which can be rotated by Variable speed motor.	01	70000	
7.	Gear Pump Test Rig	Gear Pump - 1" x 1" A.C./D.C. Motor - 1 HP Pressure Gauges for Head MeasurementControl Valve for Flow Control: Control Panel with various control mounted on it	01	55000	
8.	Motorized Gyroscope	Robust Construction, Rigid rotary disk properly supported, to verify the equation $T=Iw\ w_p$, To record the spin speed, precessional speed automatically, Spinning, precession, application of external torque in three mutually perpendicular plane, ystem should be well protected,	01	100000	Theory Of Machine
9.	CNC VIDEO MEASURING SYSTEM	Model ISV-E2515 ISV-E3020 Table metal table size(mm) 450×280 glass plate size(mm) 306×196 X-Y travel(mm) 220×120 Z travel (focus) 150(for focus) resolution of X, Y, Z axis 0.5μm accuracy of X, Y axis ≤(3+L/75)μm (L is the overall measuring length, unit: mm)	01	380000	Metrology and Industrial Inspection
10.	2 STROKE SINGLE CYLINDER PETROL ENGINE TEST RIG	With facilities to determine BHP, fuel and air intake & brake thermal efficiency at various loads provided with rope brake water cooled or electrical brake dynamometer. Engine – 150 CC horizontal cylinder, air cooled petrol engine developing 3 Kw at 6000 rpm.	01	400000	IC Engine
11.	SIMULATION SOFTWARES	**PLC Simulator** (PLC Simulation software with User manual and Activity Book)	01	100000	Mechatronics
		RoboX Robot Simulation Software (RoboX Simulation Software with	01	100000	

		User manual & Activity Book)			
		Mechatronics Simulation Software (Mechatronics Simulation Software with User manual & Activity Book)	01	100000	
12.	Motorised Gyroscope	Motorised Gyroscope to verify gyroscopic couple with applied couple	01	75000	Theory of Machine
13.	FMS Workcenter	Robot, CNC Lathe, conveyor.	01	4000000	CAD/ CAM
14.	Pneumatic Comparator	Pneumatic Comparator with all accessories	01	350000	Metrology and Industrial Inspection
15.	Micro Drilling	Micro Drilling with all accessories	01	2000000	Micro Machining
16.	Control Valve Characteristics Trainer	Input: 0.2 to 1 Kg/cm^2 (3-15 psi), O/P flow measurement, 0- 100% valve position indicator, Pneumatically actuated diaphragm type, Air to open/ close 1/2" control valve. Set up to measure flow & stame displacement of control valve with respect to 3 -15 psi air input. Inbuilt air regulator, 0-30 psi inlet & 0-15 psi outlet air pressure gauges. Brass air fittings & PU tubing. Manometer provision to measure differential pressure optional. ½" blue painted GI piping, SS / PVC sump tank, self-prime mono block pump. Simence gray powder painted front facia, black MS frame. a) Eq % or Linear or quick opening single valve characteristics.b) Eq % & Linear Two valve characteristics c) Eq %, Linear & quick Three valve characteristics	01	14000	MEASUREMETN SYSTEM
17.	Temp.Sensor Calibration Trainer II: 1000^0 C	With RTD, J, K type thermocouples. 0 to 1000^0 C built in muffle furnace, with both side sensor entries and one reference sensor along with 3½ digits digital indicating Controller with single set point, cooling fan. RTD PT100, J & K thermocouple sensors with banana sockets to connect to DMM on 200Ω/200mV range for study of sensor characteristics	01	68000	
18.	Flow Transducer Characteristics Trainer II	**:** Rotameter, Venturi & Orifice Trainer with Rota meter, Venturi, Orifice, pitot tube & D.P mercury 300mm manometer, 25L SS/ PVC storage tank, Monoblock ¼ hp Pump and 1" GI/ PVC Piping. Manometer selection from panel, panel coated with	01	72000	

		siemence gray.			
19.	Strip Chart Recorder Trainer:	Stand along study setup. 230 V AC mains operated. Strip chart type recorder. Potentiometric principle of operation. Multi colour ink pen attachment. Input 4 – 20 mA/mv/PT100 T/K etc. Inbuilt sensor processing & linearisation with input buffer. Provision to park the recorder chart & access for Chart Replacement. Programmable chart speed typically 1200 mm/hr. On site zero & gain calibration provision.	01	35000	
20.	Vacuum gauge tester	Works on floating piston principle. All parts plated & rust proof. Precise grinding of piston & cylinder. Inbuilt isolation valve and vacuum pump. Leveling screw. Blue powder painted enclosure. Industrial grade design Includes calibrated weights and necessary tool **kitOperating range: 0-760 mmHg. Accuracy: ± 1% FSD** Vacuum gauge: 4" dial, Press steel, 3/8" BSP (M) Bottom entry.Piston Cylinder Assembly: Hardened EN8, 16Φ, 2.0mm^2 Area, Self-Weight 190gms Oil: SAE 60	01	67000	
21.	Inverted Optical Microscope	Inverted Optical Microscope with all accessories	05	500000	Material Science
22.	Image Analyzer	Image Analyzer with all accessories	01	250000	
23.	Refrigeration Cycle Demo Unit	Compressor: Hermetic type Compressor with integral ½ horsepower motor drawing approximately 810 watts. Condenser: Cooling surface- 9 coils of 6.3 mm dia copper tube through which water flows, fitted to upper end plate. Cooling area 0.032m2. Ball valve at the base of the condenser allows refrigerant charge to be contained within the Evaporator: Flooded type- construction Expansion Valve: Float operated needle valve fitted in condenser base plate. Charging Valve: Fitted to base of evaporator-used to introduce or discharge refrigerant. Sight Glass: Fitted in pipe between expansion valve and evaporator- Oil Return Capillary: Combined with integral ball valves to allow oil to be	01	650000	Refrigeration

		simply Returned to the compressor in a controlled manner. Instruments: Pressure gauges: Two(Standard Unit) Range-100 to + 250 kNm2 gauge. To indicate evaporator and condenser pressures. Thermometers: Seven Five, Range 0°C to 50°C x 150mm long, glass Flow Meters: Two Tapered glass tube type, with stainless steel indicator			
24.	Laminar and Viscous flow Heat Transfer unit	Panel-- high quality glass reinforced plastic Heat Exchanger-- -concentric tube type Heater—500 W Measure Tank, capacity approx 2.5 lit. Flow meter , Digital thermometers	1	565000	Heat Transfer
TOTAL Amount In Rs.				**10881000**	

Year 2011 – 12

SN	Name of Equipment	Specification	No. of Units	Total Cost Rs.	Name of Laboratory.
1.	Adjustable Channel (2.5m)	Size: 0.25m. Width Approx., 0.35m. Depth Approx. & 2.5m. Test section length. A point gauge mounted on a trolley. Inlet pipe piece containing an orifice in it. Screw jack for adjusting slope.Sluice gate. For our 2.5 meter flume transparent section is provided only of 700mm. length.	01	50000	Fluid Mechanics And Fluid Machine
2.		Display 4 digits, 10 mm LCD, with blue backlight Parameters Ra, Rz, Rq, Rt Measuring range Ra, Rq 0.005-16.00µm Rz, Rt 0.020-160.0µm Accuracy $\leq \pm 10\%$ Repeatability $\leq 6\%$ Sensor test principle inductance type radius of probe pin 5µm material of probe pin Diamond measuring force of probe 4mN(0.4gf) probe angle 90° vertical radius of guiding head	01	170000	Metrology and Industrial Inspection

		48mm Maximum stroke 17.5mm Sampling length 0.25mm / 0.8mm / 2.5mm Evaluation length Ln=5L Speed sampling length = 0.25mm Vt=0.135mm/s			
3.	Hydraulic Comparator	Hydraulic Comparator with all accessories	01	350000	
4.	2 STROKE SINGLE CYLINDER PETROL ENGINE TEST RIG	With facilities to determine BHP, fuel and air intake & brake thermal efficiency at various loads provided with rope brake water cooled or electrical brake dynamometer. Engine – 150 CC horizontal cylinder, air cooled petrol engine developing 3 Kw at 6000 rpm.	01	400000	IC Engine
5.	Computerized Variable compression ratio Petrol Engine with variable spark timing.	Engine of standard Make, Compression ratio of Variable between 5:1 to 23:1, No of Cylinder one, Air Cooling, Diesel and petrol dual fuel Fuel, Speed 1500rev/m HP 3 HP.	01	700000	
6.	Vibration Equipment	Vibration Equipment to perform experiment on viscous damping and harmonic exitation	01	80000	Theory of Machine
7.	Micro Milling	With all accessories	01	2200000	Micromachining
8.	Vacuum Gauge Tester:	V8acuum Gauge Tester: W9orks on floating piston principle. All parts plated & rust proof. Precise grinding of piston & cylinder. Wide operating range & better accuracy. Range :0-760-mmwc vacuum pump. Powder painted enclosure. Industrial grade design Includes calibrated weights and necessary tool kit	01	30000	Mechanical Measurement
9.	Temp Sensor Calibration Trainer II : 1000 ^{0}C	Temp Sensor Calibration Trainer II : 1000 ^{0}C With RTD, J, K type thermocouples. 0 to 1000^0 C built in muffle furnace, with both side sensor entries and one reference sensor along with 3½ digit digital indicating Controller with single set point, cooling fan. RTD PT100, J & K thermocouple sensors with banana sockets to connect to DMM on 200Ω/200mV range for study of sensor characteristics	01	60000	
10.	Rotameter Calibration Trainer:	Rotameter Calibration Trainer: Trainer with Rota meter, 20 liter SS storage tank, ¼ hp monoblock Pump, flow throttle valve and GI/PVC Piping to the size 1/2", panel coated with s.	01	10000	

		gray.			
11.	**ON/OFF Controller Trainer:**	Stand alone setup on study on/off controller action for temp. RTD/ Thermocouple input, Operation temp. Range 0-450 ^{0}C.On/Off control Indicator. Programmable set point. Relay output.230 Vac mains operations.	01	65000	
12.	Proportional Controller Trainer	Stand-alone setup to study proportional control action for temp. Programmable proportional band with variable set point.3 & ½ digit LED display for process parameter.T/C Temp sensor input. Proportional control Realy/ Pulse output. Operating temp rang 0-450 ^{0}C. Alarm indication facility.	01	105000	
13.	Rotameter calibration trainer	Trainer with 35 LPH Rotameter, 20L Stainless Steel sump tank, 5LTransparent measuring tank. ¼ HP Monoblock Pump, flow throttle valve and 1/2" PVC Piping, Siemence gray powder painted panel. Size: 18" X 18" X18" Weight: 20Kgs.	01	55000	
14.	Universal testing Machine Computer control	Universal testing Machine Computer control with all accessories	01	500000	Material Science
15.	Air Conditioning Laboratory Unit	Duct: Material: Glass Reinforced Plastic (GRP)Thermal Conductivity: 0.16 W/mK Max.Temperature: 70 °C Air Throughput : 0.14 m3s-1 (max) Pre-heater : Extended Fin electric heating elements. 2 x 1.0 kW (nominally) at 220V Effective length: 1.414m Exposed tube surface area: 0.0355m2 posed Fin Surface area: 0.2876m2 Cooler: Direct expansion, extended fin coil. Cooling rate approx 2.o kW 5/8" o.d.cooper tube, 20swg. 4 Rows deep x 5 rows high: 0.253m2 exposed to air flow61 fin plates: 4.227m2 exposed to air flow Re-heater: Extended to fin electric heating elements. 2 x 1.0 kW (nominally) at 220V Effective length: 1.414m Exposed tube surface area: 0.0355m2 Exposed fin surface area: 0.2876m2 Fan: Radial acting axial flow (variable speed) Power input: approx.120W	01	1210500	Refrigeration Laboratory

		at 240V, 50 Hz, R.P.M. 0-2400 Power:0.0.9A,210W,Volts: 220-240 Humidifiers: Electrically heated and working at atmospheric pressure. Fitted with water level float switch and in line solenoid valve. Heaters: 1 x 1.o kW and 2 x 2.0 kW at 220V (nominally) Volume: 2.5 liters (to mid-sight glass) under control of level Control float switch. water solenoid valve Orientation : any Inlet pressure: 0-45 bar Power Consumption: 19 vA Refrigerator: Hermetic unit with air cooled condenser. Refrigerant: R134a Tetrafluroethane CF3CH2F Compressor speed: 2700 to 3000 rev.min-1 at 50 Hz according to load. 3300 to 3600 rev.min-1 at 60 Hz Swept volumes: 25.95 cm3 rev-1 Nominal rating ¾ HP at 32°C ambient. 2171 Watts at + 5°C evaporating temperature.			
TOTAL Amount in Rs.				**5985500**	

Year 2012 – 13

SN	Name of Equipment	Specification	No. of Units	Total Cost Rs.	Name of Laboratory.
1.	Humidity and Temperature Measurement	Humidity and Temperature Measurement: Capacitance type humidity sensor. PVC embedded enclosure. 4-digit 7seg LCD digital display. Humidity measurement range 0-99%RH. Humidity chamber with facility to change humidity. Circulating fan. Temperature ranges 0-100 ^{0}C.	01	30000	Mechanical Measurement
2.	Strip Chart Recorder:	Strip Chart Recorder: Stand along study setup. 230 V AC mains operated. Strip chart type recorder. Potentiometric principle of operation. Multi colour ink pen attachment. Input 4 – 20 Ma/mv/PT100 T/K etc. Inbuilt sensor processing & linearisation with input buffer. Provision to park the recorder chart & access for Chart Replacement.	01	45000	

		Programmable chart speed typically 1200 mm/hr. On site zero & gain calibration provision.			
3.	Stroboscope:	Stroboscope: Hand held, battery operated/ mains operated, digital display, non-contact type. Light source and speed signal detector. Range: 10,000 RPM.	01	60000	
4.	Optical Pyrometer:	Optical Pyrometer: Contact less remote operated temperature measurement system. Laser point infrared thermometer, 4 digit LCD display with back lighting. Multi function control action lick, data scan, data Latch, auto hold. Auto power off overload indication with beep & independent laser pointer, focal length adjustable, selectable temp range & resolution, adjustable emission, meter lock facility. Capable to interface with laser infrared sensor oprating range 0 – 1250 ^{0} C with 0.1 & 1^0 C etc ^{0}C/ ^{0}F Selectable engg unit, Fast sampling rate from 6 –20 μmeter. 0.1 ^{0} C resolution.	01	35000	
5.	Torque Converter test rig	Arrangement to measure Input out power, and plot characteristic	01	30000	Fluid Mechanics And Fluid Machine
6.	Working Models of	Hydraulic Coupling Differential Accumulator Intensifire Hydraulic Crane Hydraulic Press	01	25000	Fluid Mechanics And Fluid Machine
7.	Smoke Meter	Variable Sampling Smoke Meter designed for automatic measurement of the soot content in the exhaust gas of particulate emitting internal combustion engines. Suitable for application on engines test beds	01	400000	IC Engine
8.	Laser Beam Machining Center	Laser Beam Machining Center with all accessories	01	3500000	Micro Machining
9.	Angular displacement measurement trainer	Stand alone setup to study angular displacement sensor 230V ac mains operations Self-illuminated power on switch and fuse protection Selectable angular displacement range	01	35000	Mechanical Measurement

		(0-600,0-900,0-1200) Physics angular displacement indication on rotary scale Angular displacement indication on 7 seg LED display Linear signal O/P in the form of 0-5 V or 4- 20 mA A loop current			
10.	Advanced Pneumatic trainer	PLC based Pneumatic Trainer Kit. Study of basic & advance electro pneumatic components, electronic & mechanical switches, proximity sensors Powder coated frame, AFR, 2x1"single acting, double acting cylinder, 5x3 & 3x2 hand lever operated direction control valve, 5x3 lever operated, valve flow control valve, quick exhaust valve, PU tubing & fittings, pressure gauge, needle valve, pneumatic motor 22000RPM, manifolds. Pressure gauges 2.5/4" dial, All fittings ¼" BSP (M/F), MS fabricated power painted frame. *Air compressor:* 100-liter capacity with air regulator, filter, tank pressure gauge, outlet pressure gauge, Isolation cock, Safety valve, Drain Cock, suitable fitting for outlet with 20 feet flexible PU tube, Single phase AC motor with mounting arrangement and fan guard	01	13500	
11.	Demo models for Switches:	Limit Switch, Panel door Switch, Push button Switch, micro Switch, Roller limit Switch, Magnetic Switch, Optical Switch, Inductive Proximity Switch, Capacitive proximity Switch. Inter face with visual indication optional. MS fabricated powder painted inclined mounting frame	01	20000	
12.	Cut section models for pipe fittings & valve accessories	Demo board for pipe fittings: pipes, Elbow, Tee, Square, Reducer, Expander, Plug, Double nipple & Union. Cut section valve assemblies: needle valve, Globe valve, ball valve, gate valve, solenoid valve etc.MS fabricated powder painted inclined mounting frame Cut section edges are highlighted by red paint	01	20000	
13.	Boiler & Instrumentation Trainer BIT	Stand alone study setup. Stainless steel internals. Electrically fired, 18kw electric load,	01	65000	

		3ϕ mains operation. ½"Water inlet, steam outlet, provision to monitor water level optional. Necessary control panel with heater control & isolation switches. Boiler Parameter monitoring like pressure, temperature, steam flow, water flow etc. safety devices like dead weight safety valve, relief valve. Drain plug, isolation valves. Necessary GI piping & electrical wiring. Ms fabricated powder painted enclosure. High-class glass wool insulation.			
14.	Stress corrosion Packing Setup	Stress corrosion Packing Setup with all accessories	01	200000	Material Science
Total Amount in Rs.				**4478500**	

FURNITURE

Sr. No.	Name of Furniture	Quantity For Year				Total	Remark
		2009-2010	2010-2011	2011-2012	2012-2013		
1	Computer Table	15	15	15	10	60	Development of Computer Lab
2	Office Table	05	05	05	05	20	For Faculty & Department
3	Practical Table	10	10	10	10	40	Develop new Lab (Mechatronics, Metrology Micromachining Lab)
4	Almirah Medium size	04	04	03	03	14	For Faculty & Department (Autonomy)
5	Almirah Large size	03	03	02	02	10	For Faculty & Department (Autonomy)
6	Plastic Stool	25	25	25	25	100	For Labs (Mechatronics, Metrology Micromachining CAD/CAM Lab)
7	Chair Revolving	05	05	05	05	20	For Faculty & Department
8	Chair Plastic	25	25	---	---	50	For Departmental Library
9	Library Book-case	03	03	03	03	12	For Departmental Library
10	Cabin for Faculty	02	02	02	02	08	For Faculty (In new propose building)
11	Notice Board	02	02	02	02	08	For Department
12	Green Board	01	01	01	01	04	For Additional class-room & Replace previous board
13	Desk & Bench (Two Seater)	20	20	40	---	80	For Additional class-room & Existing Laboratory
14	Water-Cooler	01	01	01	---	03	For Department (Faculty &Student)
15	White Board	05	05	03	03	16	For Department

Electrical Engineering

Name of Laboratory		**Electrical Drives Lab**									
				2009-10		2010-11		2011-12		2012-13	
S. N.	Name of Equipment	Short Specification	Cost per unit (in Rs Lakh)	Qty	Total Cost	Qty	Total Cost	Qty	Total Cost	Qty	Total Cost
1	Electronically controlled variable speed DC drive trainer inclusive of suitable motor-generator set	input-400V,3 phase; output- 415 DC,15 amp; 4 quadrant operation	3.06	1	3.06	----	----	----	----	----	----
2	Electronically controlled variable speed AC drive trainer inclusive of suitable motor.	Input 230 V, 1 phase, Output 3 phase AC, 750 W, Vector controlled	1.25	1	1.25	----	----	----	----	----	----
3	Electronically controlled variable speed AC drive trainer inclusive of suitable motor	415 V, 3 phase, 750 W, Controller should include microcontroller and DSP with progmming facility	2.0	----	----	----	----	----	----	1	2.0
4	Bread Boarding Systems	With 5 V d.c. supply ,-12V -0 V + 12 V dual supply	0.5	----	----	1	0.5	1	0.5	----	----
5	Single phase semi-controlled converter	230 V single phase ,750 W	1.25	1	1.25	1	1.25	----	----	----	----
6	Single phase fully-controlled converter	230 V single phase ,750 W	0.5	1	0.5	1	0.5	----	----	----	----

7	Digital Storage oscilloscope with 100X attenuator probes	4 channel, 100 MHz	2.0	1	2.0	----	----	1	2.0	----	----
8	Microprosser Based chopper controller for DC series motor along with regeneration facility	220/110 V, 3 hp dc series motor- generator set with regenerative braking arrangement through controller.	1.0	----	----	----	----	1	1.0	----	----
TOTAL					8.16		2.25		3.5		2.0
Name of Laboratory		**Power System Lab**									
	Relay Testing Educational Kits	Electromechanical / Static / Micro Processor based / DSP Based Relays, IDMT Over Current relay with Testing Kit Under Voltage / Over Voltage relay with Testing Kit Differential Relay (percentage biased) with Testing Kit Negative Sequence Relay with Testing Kit Impedance / Admittance Relay with Testing Kit	1.2	----	----	----	----	----	----	1	1.2
5	Solar and wind powered hybrid power generator	2.1 KW	9.5	1	9.5	----	----	----	----	----	----

	Micro-Controller based over Current Relay	Current Input: 0-20 A, No. of Contact: 1No. NC contact @ 220 V,10A, 1 No. of NO Contact@220 V,10A;Auxilliary supply 230V AC 50Hz, PC interfacing facility power On/Off SwitchCurrent Injection source; Current range :0-20A	0.8	----	----	1	0.8	----	----	----	----
	Micro-Controller based Over/Under based Relay	Voltage Input: 0-220 A, No. of Contact: 1No. NC contact @ 220 V,10A, 1 No. of NO Contact@220 V,10A;Auxilliary supply 230V AC 50Hz, PC interfacing facility power On/Off SwitchVoltage Injection source; 0-300V AC	0.9	1	0.9	----	----	----	----	----	----
	Micro-Controller based earth fault based Relay	Current Input: 0-2 A, No. of Contact: 1No. NC contact @ 220 V,10A, 1 No. of NO Contact@220 V,10A;Auxilliary supply 230V AC 50Hz, PC interfacing facility power On/Off SwitchCurrent Injection source; Current range :0-2A	0.8	----	----	1	0.8	----	----	----	----
	Micro-Controller based 3-Phase differential Relay (Merz price protection Scheme)	Current Input: 0-20 A, Voltage input :0-30 V, Phase difference 0-89 degrees, No. of Contacts-3 nos.,220 V, 10 A rating ; Auxiliary supply 230V AC 50Hz	1.9	----	----	----	----	----	----	1	1.9
	Bucholtz relay study trainer		0.2	----	----	----	----	1	0.2	----	----
	Distance Protection		0.5	----	----	1	0.5	----	----	----	----

	Relay										
TOTAL					10.4		2.1		0.2		
Name of Laboratory		**Computer Center**									
1	Desktop Computer P-5	160 GB¸HDD¸1GBRam¸ DVD Writer	0.3	10	3.0	10	3.0	10	3.0	10	3.0
	Scanner		0.05	2	0.1	----	----	----	----	----	----
2	Laser Printer	Up to 12 PPM/234MHz / 2mb ram up to 600x600	0.06	5	0.3	5	0.3	5	0.3	5	0.3
3	Laptop	160 GB¸HDD¸2GBRam¸ DVD Writer	0.4	5	2.0	3	1.2	----	----	----	----
4	L.C.D Projector	NEC/ LT 3806 with media card	1.35	1	1.35	1	1.35	1	1.35		
5	All in One Printer Total		0.75	1	0.75	1	0.75	----	----	----	----

HIGH VOLTAGE LAB

Sr. No.	Name of Equipment with brief specification	Unit Cost in Lac	2009-10		2010-11		2011-12		2012-13	
01	High Voltage Test and Measure Equipment 100 kV AC , 140 k and 140 kV , 245 J IMPULSE TEST Consisting of items : - HV Test Transformer - Control Desk - Rectifier – Capacitor - Voltage Divider (Impulse)- Resistor (Measuring) - Resistor (Charging) - Resistor (Wave front) - Resistor (Wave Tail)- Sphere Gap - Electrical Drive for Sphere - Electrode - Earthing Switch - Earthing Rod - Insulating Rod - Connecting Rod - Connecting Cup - Floor Pedestal - Spacer Tube - Voltmeter (DC) - Voltmeter (Impulse Peak)- Voltage Divider (Low Voltage) - Voltage Divider (AC) - Voltmeter (AC)- Trigger Device - Electronic Trigger Sphere	20.00	----	----	1	20.00	---	----	----	----
02	Vessel for Vacuum & Pressure.	4.00	----	----	1	4.00	---	----	----	----
03	Impulse Voltage Oscilloscope 100 MHz.	3.00	----	----	1	3.00	---	----	----	----
04	Series Circuit breaker operational analyzer.	9.0	----	----	1	9.0	---	----	----	----
05	Artificial Rain making Equipment.	0.90	----	----	1	0.9	---	----	----	----
06	Three Phase Transformer with protection panel	4.0	----	----	1	4.0	---	----	----	----
07	Alternator parallel operation Training system with synchronizing parallely & protection	4.0	----	----	1	4.0	---	----	----	----
08	Feeder & Motor protection panel	4.0	----	----	1	4.0	---	----	----	----
09	Substation Protection & operation control panel	8.0	----	----	1	8.0	---	----	----	----
21	**Clamp-on Power Meter** With the following or better technical specifications:- Clamp On Power Meter, Yokogawa CW240-D/C4 or **equivalen**t,	3.0	----	----	1	3.0	---	----	----	----
	Civil Works for Installation of above equipments	20.0		20.0	----	----	---	----	----	----

Department Of Electronics and Telecommunication

Communication Laboratory

Year 2009-10

S.No.	Name Equipment	Specification	Quntity	Cost
1	Amplitude Modulation trainner kit	10Hz- 10 Khz, 0 -5 volt amplitude, On board power suplly, Carrier generatot,Signal Generator,low level and high level modulator	4	20,000
2	Frequancy Modulation trainner kit	1 Hz- 1 Mhz , 0 -5 volt amplitude,On board power suplly, Carrier generatot,Signal Generator,reactance, varactor,PLL & In *direct method*	4	40,000
3	Amplitude Demodulation trainner kit	Diode detector, 100Hz- 10 Khz, 0 -5 volt amplitude,On board power suplly, balance modulator	4	20,000
4	Frequency Demodulation trainner kit	1 Hz- 1 Mhz , 0 -5 volt amplitude,On board power suplly,	4	40,000
5	A. M. Transmitter(AGC) trainner kit	IF 600KHz-1650 KHz, local oscillator 900 KHz- 2.1 Mhz, On board power suplly, Carrier generatot,Signal Generator	4	40,000
6	F.M. Transmitter(AFC) trainner kit	1 Hz- 1 Mhz , 0 -5 volt amplitude, On board power suplly, Carrier generatot,Signal Generator,preemphasisi	4	40,000
7	A. M. Receiver trainner kit	IF 600KHz-1650 KHz, local oscillator 900 KHz- 2.1 Mhz, On board power suplly,	4	40,000
8	F.M. Receiver trainner kit	455 KHz, input ampltude 0.5- 5 volt, output ampliutde 1.5 volt,Foster - Seely detector, ratio Detedcot, PLL Detector, Quadurature Detecor,Detuned Response detector	4	40,000
9	Noise Generator/Analyzer trainner kit	Noise generate up to 1 Mhz, 0-2 5 volt , On board power suplly RC filter	4	40,000

10	SNR/Noise power Spectrul Density / Noise Temperatur/Noise figure / noise power trainner kit	Noise generate up to 1 Mhz, 0-2 5 volt , On board power suplly RC filtercalculate SNR/Noise power Spectrul Density /Noise Temperatur/Noise figure / noise power for frequancy range 1 Hz- 1 Mhz	4	40,000
11	DSB/SSB modulation trainner kit	1Hz- 1000KHz carrier i/p, modulating i/p 0.1 -100 KHz	4	40,000
12	DSB/SSB Demodulation trainner kit	IF 600KHz-1650 KHz, local oscillator 900 KHz- 2.1 Mhz, On board power suplly,	4	40,000
13	DSB/SSB Transmitter trainner kit	1Hz- 1000KHz carrier i/p, modulating i/p 0.1 -100 KHz	4	40,000
14	DSB/SSB Receiver trainner kit	IF 600KHz-1650 KHz, local oscillator 900 KHz- 2.1 Mhz, On board power suplly,	4	40,000
16	PAM trainner kit	10Hz- 10 Khz, 0 -5 volt amplitude, On board power suplly, Carrier generatot	4	40,000
17	PWM trainner kit	10Hz- 10 Khz, 0 -5 volt amplitude, On board power suplly, Carrier generatot	4	40,000
18	PPM trainner kit	10Hz- 10 Khz, 0 -5 volt amplitude, On board power suplly, Carrier generatot	4	40,000
19	PCM trainner kit	10Hz- 10 Khz, 0 -5 volt amplitude, On board power suplly, Carrier generatot	4	40,000
20	Delta/Adaoptive/Sigma modulation trainner kit	10Hz- 10 Khz, 0 -5 volt amplitude, On board power suplly, Carrier generatot	4	40,000
22	TDM trainner kit	10Hz- 10 Khz, 0 -5 volt amplitude, On board power suplly, Carrier generatot,5 channel Input and output	4	40,000
23	FDM trainner kit	10Hz- 10 Khz, 0 -5 volt amplitude, On board power suplly, Carrier generatot,5 channel Input and output	4	40,000
24	Sampling, Quantization, filter receiver trainner kit	Sampling frquancy generator, sample and hold output, filter bank at 1, 2, 4, 6 order low pass	4	40,000

26	Delta/Adaoptive/Sigma demodulation trainner kit	10Hz- 10 Khz, 0 -5 volt amplitude, On board power suplly, Carrier generatot	4	40,000
27	ASK trainner kit	500 KHz- 1MHz, on board 8 bit NRZ- l pattern	4	40,000
28	FSK trainner kit	501 KHz- 1MHz, on board 8 bit NRZ- l pattern	4	40,000
29	PSK /QPSK trainner kit	502 KHz- 1MHz, on board 8 bit NRZ- l pattern	4	40,000
30	Direct sequance Spread spectrum modulation	On board power suplly, Carrier generatot,Signal Generator	4	80,000
31	CDMA Trainner kit	On board power suplly, Carrier generatot,Signal Generator	4	80,000
32	Frquency hoping spread spectrum	On board power suplly, Carrier generatot,Signal Generator	4	80,000
33	Pseudorandom sequance	On board power suplly, Carrier generatot,Signal Generator	4	80,000
34	Optical simulation software	provide simulation and analysis tool	10 user license	13,00,000
35	OTDR - 1310/1550 nm	It should chracterised the optical fibers(1310/1550 nm)	1	6,00,000
36	Fiber Optic Patch Cable 2Km			50,000
37	Optical Power Meter	It should measured power the optical fibers(1310/1550 nm)	2	1,00,000
38	optical Source (1310/1550 nm)		2	1,50,000
39	Optical fiber (Single Mode 1310/1550 nm)		25 Km spool	50,000
40	Transmitter module 2.5 Gbps		2	1,00,000
41	Reciver Module 2.5 Gbps		2	1,00,000
42	Optical Attenuator		2	50,000
43	Bare Fiber adopter		2	25,000
44	Fiber Phone		2	1,00,000
45	electromagnetic field analysis Sofware	provide simulation and analysis tool	5 user license	5,00,000
46	Antenna design, placement and anlysis software	provide simulation and analysis tool	5 user license	6,00,000
47	DWDM Transmitters		6	3,00,000
48	DWDM Receiver Module		6	3,00,000
49	DWDM Mux/Demux		2	1,50,000
50	Opitcal Switch		1	1,50,000
51	Fiber Bragg Gratings		2	1,00,000

52	Optical Spectrum Analyzer	100KHz -30 GHz, RBW 300Hz-10MHz, USB & LAN interface,TFT color display	1	25,00,000
53	Optical Splicing machine		1	6,00,000
54	STM - 1 ADM		2	5,00,000
55	Software (Transport Layer tool)		6 user license	1,500,000
56	Software - Development tool for networks		6 user license	600,000
	Total			1,05,75,000

Year 2010-2011

S.No.	Name Equipment	Specification	Quntity	Cost
1	Microwave Bench (Klystron Based)	Band X-l frqquency, with all microwave bench component	2	240,000
2	Microwave Bench (Gunn diode Based)	Band X-l frqquency, with all microwave bench component	2	2,00,000
3	Sattelite Trainner Kit	2.4 Ghz- 5 Ghz 8 Channel ,5x5.5 Mhz Audio FM modulantion, 8 Mhz video FM modulation	1	3,00,000
4	GPS trainner kit	2 GHz, 12 No. Channel	1	3,00,000
5	Mobile communication Trainner kit	100 MHz	1	3,00,000
6	RADAR Continous wave	100 Mhz- 50 GHz,1 m - 500 Km,PPI display	1	4,00,000
7	RADAR Pulse	100 Mhz- 50 GHz, pulse width 100ps to 1ms, PPI Display	1	5,00,000
8	Antenna trainig systeme variable frequancy	86 MHz-869 MHz, LCD display	1	4,00,000
9	MicrowaveAntenna trainig systeme variable frequancy	8.22 GHz- 18 GHz, all type of microwave anttena	1	5,00,000
10	Spectrum analyzer(5 Ghz)	9KHz -5 GHz, RBW 300Hz-10MHz, USB & LAN interface,TFT color display	1	9,00,000
11	GSM trainner kit	2 GHz-20 GHz, 12 No. Channel	1	3,00,000
12	optical test bench with pillars, pneumatic suspension and compresor	Operate in range 1310- 1550 nm with frequancy 2.5 Gbps	1	5,00,000
			Total	48,40,000

Year 2011- 2012

S.No.	Name Equipment	Specification	Quntity	Cost

1	Spectrum analyzer (10 GHz)	9KHz -10GHz, RBW 300Hz-10MHz, USB & LAN interface,TFT color display	1	20,00,000
2	Dish Antennas CATV control Room TEST equipment	dish antenna, control room, various test equipment	1	50,00,000
4	Software microwave component design and analysis	provide simulation and analysis tool	10 user licencses	20,00,000
			Total	90,00,000

Year 2012-2013

S.No.	Name Equipment	Specification	Quntity	Cost
1	microwave research lab	provide all kind of facility for reasearch software as well as hardware	1	50,00,000
2	Optical research lab	provide all kind of facility for reasearch software as well as hardware	1	20,00,000
3	wireless communication research lab	provide all kind of facility for reasearch software as well as hardware	1	50,00,000
			Total	1,20,,00,000

ELECTRONIC DEVICES & CIRCUITS LAB

Year 2009-10

S.No.	Name Equipment	Specification	Quntity	Cost
1	Zener diode kit	on-board	5	50,000
2	pn-junction diode kit	on-board	5	50,000
3	Half wave rectifier kit	on-board	5	60,000
4	Full wave rectifier kit	on-board	5	60,000
5	Bridge rectifier kit	on-board	5	60,000
6	capacitor filter kit	on-board	5	60,000
7	LC filter kit	on-board	5	60,000
8	pi filter kit	on-board	5	70,000
9	RC coupled oscillator kit	on-board	5	65,000
10	tranformer coupled oscillator kit	test and measurment points	5	60,000
11	inverting amplifier kit		5	60,000
12	bread board system	scientech make st-2619	10	220,000
13	monostable multi vibrator kit	standard	5	75,000
14	astable multi vibrator kit	standard	5	60,000
15	CRO	standard(20Mhz)	5	150,000
16	Function generator	2MHZ SCIETECH MAKE	5	100,000
17	Regulated dc power supply	output voltage and current(0-	5	50,000

		32v)		
18	voltage control oscillator	model B-22amp	5	25,000
19	transisterised wein bridge oscillator	model J-24A sn 25064	5	12,500
20	non-inverting amplifier	32v dc/3A model/5VL o30003D)	5	75,000
21	dc power supply	on board	6	60,000
22	colpitt oscillator kit	inbuilt power supply	5	75,000
23	feedback amplifier kit	inbuilt power supply	5	75,000
24	pulse generator kit	inbuilt power supply	5	75,000
25	pulse generator	on board	5	75,000
26	sweep generator	standard	5	60,000
27	schimtt trigger training kit	standard	5	60,000
28	clipping training kit	on board	5	60,000
29	clamping training kit	standard	5	60,000
30	high pass filter kit	standard	5	60,000
31	low pass filter kit	on board	5	60,000
32	voltage follower opamp kit	standard	5	60,000
33	integrator opamp kit	on board	5	60,000
34	multivibrator kit using opamp	standard	5	60,000
35	multivibrator using ic-555	test and measurement points	5	75,000
36	instrumentation amplifier using opamp	standard	5	75,000
37	field effect transistor	standard	5	75,000
38	multiplexer kit(8:1)	LED and display indicators	5	75,000
39	multiplexer kit(4:1)	LED and display indicators	5	75,000
40	flipflops kit	LED and display indicators	5	75,000
41	counters kit	LED and display indicators	5	75,000
42	demultiplexer kit	LED and display indicators	5	75,000
		Total		28,375,000

Year 2010-2011

S.No.	Name Equipment	Specification	Quntity	Cost
1	Digital Lab Trainer	PLD Programming,Inbuilt signal generator,logic indicators	1	300000
2	Logic Analyzer	Develop & debug programs, Analysis of timing wave & state table, 34 channel	1	550000
3	Spectrum Analyzer	9KHz -3 GHz, RBW 300Hz-10MHz, USB & LAN interface,TFT color display	1	650000
4	Analog Design Platform	Testing & implementation of analog designs using FPAAs.PC serial interface,SMPS	2	100000
		Total		160000

Year 2011- 2012

S.No.	Name Equipment	Specification	Quntity	Cost
1	Programmable Function Generator	Two-channel, 80 MHz	2	500000
2	RF Signal Generator	9 Khz- 2.2 GHz, Resolution 0.1 Hz,setting time<10ms, AF generator 0.1 Hz to 1MHz,IEEE488/RS232 interface	1	650000
3	MATLAB Embedded trainer	For MATLAB 6.0, Simulink, with Embedded coder & state flow coder,having AD/DA, RS232/485 & ethernet interface	2	80000
4	DSP trainer	TMS 320C50 CPU board at 40MHz,14 bit codec single channel, serial port interface,LCD display,ASCII keyboard interface	2	100000
		Total		**133000**

Year 2012- 2013

S.No.	Name Equipment	Specification	Quntity	Cost
1	PCB designing machine	PC interface, PTH , with inbuilt design downloading & fabrication support	1	650000
2	20 SIM software	Modeling & simulation of Electronic & control based circuits & systems, with time domain, frequency domain, control, real-time, mechatronics tool box	1	450000
		Total		**1100000**

Computer Lab Equipments

Year-2009-10

Sr.no.	Equipment name	Specifications	Quantity	Cost
1	Personal Computers	Processor - Intel Core 2 Quad/core 2 Duo (3.2GHz) ; cache 6 Mb ; Operating System - Windows XP/ Red Hat Linux RAM -2GB;Hard Disk-160GB,front pannel USB port;Locked cabinets; Optical driver - DVD RW ; Monitor-17"Flat TFT keyboard / mouse - Logitech ; NVIDIA GeForce 7600 Graphics Card	10	Rs.3.5 lakh

2	Laser Printer (with & Scanning facility) Isensys LBP5000	Print speed: 8 ppm in colour & mono Maintenance-free with colour All-in-One cartridges 9600 x 600 dpi (enhanced) Paper supply: 250 sheets Optional network connectivity	1	Rs.50,000
3	Speakers & Headphones		3	Rs.20,000
4	Antivirus	Quick Heel version 11.5	1	Rs 2000
5	Blue Ray Disc	8.2Gb	10	Rs 1000
			Total	Rs 4.25 Lakhs

Year-2010-11

Sr.no.	Equipment name	Specifications	Quantity	Approx. Cost
1	Personal Computers	Processor - Intel Core 2 Quad/core 2 Duo (3.2GHz) ; cache 6 Mb ; Operating System - Windows XP/ Red Hat Linux RAM -2GB;Hard Disk-160GB,front pannel USB port;Locked cabinets; Optical driver - DVD RW ; Monitor-17"Flat TFT keyboard / mouse - Logitech ; NVIDIA GeForce 7600 Graphics Card	10	Rs.3.5 lakh
			Total	Rs.3.5 lakh

Year-2011-12

Sr.no.	Equipment name	Specifications	Quantity	Cost
1	Personal Computers	Processor - Intel Core 2 Quad/core 2 Duo (3.2GHz) ; cache 6 Mb ; Operating System - Windows XP/ Red Hat Linux RAM -2GB;Hard Disk-160GB,front pannel USB port;Locked cabinets; Optical driver - DVD RW ; Monitor-17"Flat TFT keyboard / mouse - Logitech ; NVIDIA GeForce 7600 Graphics Card	10	Rs.3.5 lakh
			Total	Rs.3.5 lakh

Year-2012-13

Sr.no.	Equipment name	Specifications	Quantity	Cost
1	Personal Computers	Processor - Intel Core 2 Quad/core 2 Duo (3.2GHz) ; cache 6 Mb ; Operating System - Windows XP/ Red Hat Linux RAM -2GB;Hard Disk-160GB,front pannel USB port;Locked cabinets; Optical driver - DVD RW ; Monitor-17"Flat TFT keyboard / mouse - Logitech ; NVIDIA GeForce 7600 Graphics Card	10	Rs.3.5 lakh
			Total	Rs.3.5 lakh

	Microprocessor Lab			
	Year 2009-10			
Sr.no.	Eqiupment	Specifications	Quantity	Cost(Rs.)
1	Universal programmer	Auto sensing and self programming, Automatic EPROM/ Flash ID search Serialization for Memory/µP chip .Memory buffer H / L byte swap Project file save / load function Device insertion /continuity check Support OS: windows 95/98/XP (parallel port) Windows 98SE/Me/2000, windows XP (USB port)	1	60,000/-
2	In circuit emulator for 8085	1. Support OS: Windows XP/2000 2. Memory display and edit while executing in real-time 3. 115 KBaud serial download 4. 64 KB of program / data RAM Two 16-bit pass counters	2	45000
3	DMA kit	Suitable to interface with 8085kit with manuals	4	30,000/-
			Total = 1,35,000/-	

Year 2010-2011

Sr.no.	Eqiupment	Specifications	Quantity	Cost(Rs.)
1	VLSI education kits	1. VLSI trainer kit with 50K logic gates,1750 logic cells.	5	40,000/-

		2. CPLD kit with webpack software.		
2	Logic Analyzer	1. Sampling rate=500MHz.	1	45,000/-
		2. Max.168 data i/p channel.		
		3. High impedance probes.		
3	PIC micro controller kits	1.Programs 8, 14,18, and 28 pin 300mil DIP PIC IC's.	3	50,000
		2.Flash microcontroller that can be programmed.		
		3. suitable for programming Microchip® FLASH PIC (tm)		
		4. supports 4 different 300 mil. PICs: 8p, 14p, 18p and 28p		
		5. easy connection to a PC through the serial port		
4	Study cards of M85	Suitable to interfaced with 8085 kit	3	30,000
	1. 8253 study card			
	2. 8251 study card			
	3. 8257 study card			
5	Proteus VSM(virtual system modeling)	1.Complete Electronics circuit simulation	1 set	530,000.00
		2. Software along with co simulation of microcontroller		
			Total = 6,95,000/-	
	Year 2011-2012			
1	PC Compatible Universal Emulator	1.Multiple Keyboard/Mouse Emulation	5	30,000/-
		2. Hot Attach/Detach USB KBC		
		3. Compatibility Test Coverage		
2	8051 & ARM-7 based single board computer : Titan-CX & Metis-BX	1.200MHz ARM9 CPU	3	40,000
		2. PC/104 expansion bus		
		3. 32MB SDRAM (64MB opt)		
		4. 8MB NOR Flash (16MB opt)		
		5. Watchdog timer, SPI bus		
		6. Matrix Keypad and text LCD support		
		7. Optional Temp Sensor, RTC and WiFi		
		8.Optional 8 12-bit ADC and RS-485		
3	ARM-9 based single board computer : Explorer-BX	1.Unique MAC ID is assigned to each board.	3	50,000
		2.1 full speed USB Host interface. 3.1 full speed USB		

		device interface.		
		4.I2C interface (with optional on-board 64KB I2C EEPROM).		
		5.SPI interface signals brought out on a separate 6 pin connector.		
		6. RTC with battery backup.		
		7. FPGA: on-board Spartan-III FPGA with 400K gates; memory mapped interfaced to main processor with 16 address and 16 data lines.		
			Total = 1,20,000/-	
	Year 2012-2013			
1	USB PIC Programmer Electronic Kit	1. Requires USB or Serial Cable Includes standard IC sockets		
		2. Software that can be updated as new Pics are released		
		3. Windows 9x/NT/2000/XP Compatible Software		
		4.ICSP (In Circuit Serial Programming) Connector		
		5. Quality PCB and Silkscreen for Easy Assembly		
		6.Complete Assembly and Programming Instructions	1	45,000
2	Integrated Development Environment RTOS	1. 64MB SDRAM	2	50,000
		2. The advanced on-board interfaces including support for SD/MMC card, TFT LCD display, CMOS camera		
		3. Image sensor interface and serial port interfaces		
3		Electronic interface modules	1	45,000
		1.Relay Interfaces		
		2. IDC/DSUB Connector to Discrete Converters		
	Application Interface modules	3. Component Housings		
			Total = 1,40,000/-	

Consumer Electronics , Image Processing , Speech Processsing, General Proficiency, Power Electronics

2009-10

Sr.No	Name of equipment	specification	Quantity	cost
1	Bar code scanner /printer	40 scan per min	2	30000
2	Microwave Oven	25 liters	2	30000
3	Washing Machine	10kg automatic	1	25000
4	Refrigetor	200 liters auto defrost	1	15000
5	LCD TV Receiver	USB port,120 deg viewing	1	30000
6	Tape Transport Mechanism	Different test point	2	5000
7	DVD Model	MPEG4 compatible	2	20000
8	Photo Copier Model	Along with scanner facility(colour)	1	45000
9	Digital Still Camera	10 migapixel, atuo focusing	2	46000
10	Digital video camera	movie mode,still photography mood	1	45000
11	Stereo Speakers set	8 ohm 1000 watt(pmpo)	4	40000
12	Mike for recording	omnidirection pickup, high sensitivity	4	40000
13	TMS 320 speech processor	with audio pro- bundle	2	250000
14	TMS 320 Image processor	with graphic card on board	1	50000
15	Digital multimeters	30000mV resolution 10microvolt	10	100000
	2010-11			
1	Digital multimeters	30000mV resolution 10microvolt	10	100000
2	Digital storage osciloscope	with maths FFT, External trigger communication extension module	1	200000
	2011-12			
1	CRO	2GHz, four channel	10	300000
2	Power supply	32V dc 3amper	10	100000
3	Power supply	300V dc 2 amper	2	50000
4	Function generator	2MHz	5	50000
	2012-13			
1	Power Electronics kits	based on experiment such SCR, DIAC,TRIAC, MOSFET, IGBT, Choppers, inverters	2 sets each	200000
2	Power Electronics basic kits	characteristic of SCR	2	60000

Total 1831000

INSTRUMENTATION LAB

SESSION 2009-2010

SR. NO	NAME OF EQUIPMENT	SPECIFICATION	QUANTITY	COST
1	LVDT	Range-0 to 300mm	2	30000
2	WHEATSTONE BRIDGE KIT	On board	2	15000
3	KELVIN BRIDGE KIT	On board	2	15000
4	SCHERING BRIDGE KIT	On board	2	15000
5	WEINS BRIDGE KIT	On board	2	15000
6	PRESSURE MEASUREMENT TUTOR	----------	2	30000
7	TEMPERATURE MEASUREMENT TUTOR	----------	2	30000
8	RPM/SPEED MEASUREMENT TUTOR	----------	2	30000
9	LASER STROBOSCOPE,DIGITAL STROBOSCOPE,TACHOMETER	----------	2	50000
10	CRO	2 GHz	2	60000
11	DIGITAL MULTIMETER	Standard	2	30000
			TOTAL	380000

	SESSION 2010-2011			
Sr.no.	**NAME OF EQUIPMENT**	**SPECIFICATION**	**QUANTITY**	**COST**
1	LOAD MEASUREMENT TUTOR	Range-0 to 5 kg	2	50000
2	LIGHT MEASUREMENT TUTOR	Photo cell-400mV	2	50000
3	TORQUE MEASUREMENT TUTOR	Range -0 to 1 kg	2	50000
4	STUDY OF HALL EFFECT SENSOR	----------	2	40000
5	MAXWELL'S BRIDGE KIT	On board	2	40000
6	DE-SAUTY'S BRIDGE KIT	On board	2	40000
7	ANDERSONN'S BRIDGE KIT	On board	2	40000
TOTAL				310000

	SESSION 2011-2012			
Sr.no.	**NAME OF EQUIPMENT**	**SPECIFICATION**	**QUANTITY**	**COST**
1	STUDY OF CAPACITIVE PICK UP	----------	2	30000
2	MEASUREMENT OF PH USING CONDUTIVITY CELL	----------	2	40000
3	DC TACHOGENERATOR:STUDY	----------	2	50000
4	CHARACTERISTICS OF	----------	2	40000

	THERMOCOUPLE			
5	MEASUREMENT OF FORCE USING TRANSDUCER	----------	2	40000
TOTAL				200000

SESSION 2012-2013

Sr.no.	NAME OF EQUIPMENT	SPECIFICATION	QUANTITY	COST
1	FREQUENCU TO VOLTAGE CONTROLER	----------	2	40000
2	LEVEL CONTROLER USING INDUCTIVE TRANSDUCER	----------	2	50000
3	LEVEL CONTROLER USING CAPACITIVE TRANSDUCER	----------	2	50000
TOTAL				140000

Furniture

SESSION 2009-2010

Sr.no.	NAME OF FURNITURE	SPECIFICATION	QUANTITY	COST (APROX.)
1	Small cupboard	Standard size	3	15000
2	Big cupboard	Standard size	3	27000
3	Executive table	Standard size	3	30000
4	Executive chair	Standard size	5	20000
5	Foldable partition	5X5 FEET	2	6000
6	Round table (LIB)	30 Feet rounded	1	15000
7	Round table (MEETING HALL)	40 Feet rounded	1	20000
8	Round table (GIRLS COMMON ROOM)	30 Feet rounded	1	15000
9	Book cases	Standard size	3	15000
11	Shoes racks	big size	2	3000
TOTAL				166000

SESSION 2010-2011

Sr no	NAME OF FURNITURE	SPECIFICATION	QUANTITY	COST(APROX.)
1	Small cupboard	Standard size	3	15000
2	Big cupboard	Standard size	3	27000
3	Executive table	Standard size	3	30000
4	Executive chair	Standard size	5	20000
5	Foldable partition	5X5 FEET	2	6000

6	Book cases	Standard size	3	15000
7	Air cooler	exost	3	15000
8	Shoes racks	big size	2	3000
TOTAL				166000

SESSION 2011-2012

Sr no	NAME OF FURNITURE	SPECIFICATION	QUANTITY	COST (APROX.)
1	Small cupboard	Standard size	3	15000
2	Big cupboard	Standard size	3	27000
3	Executive table	Standard size	3	30000
4	Executive chair	Standard size	5	20000
5	Foldable partition	5X5 FEET	2	6000
6	Book cases	Standard size	3	15000
7	Air cooler	exost	3	15000
8	Shoes racks	big size	2	3000
TOTAL				131000

SESSION 2012-2013

Sr no	NAME OF FURNITURE	SPECIFICATION	QUANTITY	COST (APROX.)
1	Small cupboard	Standard size	3	15000
2	Big cupboard	Standard size	3	27000
3	Executive table	Standard size	3	30000
4	Executive chair	Standard size	5	20000
5	Foldable partition	5X5 FEET	2	6000
6	Book cases	Standard size	3	15000
7	Air cooler	exost	3	15000
8	Shoes racks	big size	2	3000
TOTAL				131000

Computer Science and Engineering Department

Sr.No.	Department	Year	Laboratory	Equipment with brief specification	Quantity	Total Cost (in Lacks)
1.	Computer Science & Engineering	2009-10	Operating System and Compiler Construction Lab	1. **Sun Solaris Operating System**	20	20.00
2.				2. Intel® Compiler Suite Professional Edition for Windows	05	2.50
3.				3. Intel® Compiler Suite Professional Edition for Linux	05	4.325
4.				4.Intel@ C++ Compiler Professional Edition for Windows*	05	1.25
5.				5. Intel@ C++ Compiler Professional Edition for Linux*	05	1.25
6.				6.Intel C++ Compiler Standard Edition for Mac OS* X	05	1.25
7.				7.V TuneYM Analyzer for Windows	05	1.25
8.				8.V Tune Performance Analyzer for Linux	05	1.25
9.				9.Intel @ Thread Checker for Windows	05	2.50
10.				10.Intel Thread Checker for Linux	05	2.50

11.				11.Intel @ Thread Profile for Windows	05	0.75
12.				12.Intel @ Threading Building Blocks for Windows	05	0.75
13.				13.Intel Threading Building Block for Linux	05	0.75
14.				14.Intel Threading Building Block for Mac OS X	05	0.75
15.				15.Intel @ Cluster Toolkit For Linux	05	2.50
16.				16.Intel @ Cluster Tool Kit For Windows	05	2.50
17.				17.Intel @ Cluster Tool Kit Compiler Edition for Linux	05	4.50
18.				18. 17.Intel @ Cluster Tool Kit Compiler Edition for Windows	05	3.00
19.				19.Intel @ Trace Analyzer and Collector For Linux	05	1.75
20.				20. Intel @ Trace Analyzer and Collector For Windows	05	1.75
Total						**57.075**

Sr.No	Department	Year	Laboratory	Equipment with brief specification	Quantity	Total Cost (In Lacks)
21	Computer Science & Engineering	2010 - 2011	Data Communication Laboratory	Blue tooth trainer InterfaceUART	05 license	5.00
22				CDMA-2000 protocol Analyzer	01	4.00
23				NET-SIM Ver 2.1	10	11.00
24				Test & Measurement Software for IP Network	01	5.00
25				Voice Quality Testing solution Software	01	5.00
26				Lan Trainer	05 kit	5.50
27				Internet security trainer kit	1 set 15 login	2.50
28				Multiservice access router	1	4.90
29				Intrusion detection system	1	3.00
30				Apache web server	1	4.00
31				Wan management system	1	2.50
32				Core to duo P-IV computers Or higher version	25	10.00
33				Quad-Core Intel Xeon Processor E5430 (2.66 GHz, 80 Watts, 1333 FSB) / 12MB (2 x 6MB) Level 2 cache / 2 GB (2 x 1 GB) PC2-5300	02	6.00
Total						**68.4**

Sr.No.	Department	Year	Laboratory	Equipment with brief specification	Quantity	Total Cost (In Lacks)
34	Computer Science & Engineering	2011-12	Operation Research & Planing Management Lab	1. AIMMS 3.8.4 Software and CPLEX 11 Tuning Tool	20	0.405
35				2.AIMMS 3.7.110 softaware CPLEX 11 Tuning Tool	20	0.405
36				4.General Algebraic Modeling System (GAMS)	1	1.44
37				Core to duo P-IV computers Or higher version	25	10.00
38				Quad-Core Intel Xeon Processor E5430 (2.66 GHz, 80 Watts, 1333 FSB) / 12MB (2 x 6MB) Level 2 cache / 2 GB (2 x 1 GB) PC2-5300	02	6.00
Total						**18.25**

Sr.No.	Department	Year	Laboratory	Equipment with brief specification	Quantity	Total Cost (In Lacks)
39	Computer Science & Engineering	2012-13	Advance Networking lab	Cisco 2950 Switches (48 port) with fiber ports	5	12.5
40				Cisco layer 3 Cisco 4507 switch	1	15.00
41				Uninterrupted power supply (UPS) 10KVA	2	5.00
42				Ftp server with integrated software	1	6.75
43				Terminal server for all customise softwares	1	2.75
Total						**42.00**

Information Technology Department

Sr.No.	Department	Year	Laboratory	Equipment with brief specification	Quantity	Total Cost (In Lacks)
1	Information Technology	2009-10	Data ware Housing and data Mining Lab	1. Stastical Data Miner Ver 7.1 (10 User License) for windows	01	12.00
2				2. Xpert rule software for data mining	01	5.00
3				3.Poly Analyst 6.0	01	5.00
4				Core to duo P-IV computers Or higher version	25	10.00
5				Quad-Core Intel Xeon Processor E5430 (2.66 GHz, 80 Watts, 1333 FSB) / 12MB (2 x 6MB)	02	6.00
6				Laptop Core to duo P-IV 1.86 ghz 160GB HDD 1 GB RAM	10	4.00
Total						**42.00**

Sr.No.	Department	Year	Laboratory	Equipment with brief specification	Quantity	Total Cost
6	Information Technology	2010-11	Multimedia and Computer Graphics Lab	1. Maya 7.0 Software	15	5.00
7				2. 3 D Max Software	01	5.00
8				3.Adobe Photoshop Extended CS3 10	05	1.225
9				4.Adobe Acrobat Writer Professional	05	0.625
10				5.Adobe Premiere Professional	05	1.40
11				6.Adobe After Effect	05	1.75
12				7.Adobe Audition	05	0.625
13				8.Adobe Director 11	05	1.40
14				9.Adobe Dreamweaver CS3 9.0	05	1.40
15				10.Adobe Firework CS2 9.0	05	0.75
16				11.Adobe Flesh CS3	05	0.50

				Professional		
17				12.Adobe Illustrator CS3	05	1.20
18				13.Adobe Photoshop Extended CS3	05	1.10
19				14.Adobe sound booth CS3	05	1.25
20				Core to duo P-IV computers Or higher version	25	10.00
21				Quad-Core Intel Xeon Processor E5430 (2.66 GHz, 80 Watts,	02	6.00
22				Laptop Core to duo P-IV 1.86 ghz 160GB HDD 1 GB RAM	10	4.00
Total						**43.225**

Sr.No.	Department	Year	Laboratory	Equipment with brief specification	Quantity	Total Cost
22	Information Technology	2011-12	Software Project management Lab	1. Load Runner Software	01	8.50
23				2. Win Runner Software	01	3.50
24				3. Mircury Quick Test Professional Software	01	8.00
25				4.IBM Rational rose(20 users)	01	3.00
26				Core to duo P-IV computers Or higher version	25	10.00
27				Quad-Core Intel Xeon Processor E5430 (2.66 GHz, 80 Watts, 1333 FSB) / 12MB	02	6.00
Total						39.00

Sr.No.	Department	Year	Laboratory	Equipment with brief specification	Quantity	Total Cost
28	Information Technology	2012-13	Image processing lab	1. DSP Starter Kits	10	4.00

29				2. Monoid Software (10 Users)	01	5.00
30				Core to duo P-IV computers Or higher version	25	10.00
31				Quad-Core Intel Xeon Processor E5430 (2.66 GHz, 80 Watts, 1333 FSB) / 12MB (2 x 6MB)	02	6.00
Total						**25.00**

INSTRUMENTATION ENGINEERING DEPARTMENT
Year: 2009-2010

Sr.No.	**Equipment**	**Brief specification**	Name of the laboratory	Appro. cost	quantit
1.	Micro processor based colorimeter	**Photometric range** % transmission : 0-130% Absorbance : -0.1. – 1.99 Repeatability : 0.01 Abs **LIGHT SOURCE : LED** **FILTERS:** 8 NARROW BAND HERMETICALLY SEALED FILTERS **DETECTOR:** photodiode **Readout :**4digit 7 segment LED display **Power req. :**230V,50 HZ, single phase,5VA	Biomedical instrumentation	60,000	1
2.	Double beam UV-VIS spectrophotometer	High resolution bandwidth Automatic wavelength calibration 2 lamps deuterium and tungsten PC compatible through USB Data in form of graph and table	Biomedical instrumentation	1,69,000	1
3.	MINI spectrophotometer	Scanning visible spectrophotometer covering near UV visible and near IR spectrum, Microprocessor based with printer interface, Stable single beam optics, Compact modular, 2 position manual selectable multi path length cuvette holder	Biomedical instrumentation	35,000	1
4.	Flame photometer	Microprocessor based , Should analysis of Na, K, Li, Ba and Ca Calibration curve programmability can be done using a maximum of 20	Biomedical instrumentation	39,500	1

		standards in the range of interest of the user, Data processing through optional curve fitting techniques, Can also be interfaced to a printer			
5.	NIR spectrophotometer	**Spectral:** Range : 600- 2500 nm Bandwidth: 20nm Accuracy: 0.5nm Repeatability: 0.2nm **Photometric:** Range: 2.5Abs Accuracy:0.005Abs Stray light:< 1% T @2300nm **Light source:** quartz halogen lamp **Monochromator:** 300 lines/ mm concave holographic grating **Detection:** 2 colour detection **Data presentation:** 12" VGA colour monitor **Power req.:** 230 V, 50 Hz,200VA	Biomedical instrumentation	4,55,000	1
6	Dissolved oxygen analyser	**Dissolved oxygen:** Range: 0-20ppm Accuracy:0.1 ppm Repeatability: 0.1 ppm **Temperature:** Range: 0-100C ppm Accuracy:0.1 C Repeatability: 0.1C **Probes:** Dissolved oxygen : polarographic type Temperature: semiconductor type **Readout:** Three and a half digit 7 segment LED display **Recorder o/p:** 10mV/ppm **Power req.:** 230V,50Hz	Biomedical instrumentation	12,500	1
7	Flame photometer	**Range element:** **Low/Medium/High** **Na-100/10/1** **K-100/10/1** **Ca-15(High)** **Li-15(High)**	Biomedical instrumentation	25,000	1

		Accuracy: 1 digit **Repeatability:** 1 digit **Nebulizer:** Concentric suction type **Flame system:** Burner: stainless steel Fuel gas: LPG Oxidant: dry oil free air Regulator: stainless steel needle type **Detector:** photo conductive cell **Readout:** 2 and a half 7 segment display **Power req.:** 230V, 50Hz			
8	Forbidden energy gap of a semiconductor kit	2V DC @ 10 mA, regulated power supply, digital microA,3 and a haf digits having range 200 microA DC, semiconductor diode, thermometer 0-110, oven electrically heated to heat semiconductor diode	Electronic instrumentation	20,000	1
9.	Class A, B, C, AB amplifier	12V DC @ 100mA, IC regulated power supply internally connected, NPN transistor, built in 1KHz sinewave Oscillator, 2 potentiometer	Electronic instrumentation	20,000	1
10	OP-AMP used as scalar, summer and voltage follower	15V DC @ 150 mA, IC regulated power supply, 2 DPM , 3 and a half digit to read 0-20 V, 2 OP-AMP IC 741, 2 potentiometers, mains on/off s/w.	Electronic instrumentation	10,000	1
11.	OP-AMP as differentiator and integrator	15V DC @ 150 mA, IC regulated power supply, 2 OP-AMP IC 741, mains on/off s/w Square wave generator of 1 KHz.	Electronic instrumentation	10,000	1
12	Study of OP-AMP (i/p bias current, o/p offset voltage, slew rate)	12 VDC @ 100 mA, Ic regulated power supply, OP AMP IC 741, 2 SPDT switches, potentiometer, mains on/off s/w.	Electronic instrumentation	10,000	1
13.	Instrumentation amplifier (study experiment)	2 independent instrumentation amplifier on a single training board, programmable gain amplifier, internal high precision f/b n/w, high CMRR, 12V DC @ 100 mA, regulated power supply.	Electronic instrumentation	10,000	1
14.	Passive	Different types of passive filters,	Electronic	10,000	1

	filters(low, high, bandpass)	adequate no. of other electronic components	instrumentation		
15	Schmitt trigger	0-12 V Dc variable power supply, adequate no.of transistor, resistor, capacitor, on/off s/w with jewel light and fuse, set of patch cords	Electronic instrumentation	10,000	1
16	Fixed o/p power supply	15V, 500mA,1 A,2A, 3 A	Electronic instrumentation	10,000	1
17	OP AMP DESIGN (clipper, clamper, detector, amplifier, OP AMP characteristics)	230 V 50 Hz power supply, 15 v Dc @ 100mA, IC regulated power supply, 2 OP AMP IC 742, transistor, 5 diodes, 2 zener diodes, 28 resistor, 8 capacitor, 1 LED, mains on/off s/w	Electronic instrumentation	10,000	1
18	4- bit binary full adder and subtractor	5VDc @ 200mA, 4 bit full adder IC, quad 2 i/p EXOR gate, LED's, SPDT s/w for logic selection,	Electronic instrumentation	7,000	1
19	Study of various flip/flops	5 V DC @ 100 mA, 2 i/p NAND gate, 4 3i/p NAND gate, one inverter, 4 LED's, mains on/off s/w	Electronic instrumentation	8,000	1
20	Single phase fully contolled bridge converter	230 V AC, isolated transformer, power 50W, 9V DC @ 100mA, zener regulated power supply, 2 UJT, 4 SCR, 2 pulse transformer 1:1:1, 2 potentiometer, bulb 40 W	Electronic instrumentation	12,000	1
21	Single phase half wave controlled converter	230 V AC, isolated transformer, power 50W, 9V DC @ 100mA, zener regulated power supply, 2 UJT, 4 SCR, 2 pulse transformer 1:1:1, 2 potentiometer, bulb 40 W	Electronic instrumentation	12,000	1
22	Single phase half controlled symmetrical and assymetrical bridge converter	230 V AC, isolated transformer, power 50W, 9V DC @ 100mA, zener regulated power supply, 3 NPN transistor.	Electronic instrumentation	14,000	1
23	3 phase half wave rectifier	3 phase transformer, digital panel meter, 3 pole power contactor, 4 pole miniature ckt breaker, 3 neon indicator, 3 SPDT s/w,	Electronic instrumentation	10,000	1
24	3 phase full wave rectifier	3 phase transformer, digital panel meter, 3 pole power contactor, 4 pole miniature ckt breaker, 3 neon indicator, 3 SPDT s/w,	Electronic instrumentation	10,000	1
25	Verification of thevenins, super position, and reciprocity theorem	9V @ 2mA, iC regulated power supply, digital voltmeter, digital mA, mains on/off s/w fuse and jewel light	Electronic instrumentation	10,000	1

26	Dry battery	12V , 35AH, for UPS purpose 3KV	Software instrumentation	3,500	14
27	Verification of the super position theorem	9V @ 2mA, iC regulated power supply, digital voltmeter, digital mA, mains on/off s/w fuse and jewel light	Electronic instrumentation	10,000	1
27	Verification of reciprocity theorem	9V @ 2mA, iC regulated power supply, digital voltmeter, digital mA, mains on/off s/w fuse and jewel light	Electronic instrumentation	10,000	1
28	Verification of the norton's theorem	9V @ 2mA, iC regulated power supply, digital voltmeter, digital mA, mains on/off s/w fuse and jewel light	Electronic instrumentation	10,000	1

INSTRUMENTATION ENGINEERING DEPARTMENT
Year: 2010-2011

Sr.No.	Equipment	Brief specification	Name of the laboratory	Appro. cost	quanti
1	spectrophotometer	**Spectral :** **Range:** 340 – 1000nm **Bandwidth:** 10nm **Accuracy:** 2.5 nm **Repeatability:** 2.5 nm **Readout:** gradual scale **Photometric:** **Range:**0-1.999 Abs **Accuracy:**0.1 @1.0Abs **Repeatability:** 0.05 Abs **Light source:** tungsten halogen lamp **Monochromator:** diffraction grating with 600lines/mm **Detector:** photodiode **Readout:** 3 and a half 7 segment display	Biomedical instrumentation	25,000	1
2	fluorometer	**Range:** 0-0.2,2,20 &200ppm **Light source:** mercury lamp **Filters:** low pass **Detector:** photodiode **Readout:** 3 and a half 7 segment display	Biomedical instrumentation	44,000	1
3	Conductivity meter	**Range:** 0-20, 200microS **Accuracy:** 1% full scale **Repeatability: 1% full scale** **Operating frequency:** 1000 Hz **Temp. compensation:** 0- 50C manual **Temp. coefficient: 2%** **Readout:** 3 and a half 7 segment	Biomedical instrumentation	10,000	1

		display **Output:** 20mV full scale			
4	colorimeter	**Photometric:** **Range:** 0-1.99Abs **Repeatability:** 0.01Abs **Light source:** tungsten lamp **Filters:** peak transmission @450,470, 510, 520, 540, 570nm **Detector:** photodiode **Readout:** 2 and a half 7 segment display **Power req.:** 230V, 50Hz	Biomedical instrumentation	8000	1
5	Zener regulated and IC regulated power supply	12V AC @150mA, 15VDC @100mA IC power supply internally connected, digital voltmeter, 3 and a half digits having range 20V DC, digital mA 3 and a half digits having range 200mA, 1 potentiometer, Mains on / off switch, fuse and jewel light	Electronic instrumentation	20,000	1
6.	Boolean algebra trainer	5V DC @ 100 mA, 4 NOT gates, 3 AND gates,3 OR GATE, 3 selector s/w for logic selection, 2 LED'S, main on/off s/w.	Electronic instrumentation	7,000	1
7	Binary to gray and gray to binary code converter	5 V DC @ 100 mA, IC regulated power supply, quad 2 i/p EXOR gate, s/w for code selection, LED's for display	Electronic instrumentation	6,000	1
8	Hysteresis curve demonstrator	Voltage selector 6v, 12 v, 20 v, 40v, 80v. Power require 230V 50Hz.	Process instrumentation	5,000	1
9.	Non contact IR thermometer/ pyrometer	Temp. range: -18 to 275 C Sighting LASER D:S ratio : 8:1 Emissivity: 0.95 preset	Process instrumentation	500	1
10.	Thermocouples J/K/B/E/R/S/T/ MI, RTD's, MIRTD's, THERMOWELLS	SHOULD MEASURE THE TEMPERATURE IN THE PARTICULAR RANGE	Process instrumentation	5,000	1
11	Portable temp/humidity meter, I/P converter	----------	Process instrumentation	8,000	1
12	DCS trainer	Siemens make	Process instrumentation	12,00,000	1

INSTRUMENTATION ENGINEERING DEPARTMENT

Year: 2011-2012

Sr.No.	Equipment	Brief specification	Name of the laboratory	Appro. cost	quantity
1	PID controller	----------	Process Instrumentation	50,000	1

Year: 2012-2013

Sr.No.	Equipment	Brief specification	Name of the laboratory	Appro. cost	quantity
1	Electropneumatic and electrohydraulic trainer	Neeshionic make	Process Instrumentation	2,00,000	01
2.	Labview and matlab software	New versions	Software instrumentation	12,00,000	01

DEPARTMENT OF APPLIED PHYSICS

YEAR 2009-10

DEPARTMENT OF APPLIED PHYSICS

YEAR 2010-11

SR.NO.	NAME	SPECIFICATIONS	QTY.	Price/unit	Total cost
1	Dielectric study kit		04	19000/-	76000
2	Quink's Tube	Quink's tube with stand, sample : $FeCl_3$,Electromagnet Constant current power supply Digital gauss meter Transducer –Hall probe	04	40000/-	160000
3	e/m Apparatus	complete with power supply cathode ray tube.	04	13000/-	52000
4	Crystal Models		03	2500/-	7500
5	Optical spectrometers	with least count 1/2min, 10x eyepiece with fine cross wire	04	13000/-	52000
6	Newton's Ring	Compact arrangement With source	04	4000/-	16000
7	Lorent's half shade Polarimeter	With all with Necessary Accessories	04	25000/-	100000
8	Internet nodes		02		
9	High Temp Furnace	Temp Capacity 1000 ^oC	01	40000/-	40000
10	Temp Controller	PID type with power pack	01	30000/-	30000
11	Die Punches	10 mm to 12 mm dai stainless steel specac or its equivalent make	01	25000/-	25000

Sr.No.	Name of Item	Specification	Quantity	Price/unit	Total cost
1.	Voltage stabilizer cum ups	10 KVA	01	25000/-	25000
2.	Xerox machine		01	60000/-	60000
3.	Computer Desktop	Intel Pentium 4	01	30000/-	30000
4.	Hall Effect	for semiconductor samples	04	40000/-	160000
5.	Compton Effect	All required Equipment	04	20000/-	80000
6.	Optic Benches with all accessories		05	10000	50000
7.	Dualism of Wave and Particle	Power supply with Necessary Accessories	02	25000	50000
8.	Printer		02	7000/-	14000
9.	Digital stop Watch		03	5000/-	15000
10.	Book Shelves		04	8000/-	32000

DEPARTMENT OF APPLIED PHYSICS
YEAR 20011-12

Sr.No.	Name of Item	Specification	Quantity	Price/unit	Total cost
1.	Decade resistance box	Wire wound & 1Ω to 10MΩ,5 Watt	08	2000	16000
2.	Digital multi meter	Meco make	03	10000	30000
3.	Ac with infrastructure maintains darkroom &light Accuracy Equipment		01	100000	100000
4.	Std. Optical sources	Sodium Lamp with Chock	04	3500/-	14000
5.	Laser Source	He-Ni Laser with power Supply	04	10000/-	40000
6.	Learning resources		05		80000
7.	Water Cooler	With filter 20 lt	01	40000/-	40000
8.	Consumable			10000	10000
9.	Repairing			10000	10000
				Total Amount	340000

GOVERNMENT COLLEGE OF ENGINEERING, AMRAVATI

DEPARTMENT OF APPLIED CHEMISTRY LIST OF EQUPMENT

Sr NO.	Name of Equpment	2009-10	2010-11	2011-12	2012-13
1	**PH Meter :-3½ Digit Indication PH Range:- 0-14 Accuracy:-0.1%F.S.D.Or 2 M.V. Reproductibility:-±1m.V. Temprature Compensation:-0-100*C Manuals Power Supply :- 220/230v AC Single Phase Unit Supplied With One Combination Electrode With Holder &Stand.**	**2X25000 /-**	**1X25000/-**	**1X25000/-**	**1X25000/ -**
2	**Photoelectric Colorimeter (Elico make)**	**1X22000**	**----------**	**1X22000/-**	**---------**
3	**Hot Plate Round Surface:- Surface Diameter 20cm Rating:-1.0 Kw. With 3 Heat Switch & Energy Regulator**	**2X12000 24000/-**	**2X12000/- 24000/-**	**2X12000/- 24000/-**	**2X12000/ 24000/-**
4	**Spectrophotometer**	**--------**	**1X32000/-**	**---------**	**1X32000/**
5	**Single door Refrigerator Cap 286 lit.**	**1X18000**	**-----**	**-------**	**--------**
6	**Stop Watchs**	**6X2000/- 12000/-**	**6X2000/- 12000/-**	**6X2000/- 12000/-**	**6X2000/- 12000/-**
7	**Conductivity meter**	**---------**	**2X10000/- 20000/-**	**1X10000/- 10000/-**	**1X10000/ 10000/-**
8	**Claud and pour point apparatus**	**1X4000/-**	**1X4000/-**	**1X4000/-**	**1X4000/-**
9	**Abbe's Refractometer Accuracy 0.001**	**1X12000**	**1X12000/-**	**1X12000/-**	**1X12000**
10	**Conradsan appratusfor carbon resedue**	**1X6000/-**	**1X6000/-**	**1X6000/-**	**1X6000/-**
11	**WaterDisttilation still(Wall patern)**	**1X14000**	**------**	**1X14000/-**	**------**
12	**Abels flash point apparatus**	**1X18000**	**1X18000/-**	**1X18000/-**	**1X18000**
	TOTAL Rs.	**1,80,000/-**	**1,53,000/-**	**1,47,000/-**	**1,43,000/-**

LIBRARY

Year 2009-10

Sr. No.	Name of Department	Name with Specification of Equipments / Furniture	Qty.	Approx. Expenditure in Lakhs Rs.
1	Library Furniture	Book Stacks Double Faced (Main) Qty. 15 & Book Stacks Double Faced (Add on Section) Qty. 30	15+30	5.0
1	Library Equipments	Laser Printer	3	0.2
2		Laser Printer with Scanning & Xeroxing Facility	1	0.2

			Total Amount	5.4

Year 2010-11

Sr. No.	Name of Department	Name with Specification of Equipments / Furniture	Qty.	Approx. Expenditure in Lakhs Rs.
	Library Equipments	Tattle Tapes based Asset Security System	1	20.0
		Image Server for managing e-content	1	5.0
		Xerox Machine	1	0.8
			Total Amount	25.8

Year 2011-12

Sr. No.	Name of Department	Name with Specification of Equipments / Furniture	Qty.	Approx. Expenditure in Lakhs Rs.
1	Library Furniture	Book Stacks Double Faced (Main) Qty. 15 & Book Stacks Double Faced (Add on Section) Qty. 30	15+30	5.0
1	Library Equipments	Computers dual core	5	2.00
			Total Amount	7.0

D: For Year 2012-13

Sr. No.	Name of Department	Name with Specification of Equipments / Furniture	Qty.	Approx. Expenditure in Lakhs Rs.
	Library Equipments	Air Conditioning of Library – Reading hall, Book Bank & General Stack Section etc.	1200 Sq. m.	25.0
			Total Amount	25.0

3.1.2.2 Strengthening of PG education

As per the National Knowledge Commission Report, the capacity of PG education in engineering needs to be tripled. At present four full time PG programmes are available in department of Civil, Mechanical and Electrical engineering. PG programme in Electronics and Telecommunication and Computer Science and Engineering courses programmes are proposed. In order to establish laboratories for these programmes, needed equipments are identified and list of equipment is as given below.

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Sr. No.	Department	Name of Lab	Name of equipment with specification	Quantity	Aprox. Cost in Lakhs
1	Electronics and Telecommunication	Embedded System Laboratory	Embedded System development Complete setup for Embedded system design tools including Titan boards(10), metis board (05), explorer board(05), interface module(02), triton IDE(20), debugger tool(20)	One set	16.0
2	Computer Science and Engineering	Image Processing Laboratory	P-IV Computer Core to Duo 2.6 GHz Processor or enhanced	25	7.5
			Helix Server	25 User License	4.25
			Server :-Quad-Core Intel Xeon Processor E5430	01	2.75
			Quad-Core Intel Xeon E5260 Processor	01	3.25
			Polymark Software	01	1.0
			Meshmark Software	01	1.0
			Volmark Software	01	1.0
			Eikona for Arts/Database Software	01	1.0
				Total	37.75

3.1.2.2 Computational facility at Hostel:

Presently institute has three hostels, two for boys and one for girls. Institute has provided internet facility in these hostels in limited way due to unavailability of computers and lack of strong campus wide networking. In this XI plan, campus wide networking will be strengthen and will helps to improve internet facility in hostel also. However, institute will require to purchase minimum 100 P4 computers.

Sr. No.	Description	Per Unit Cost in lakh	Quantity	Aprox. Total Cost in lakh
1.	Pentium 4 Computer with Flat monitor, keyboard, mouse, 160 GB hard disk and DVD RW etc.	Rs. 0.35	100	35.0
			Total	35.0

3.1.3 Library

The institute has constructed Central Library under TEQIP programme and purchased number of books and e-journals. A large numbers of books are available in the library. In addition to this the library has e-journals, educational channel and digital library facility due to which number of visitors has increased a lot. In order to provide security, Surveillance system with 12 cameras is provided. It is necessary to provide a system which will be automatically detect the movement of book out of library. Therefore, Radio Frequency Identification (RFID) security technology is necessary and needs to be provided.

The development in IT has made it possible to share information resources. Many Journals are electronically published and therefore it is necessary to subscribe e-journals. E-journals of Science Direct, ASCE and ASME are subscribed by the library. The subscription of these e-journals is to be renewed year. However, continuation of these e-journals is doubtful due to limited funds. Therefore, provision for security system and e-journals under XI plan is made as shown in following table.

Sr. No	Description	Amount in Lakhs	Quantity	Aprox. Cost in Lakhs
1.	Library Security System 3M Tattle Tape detection strip EM detection system with single corridor & buried cable kit and circulation workstation for de/re sensitizing Tattle Taper.	20 per set	Complete One Set	20.0
			Sub Total for Security System	20.0
2.	Science Direct e-jornals	12 per year	Subscription for 4 yrs, 2009-12	48.0

3	ASCE	3.0 per year	Subscription for 4 yrs, 2009-12	12.0
4.	ASME	3.0 per year	Subscription for 4 yrs, 2009-12	12.0
			Sub Total for e-journals	72.0
			Total	92.0

3.1.4 Faculty

The most serious challenge in front technical education is the dearth of well qualified faculty and attracting and retaining motivated faculty. Simultaneously the faculty available though is in less number need to be trained to transform technological developments to the students. The training of faculty and staff is required to be organized to ensure the quality and excellence in technical education. The key areas for faculty and staff development have been identified at the institute level and appropriate schemes to achieve these targets are proposed as follows. The different schemes to achieve target are proposed. The proposal is meant for developing a wider vision of the faculty and for the opportunities at national and international levels.

The faculty and staff training programs include industrial training, induction training, knowledge / skill up-gradation, maintenance of equipments, etc.

The faculty and staff training programmes are aimed

1. To improve the effectiveness of teaching learning process.
2. To update the knowledge of faculty and staff.
3. To design new curriculum and its effective implementation.
4. To encourage research and development

3.1.4.1 Faculty training:

Sr No	Training Area	Training Agency	Duration	No of Beneficiaries	Approx. Cost in Lakhs	Deptt.
1	Induction Training for teachers	NITTTR, Bhopal	One Month	20	10	ALL
2	Micromachining	IIT B	3 days	20	1.6	Mech.
3	Production Management for Excellence	IIT B	3 days	20	1.6	Mech.
4	Renewable Energy Sources	IIT Delhi	3 days	20	1.6	Mech.
5	Earthquake Engineering	I.I.T. Kanpur	01 week	20	3.25	App. Mech
6	Non destructive Testing	I.I.T. Bombay	01 week	20	3.25	App Mech

7	Digital Image Processing	IIT, Kgp	01 week	25	3.0	Comp
8	Artificial Intelligence	IIT,Kgp	01 week	25	3.0	Comp
9	Design & Analysis of Algorithms	IIT, Kgp	01 week	25	3.0	Comp
10	Object Oriented Systems Design	IIT, Kgp	01 week	25	3	Comp
11	Pattern Recognition	IIT B	01 week	12	2	Electro.
12	Mobile communication	IIT B	01 week	15	2	Electro.
13	Communication Network	IIT B	01 week	20	2	Electro.
14	Neural Network	IIT B	01 week	20	2	Electro.
15	Soft Computing	IIT B	01 week	25	2	Electro.
16	Modern Electronic Devices	IIT B	01 week	15	2	Electro.
17	Modern Programmable devices	IIT B	01 week	20	2	Electro.
18	Digital Control	IIT B	5 days		2.5	Instru
19	Signals and Systems	IIT B	5 days		2.5	Instru
20	Microelectromechanical Systems (MEMS)	IITK	5 days		2.5	Instru
21	MS project by Primavera in construction management	NICMAR, Pune NICMAR, Hydrabad	01 week	02	0.5	Civil
22	Geotechnical Engg.	IIT, B IIT, Delhi	01 week	04 04	1.0 1.0	Civil
23	Geotextile Engg.	IIT, Delhi	01 week	04	1.0	Civil
24	Ground Improvement Technique	IIT,Delhi	01 week	04	1.0	Civil

25	Water resources Engg.	CWPRS, Pune	01 week	03	0.75	Civil
26	Transportation Engg.	NHAI	01 week	04	2.0	Civil
27	Advanced surveying , Including GIB & GIS	IITB	5 days	5	2.0	Civil
28	Irrigation Engg.	CWC,Delhi	3 days	5	1.50	Civil
29	Intelligent Machines and System	IITKgp	01 week	25	3	IT
30	Computer Architecture and Operating System	IITKgp	01 week	25	3	IT
31	Computer Networks and Communication	IITKgp	01 week	25	3	IT
32	Wavelet transform	IITB	01 week	20	3	Elect.
33	MATLAB and Simulink	IITB	01 week	20	2.5	Elect.
34	Design analysis and Diagnostic of Power transformer	IITB	01 week	20	3	Elect.
35	DSP	IITB	01 week	20	3	Elect.
				Total Cost	86.05	

3.1.4.2 Staff training:

Sr. No	Training Area	Training Agency	Duration	No of Beneficiaries	Approx. Cost in Lakhs	Deptt.
1	Maintenance and usage of laboratories and equipment	NITTTR Bhopal	1week	35	3	All Deptt. and Office
2	Office automation and paperless work	NITTTR Bhopal	1week	35	3	

03	Computer Hardware repair and Maintenance		1 week	20	0.8	
				Total	6.8	

3.1.4.3 Student competitions:

Sr No	Name of Programme	Various Events	No of Beneficiaries	Approx. Cost in Lakhs
01	Prajwalan-2009	Paper presentation, Contraption, Model Exhibition , Robotics, On Spot events, On line events	1500	3.0
02	Tech Fest-2010	Paper presentation, Contraption, Model Exhibition , Robotics, On Spot events, On line events	1500	3.0
			Total	6.0

3.1.4.4 Industry academia interaction

Sr. No	Name of Programme	No of Programs	No of Beneficiaries	Approx. Cost in Lakhs
01	Expert Lectures	30	600	3
02	Industrial training	10	30	3
03	Industrial Visit	5	20	1
04	Workshop	6	120	1.2
05	Industrial Research Project	10	100	5.0
			Total	13.2

3.1.4.5 Summary of expenditure for Training: Faculty / Staff

Sr. No.	Name of Program	No of Programs	Approx. Cost in Lakhs
01	Faculty / Staff Training	38	92.85
02	Student Competitions	02	6.0
03	Industry Academia Interaction	05	13.2
		Total	112.05

3.1.5 Accommodation

The institute has huge land of 105 acre at prime location in the city. The existing built-up area is given as below,

Sr. No	Department	Built – up Area (Sq. m)
1	Administrative Building	5600.0
2	Civil And Applied Mechanics	3492.5
3	Mechanical	1797.14
4	Electrical Engg	3026.48
5	Work Shop (Sheet roof)	2212.3
6	Electronics & Computer	3902.0
7	Central Library	1478.0
8	Hostels (a) Boys (2)	5250.0
	(b) Girls (1)	2926.0
9	Quarters	917.0
	Total	**30601.42**

The present students' strength of the institute is 1800 which, as per AICTE norms require 21000 m^2 built up area for academic and instruction purposes. However at present institute has about 12000 m^2 area for this purpose. Therefore institute has submitted the proposal of 3 new buildings and is under consideration of state government.

Due the basic requirement of building for academic purposes, other requirement like girl's hostel and guest accommodation have become secondary. However these are essential for every role model technical education. The residential complex is need of hour and helps to motivate students and faculties to spend maximum time for education in the campus.

3.1.5.1 Girls hostel:

Presently institute has two boys and one girls' hostel with 180 student's capacity each. The strength of girl student is around 30 % which comes out to be 600 with 5% variation. Because institution is autonomous and is popular for quality education the girl's students from all over the states shows their interest in joining this institution. Therefore majority of the girls are from outside the city. Though the capacity of existing girl's hostel is 180, total 300 students are staying in hostel. If the girls are denied the admission their parents and girls students stand with their hand folded requesting to accommodate their ward in the existing hostel for safety and security reason. This has resulted in total chaos has disturbed academics environment in the hostel due to huge girls. Hence one girl's hostel of 200 capacity of 3000 km^2 is proposed. The details of construction, execution authority and cost based on prevailing CSR rate is as given at end of the section.

3.1.5.2 Guest accommodation:

The institute became autonomous since academic session 2006-07. Under autonomous pattern, various eminent persons from Academic institute such Indian Institute of Technology, industry experts, faculties from different institutes are nominated on Senate/Academic board, Subject board (BOS), examination committee and they are have to attend the meetings regularly. In addition to this, the examiners are also are coming from outside for theory and practical examination. However the institute dosn't has facility of guest house. Because of this, these eminent personalities have to stay at some other location making inconvenience to them. Because important guest are staying in hotels, the institute has to pay huge amount. Moreover the need of guest house within campus has been pointed out by AICTE from time to time. Therefore a small guest house of 500 m^2 with ancillary facility is proposed to be constructed.

Summary of proposed buildings are given below:

Sr. No.	Name of Building	Built–up Area (sq.m)	Approx. cost (lakhs)
1	Girls hostel of 200 capacity	3000	520.00
2	Guest house	500	105.00
3	Extension of Instrumentation	2294	336.00
4	Basic Science building		380.00
5	Extension of Electrical		90.00
6	Extension of Mechanical	1248	159.48
7	Class rooms for Electronics		138.79
8	Computer Center	1469	231.17
		Total	1960.44

3.1.6 Physical Facilities

National Knowledge Commission has strongly recommended increasing the quantity and quality of PG education. It is therefore propose to have separate PG complex for conducting instructional activity for all PG courses.

Recently constructed building of Central library is finding it difficult to accommodate all the facility that are provided by the library. Due to this students are finding the reading space insufficient. In order to provide a separate reading hall so as to accommodate 250 students at a time, an extension to exiting library building of the area of 750 m^2 is proposed.

3.1.6.1 PG education complex:

The institute is offering four full time post graduate (PG) programmes in Electrical Power system, Thermal engineering, Structural engineering and Environmental engineering. Two new PG courses are also planned to start in near future. The PG classes are accommodated in their department with many constraints. No separate classrooms, laboratories, seminar rooms exist for PG programme. Hence, a separate PG building to accommodate all PG programme can be provided by constructing classrooms, laboratories, seminar rooms etc. of 1000 m^2 area.

3.1.6.2 Library extension:

The central library building has stack rooms, e-library room, seminar room and reading room with limited seats is available in the institute. However, increased capacity of students needs additional space of a separate reading room which will be open for 12 hours. Therefore, extension to the existing library building of 750 m^2 is proposed.

Summary of proposed PG building and extension of library building details are given below:

Sr. No.	Name of Building	Built–up Area (sq.m)	Approx. cost (lakhs)
1	PG building	1000	170.00
2	Extension to library building	748	150.00
		Total	320.00

5.0 Impact and expected outcome

The impact and expected outcome due to financial assistance under XI plan is summarized below.

1. The project will basically benefit teaching learning process in the institute. The improvement in teaching aid will result in effective teaching and improved results.
2. The availability of latest and sophisticated equipment will provide practical knowledge to the students in tune with industry.
3. The strengthening of campus wide network will results in fast connectivity, better communication. The student and staff will be exposed to more and recent information available on internet and consequently acquire the updated knowledge.
4. The provision of computers and internet facility at hostel to students for 24 hours shall help them in project completion, assignments and using network software available in college.
5. The student competition will improve competitive spirit among the students and also help in technical presentation skills.
6. The faculty trainings will help to improve the knowledge base of the students.
7. E-journals are more convenient and multiple users can refer variety of journals.
8. The strengthening and expanding PG education will help in improving its quality and specialized persons now to achieve the target fixed by National Knowledge Commission.
9. The new security system shall facilitate security effective with no manpower.
10. The provision of girl's accommodation will save hardship of girl's student and will allow more concentration on study. The provision of in campus guest house will enrich the campus facility.
11. The separate provision for conducting PG classes shall create academic ambience so as to concentrate of research part of education of PG students. The existing library shall provide the reading hall facilities to the students.