CURRICULUM FOR THREE YEAR
(SIX SEMESTER)
DIPLOMA COURSE IN

COMPUTER SCIENCE & ENGINEERING

Effective from Session

Semester System

Prepared By

Curriculum Development Cell

INSTITUTE OF RESEARCH DEVELOPMENT
& TRAINING, U.P., KANPUR

APPROVED BY

BOARD OF TECHNICAL EDUCATION
U.P. LUCKNOW,
CORRECTED AS SYLLABUS COMMITTEE OF:
B.T.E. MEETING HELD ON 02.06.2015

Corrected and Approved by B.T.E. Meeting On Dated 02.06.2015

STUDY AND EVALUATION SCHEME FOR
THREE YEAR SIX SEMESTER) DIPLOMA COURSE IN COMPUTER SCIENCE AND ENGINEERING
(Effective From)

I Semester- (Common To Diploma In Information Technology)

Curriculum							Scheme of Examination								
Periods Per Week								Theory			Practical				Grand Total
Lec.	Tutorial	Draw		Lab	Work Shop	Total	S U B J E C T	Examination Dur.	Sess. Marks	Total Marks	Examination Dur.	Sess. Marks	Total Marks		
5	-	-		3	-	8	1.1 Professional Communication	2.5	50	20	70	3	20	10	30	100
3	1	-		-	-	4	1.2 Applied Mathematics-I(A)	2.5	50	20	70	-	-	-	-	70
3	1	-		-	-	4	1.3 Applied Physics-I	2.5	50	20	70	-	-	-	-	70
6	-	-		-	-	6	1.4 Applied Chemistry	2.5	50	20	70	-	-	-	-	70
8	4	-		-	-	12	1.5 Components Of Information Technology.	2.5	50	20	70	-	-	-	-	70
25	5			3		34	T O T A L		250	100	350	-	20	10	30	380
							GAMES/NCC/Social and Cultural activities + Discipline (15+10)								25
														Total	405

II Semester-(Common To Diploma In Information Technology)

3	1	-		-	-	4	2.1 Applied Mathematics-I(B)	2.5	50	20	70	-	-	-	-	70
3	1	-		4	-	8	2.2 Applied Physics-II	2.5	50	20	70	3	40	20	60	130
6	-	-		4	-	10	2.3 Electrical Engineering-I	2.5	50	20	70	3	50	25	75	145
4	1	-		-	-	5	2.4 Engineering Mechanics and Material	2.5	50	20	70	-	-	-	-	70
8	-	-		6	-	14	2.5 Operating system	2.5	50	20	70	3	50	30	80	150
4	-	-		3	-	7	2.6 Fundamental of Electronic Devices	2.5	50	20	70	3	50	25	75	145
28	3			17		48	T O T A L		300	120	420	-	190	100	290	710
							GAMES/NCC/Social and Cultural activities + Discipline (15+10)								25
														Total	735

NOTE:- (1) Each period will be of 50 minutes duration.
(2) Each session will be of 16 weeks.
(3) Effective teaching will be at least 14 weeks.
(4) At least 2 industrial visits should be scheduled during the session.

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STUDY AND EVALUATION SCHEME FOR
THREE YEAR SIX SEMESTER) DIPLOMA COURSE IN COMPUTER SCIENCE AND ENGINEERING
(Effective From)

III Semester

Curriculum						C O U R S E S / S U B J E C T S	Scheme of Examination								
Periods Per Week							Theory				Practical				Grand Total
Lec.	Tutorial	Draw	Lab	Work Shop	Total		Examination Dur.	Examination Marks	Sess. Marks	Total Marks	Examination Dur.	Examination Marks	Sess. Marks	Total Marks	
5	2	-	-	-	7	3.1 Applied Mathematics-II	2.5	50	20	70	--	--	--	--	70
6	-	-	6	-	12	3.2 Programming in C & C++	2.5	50	20	70	3	70	30	100	170
6	-	-	6	-	12	3.3 Computer Hardware And Maintenance.	2.5	50	20	70	3	75	40	115	185
5	1	-	6	-	12	3.4 Electronic Instruments And Measurement.	2.5	50	20	70	3	60	30	90	160
22	3	-	18	-	43	T O T A L		200	80	280	-	205	100	305	585
						Games/NCC/Social and Cultural activities + Discipline (15+10)									25
														Total	610

IV Semester-(Common To Diploma In Information Technology)

6	-	-	4	-	10	4.1 Data Communication & Computer Network	2.5	50	20	70	3	60	30	90	160
6	-	-	6	-	12	4.2 Office Tools	2.5	50	20	70	3	70	30	100	170
6	-	-	6	-	12	4.3 Dot(.) Net Technology	2.5	50	20	70	3	70	35	105	175
6		-	6	-	12	4.4 Microprocessor & Its Application	2.5	50	20	70	3	60	30	90	160
24	-	-	22	-	46	T O T A L		200	80	280	-	260	125	385	665
						Games/NCC/Social and Cultural activities + Discipline (15+10)									25
														Total	690

Note : (1) Each period will be of 50 minutes duration.
(2) Each session will be of 16 weeks.
(3) Effective teaching will be at least 14 weeks.
(4) 4 weeks structured and supervised, branch specific, task oriented industrial/field exposure to be organised after IV Semester
Student will submit a report. There will be 60 marks for this exposure.
These marks will be awarded by project examiner in the VI Semester.
(Examination marks : 40, Sess. marks : 20).
(5) At least 2 industrial visits should be scheduled during the session.
(6) At least 1 seminar should be organised at the institute level with in the session.

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STUDY AND EVALUATION SCHEME FOR
THREE YEAR SIX SEMESTER) DIPLOMA COURSE IN COMPUTER SCIENCE AND ENGINEERING
(Effective From)
(COMMON TO INFORMATION TECHNOLOGY (THREE YEAR)

V Semester-(Common To Diploma In Information Technology)

Curriculum						COURSES	Scheme of Examination								
Periods Per Week						SUBJECTS	Theory			Practical			Grand Total		
Lec.	Tutorial	Draw	Lab	Work Shop	Total		Examination Dur.	Marks	Sess. Marks	Total Marks	Examination Dur.	Marks	Sess. Marks	Total Marks	
6	2	-	-	-	8	5.1 Industrial Management and Entrepreneurship Development	2.5	50	20	70	--	--	--	--	70
6	-	-	4	-	10	5.2 Data Structure Using C&C++	2.5	50	20	70	3	60	30	90	160
6	-	-	6	-	12	5.3 RDBMS	2.5	50	20	70	3	60	30	90	160
6	-	-	6	-	12	5.4 Java programming	2.5	50	20	70	3	60	30	90	160
6	-	-	-	-	6	5.5 E-Commerce & EPR	2.5	50	20	70	-	--	--	--	70
30	2	-	16	-	48	TOTAL		250	100	350	-	180	90	270	620
						Games/NCC/Social and Cultural activities + Discipline (15+10)									50
														Total	645

VI Semester-(Common To Diploma In Information Technology)

4	-	-	-	-	4	6.1 Environmental Education &* Disaster Management	2.5	50	--	--	-	--	--	--	--
6	-	-	6	-	12	6.2 Internet & Web Technology	2.5	50	20	70	3	60	30	90	160
6			6		12	6.3 Computer Graphics	2.5	50	20	70	3	60	30	90	160
-	-	-	8	-	8	6.4 Project -i. Problem	--	--	--	--	3	80	40	120	120
						ii Exposure	--	--	--	--	-	40	20	60	60
						iii Seminar	--	--	--	--	-	--	20	20	20
16	-	-	20	-	36	TOTAL		100	40	140	-	240	140	380	520
						Games/NCC/Social and Cultural activities + Discipline (15+10)									25
														Total	545

30% Carry	Over of I & II	342
70% Carry	Over of III & IV	910
100% Carry	Over of V & VI	1190
	Grand Total	2442

NOTE:-(1) Each period will be of 50 minutes duration.
(2) Each session will be of 16 weeks.
(3) Effective teaching will be at least 14 weeks.
(4) Remaining periods will be utilised for revision etc.
(5) At least 2 Field visit and 2 extension lectures are to be organised and managed well in advance at institute level during the session.
(6) (*) It is compulsory to appear & to pass in examination, But marks will not be included for division and percentage of obtained marks.
(7) At least 1 seminar should be organised at the institute level with in the session, Participation of each student is compulsuory and sessional marks for this should be allotted to the student. (No External Exam.)

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C O N T E N T S

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MAIN FEATURES OF THE CURRICULUM

1.	Title of the Course	:	Diploma In Computer Science & Enginnering.
2.	Duration of the Course	:	Three Years(Six Semester)
3.	Type of the Course	:	Full Time Institutional
4.	Pattern of the Course	:	Semester System
5.	Intake	:	60
6.	Entry Qualification	:	Passed High School with 35% Marks
7.	Admission Criteria	:	State Joint Entrance Examination

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III LIST OF EXPERTS

List of experts who contributed to Change the of curriculum of Three Year Diploma Course In Computer Science and Engineering in Semester System held on 08.04.2015 at I.R.D.T . U.P., Kanpur.

1. Smt Preeti Chaturvedi	Lecturer, C.S.J.M. University Kanpur
2. Shri Anoop Kumar Patel	H.O.D., G.P., Kanpur
3. Shri Harinam	Lecturer, G.P., Lucknow
4. Shri Litil Kumar	Assistant Professor I. R. D. T., Kanpur

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IV. NEED ANALYSIS :

With the development of civilisation, human needs to keep on increasing thier fulfilment needed simulation, analysis of lot of informations too became essential. Now the individual responsbilities of every responsible citizen grew up to such a light that it is difficult for him to handle them successfully. Human memory too has its own limitations. So here comes the computer to help in all kind of decision making, whether it is highly complicated research work, war strategy, market speculations or day-to-day need of human life etc. As a matter of fact every individual activity needs decision making. So the computer is the need of organisations and also the need of individual being. It will not be exaggeration if we say that it is "Computer era". So is the need for developing a course for computer engineering at diploma level. The course aims to develop perssonnels, capable of taking responsibilities such as installation repair and maintenance and operating computer units. It is supposed that such personnel will not face any dearth of employment because of omnipresent nature of computer.

The syllabus for diploma in computer Engineering has been developed to meet above mentioned aims. Obviously achievement of any aim requires knowledge of the means and procedures of thier utilisation. With this view various courses have been carefully selected and thier length and depth decided by experienced experts in the field.

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V. PROFILE DEVELOPMENT :

A tool in the form of questionaire for getting information about job potential, job opportunities, man power requirements and job activities of Diploma holder in Computer Engineering was designed and sent to various organisations, industries, higher technological Institutions and Polytechnics. The response was not very much encouraging. So efforts were made to get feed back through mutual interaction with the experts of above organisations, industries, higher technological institutes and polytechnics. The feed back received was discussed and analysed in a workshop and a draft curriculum was prepared adopting the following procedure.

1. Listing job potential and job activities.

2. Analysing activities into knowledge and skill.

3. Determining course objectives.

4. Planning horizontal and vertical organisation of the subjects.

5. Developing study and evaluation scheme.

6. Development of detailed course content and coverage time keeping in view the knowledge and skill requirement.

7. Determination of resource input in the form of human resource, space, equipment etc.

The so prepared curriculum was sent for comments of experts in various higher technological institutions and senior personnels in industries. The suggestions thus recieved and those through personal contacts were incarporated where found suitable. Finally revised curriculum was put before an exspert Committee approved by the "Government of Utter Pradesh" for its final approval. The Committees suggestions though very nominal too were respectfully incarporated to give it its final shape.

It is hoped that revised curriculum of Diploma in Computer Engineering will be useful in producing middle level manpower for world of work.

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VI. JOB POTENTIAL/JOB OPORTUNITIES

JOB POTENTIAL

Background Information Regarding Computer Industry:

Most of the industries in computer area are in private sector. The job designations are not standard. They change from firm to firm depending upon the size of firm and the nature of work, the firm is engaged in R & D or marketing software development etc. In general the jobs for a diploma holdder in Computer engineering are available in the following areas :

i. Service Division.
   Maintenance, service and installation of computer system.
ii. Production and Quality Control Division.
iii. Marketing division.
iv. Commercial (stores, purchase and pricing)
v. Research and Development.

Assessment of job potential from Computer Industry:

A questionnaries was sent to 30 different industries dealing with different aspects of Computer Engineering. On the basis of information collected and discussions held during the visits to these industries a chart showing manpower spectrum of some of the computer industries has been prepared. This chart is attached here. In this chart a typical manpower employment in computer is shown. It also shows the relative position of the personnels in computer field. The nomenclature of the designations is by no means standard and the chart only indcates their relatives position.

JOB OPPORTUNITIES

The possible job opportunities for the product of this curriculum are

1.3.1. Junior engineer/Design Assistant/Senior Technical Assistant in R&D, Quality Control and Testing activities.

1.3.2. Shopfloor manger/Assembly supervisor in manufacturing and production Activities.

1.3.3. Installation Engineer/Service Engineer/Junior Engineer/ Junior Service Engineer in installation,Service and Custom Support Activities.

1.3.4. Junior Marketing Executive/Junior Purchase Officer/Junior Stores Officer in Marketing and Commercial activities

ACTIVITIES/JOB DESCRIPTION

Service Division:

Maintenance, service and installation of computer systems

Identify hardware and software faults and rectify them.

Suggests the desirable changes in the design in view of this

maintenance experiences.

Rectify fault by component and card level.

Advises the customer on site preparation and checks the site.

Install the systems and tests its operation.

Train the customer in the operation and the use of the system.

Production and Quality Control:

Indenting the material from stores and schedule the work of skilled workers.

- Fault finding in assembly work by visual inspection.
- Guiding skilled workers in component identification, component testing and precision assembly work.
- Fabricate (if required) test and interconnect different sub-assemblies and subsystems like power supply, interface, processor and memory units, video display unit, printer, plotter, graphic monitor, hard disc drives interface etc.
- Managing personnel like technicians and skilled workers.

Marketing:

- Meeting with prospective customer under the guidance of sales engineer.
- Arranging demonstration at the site of customer.

Commercial:

- Assists sales engineer in the sales of computer system (Contacts customer, arranges demonstration, preparation of technical documents and specification.
- Purchase material (writes specifications, receiving quotations, prepares and checks comparative statements, checks bills).
- Prepare bill for service charges and cost of materials used.
- Incoming inspection (checking quality, quantity and specification of the material supplied against orders).
- Maintains stocks and records.

Research & Development Work:

- Design simple microprocessor based subsystem (without optimisation) under the guidance of design engineer.
- Printed circuit board (PCB) layout design under the guidance of design engineer.
- Fabricates prototype of a subsystem or system.

- Plans flow of activities for production along with engineer.

- Test systems at card level, subsystem level and at complete system level.

- Documents the layouts, circuit diagram, procedures and processes.

- Develops systems software, the line drivers and interface with the guidance from engineer and runs it.

- Communicates with engineer and assists him in converting technical ideas into practical shape.

- Assist engineer in laying test procedures, tests standards and maintaining the quality of the products.

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VII. JOB ACTIVITIES & ACTIVITY ANALYSIS:

ACTIVITY	KNOWLEDGE	SKILLS
1. Service Division (Maintenance, Service & Computer:	Installation of	
1.1 Identify hardware & software faults & rectify them.	Working of the total System CPU, peripherals interfaces & system software.	Using diagnostic routines for fault location and identifying the fault at sub system level, card level, chip level, user level.
1.2 Suggests the desirable change in the design in view of his maintenance experience.	Faults diagnoses procedure including introduction of fault and fault diagnosis logics.	Use of test equipment for fault location.
	Diagnostics methods of running them and interpreting the results.	Study of literature (HW & SW) aspects and adapt the engineering change notes.
	Fault identification at system level subsystem level, card level component level & user level.	Preventive maintenance.
	Error rates in communication peripherals.	
1.3 Rectify fault at component & card level.	Data communication equipments.	
	Data communication principles, spare parts & identification.	
	Use & knowledge of tools and test equipment for maintenance including PBRS equipement.	
	Understanding and implementing engineering change notes for both hardware & software.	
	Performance measurement of computer system.	

ACTIVITY		KNOWLEDGE	SKILLS
		Preventive maintenance schedules and its consequence, knowledge of terms like MTBF, MTRR, response time, Cost of down time. Log maintenance (Symptoms, diagnosis and corrective action). Maintenance procedures and techniques for CPU, peripherals, interfaces power supplies. Complaint reporting system, performance reporting system. Maintain ability of system software, updating and its consequences user accounting.	Maintenance of log register and complaint reporting systems maintenance of user.
	Installation		
1.4	Advise the customer site preparation & check the site.	Layout considerations & planning influence of factor like vibration humidity, airconditioning systems on system performance, measurement, dust prevention specification in regard to above. Comparative study of air conditioning system such as window & A.C. plant and package, power disturbances earthing & its specifications. Single, Three Phase supplies, isolation stablizers switches, power distribution system and components and materials safety design. Low power transformer, Servo regulated power supplies.	Communication skills oral & written. Measurement of humidity, vibration, temperature, dust, testing of earthing isolation, prepare wiring diagram & trace the wiring system Operate various test equipment, A/C system voltage regulators and isolation transformers. Wiring & preparation of wiring diagrams

ACTIVITY		KNOWLEDGE	SKILLS
1.5	Installs the system & test its operation.	Wiring, interpretaion of installation & wiring drawings. Knowledge procedures.	Install the systems, run diagnostics, run system software, rectification of faults, train operators
1.6	Trains the customers in the operation and use of system.	Principles of working of operation of each system and sub system.	Practice in using computer system.
2.	Production & Quality Control:		
2.1	Identing the material from stores and schedule the work of skilled workers.	Concept of production document, drawing concepts principles of working of the components (ICs, discreate components, active passive and metal ware).	Practice of reading, drawing, knowledge of English.
2.2	Fault finding in assembly work by visual inspection.	Material used in assembly process. Handling of LSI and other components.	Practice in soldering & desoldering work.
2.3	Guiding skilled workers in component identification, component testing and precision assembly work.	Reading electronic drawing. Terminology, symbols, correlate the drawing with related components.	Component identification colour code of registor capacitor.
2.4	Fabricates, (if required) test & interconnects different subassemblies and sub system like power supply, interfaces, processor and memory units, video display unit, printer, plotter, graphic monitor, hard disc, drive interfaces etc.	System block diagram, function of each block run diagnsotic programme, diode errors, operation of test equipments like storage oscilloscope logic analyser, logic probe, meters, DBO, oscillator, pulse generator Block diagram of software, linear circuits different devices & digital circuit & microprocessors, magnetic recording techniques, knowledge of assemblers.	Practice in using equipments (Electronic as well as special type), able to write & run a small programme in assembly & high level language (BASIC & COBOL).
2.5	Managing personnel like junior technicians and skilled workers.	Concepts of Human relations, dignity of labour	

ACTIVITY		KNOWLEDGE	SKILLS
3.	Marketting		
3.1	Meeting with prespe-ctive customer under the guidence of sales engineer.	Commerical term, types of payments, insurance communication skill, command on language advertising technique communicate computer specifications (includ-ing various peripherals) understanding of customers application. Analyse specifications, vis-a-vis other computer.	Practice in operation of small computer.
3.2	Arranging demonstra-tions at the site of customer.		
4.	Commercial		
4.1	Assists sales engineer in the sales of computer system (Contacts customer arrange demonstrati-ons, preparation of documents & specific-ations).		
4.2	Purchase & sales of computer system (Con-tact customer, arrna-ge demonstration).	Source of supply knowl-edge of & writing deta-iled specifications of the materials & equipm-ent needed in computer manufacture; computer peripherals, import procedures. Document preparation for quotations, specificati-ons & demonstration of systems.	Written communication skill. Understand cus-tomer needs. Demonstrate the systems. Quotation preparation & ordering equipment.
4.3	Prepares bills for service charge and cost of material.	Commerical terms like FOR, FOB, Desitnation terms of sales & purchase, Sales tax income tax procedure.	Practice in using various forms.
4.4	Incoming inspection (inclucing checking qulaity, quantity and specifications of the material supplied against orders).	Read specification, data sheet, component testing procedures. Specifications of compo-nents, identification of components, stores entries.	Practice in the operation of instruments, testing of component, error report preparation.

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ACTIVITY		KNOWLEDGE	SKILLS
		Component identification, detailed specification, storage systems of components.	
4.5	Maintains stocks and records.	Registers, their types & method of maintaining entries.	Practice in dealing with different entries in the registers, inventory control.
5.	R & D		
5.1	Design simple up based sub system without optimisation under the guidance of engineer.	Digital logic design, Microprocessor, computer architecture system integration, Application areas, design of memory boards peripheral interfacing techniques using mannuals,chip, chip substation, situation data communication modules, multiplexers, A/D & D/A base standards, Communication protocols, Characteristics of components, noise levels and causes.	Working with digital linear and up circuits using VLSI, LSI, MSI chips, for a particular use, Acquiring information regarding the chips from data books/sheets. Chip subsituation,Interfacing of peripherals and information regarding interfacting chips.
5.2	PCB layout design under the guidance of design engineer	Noise, Noise levels & cause, principles of PCB design, familiarity with chips, knowledge of connectors, Knowledge of PC boards, Knowledge of PCB drafting aids and drafting techniques, back pannels and multiboard modules. Standard PCB size.	Drawing layouts, practice in making the layouts.
5.3	Fabricates prototype of a subsystem or system (Contact customer, arrange demonstration).	Mechanical packaging, considerations in packaging & design, organise a small workshop, draw flow of activities, guide, small groups in fabrication, wire wrapping. Thermal properties of metals and components. Mounting modes fuse and safety devices. Connector, cables and wiring, HDS.	Soldering & Desoldering techniques component mounting chassis fabrications, drilling & surface treatment of PCBs. Wire wrapping techniques, screen printing, painting. Testing of PCB circuit.

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ACTIVITY		KNOWLEDGE	SKILLS
5.4	Plans flow of activities for production along with engineer.	PERT, time consciousness knowledge of production activities.	
5.5	Test system at card level, sub-system level and at complete systems level.	Locating faults, identification of causes (components or design). Use test equipment including programmable test equipment and calibration of test equipment. Interpretation of test results. Visible defects, chips and equivalent chips. Noise cause.	Fault finding in PCBs, use of test equipment.
5.6	Documents the layouts circuit diagrams, procedures and processes.	Documentation of test equipments, test procedure, flow activities, quality control standard computer equipment and diagnestics programmes of system software.	Documentation skills.
5.7	Develops system software, the line drivers & interfaces with the guidance from engineer and runs it.	Fundamentals of programming, logic, programming language, applications, Knowledge of system software, operating systems, compilers drivers and other system software. Efficient use of system software, write small diagnostic programmes to test system, generation and running of system software, knowledge of application packages and their running. Assembly and machine language programming. Modification & adaption of software.	Programme wirting debugging skills in high level & assembly languages. Documentation of programmes. Modification and adaption of software.
5.8	Communicates with engineers and assist him in converting technical ideas into practical shape.	Understand the language of the engineer. Understand the drawing, notation specifications Fabricate, translate or code as per the specification use modules, sub assemblies written/prepared by others.	Fabricatory skills, Coding skills, Translative skills. Modification and adoption of circuits and programs.

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ACTIVITY		KNOWLEDGE	SKILLS
5.9	Assists engineer in laying test procedures, test standards and maintaining the quality of the products.	Quality control, quality checking procedures and standards. Documentation of test procedures reporting. Effect of environment on the behaviour of components and systems.	Testing for quality. Documentation & reporting skills Fabricate circuits, test the circuits make PCBs.

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VIII.COURSE OBJECTIVE:

Preceding section details the knowledge and skills required for middle level personnel of computer industry. The objectives are derived which deserve greater weightage are marked with asterisk.

Course objectives lay the foundation for planning educational programme.

1. Knowledge:

1.1 He must acquire basic concepts in electronic drawing (including standard symbols for electronic components active as well as passive).

1.2 He must acquire basic concepts and principles of working of linear and digital circuits using discrete components and integrated circuits.

1.3 He must have the knowledge of testing procedure of active and passive components, (including integrated circuits) discreate and digital circuits by making use of different test instruments as per to their specification.

1.4 He must acquire knowledge of system block diagram and working principles of different computer peripherals.

1.5 He must acquire the knowledge of making P.C.B. layouts and learn drafting techniques.

1.6 He must acquire the knowledge of efficient use of system software by writing a small diagnostic programme to test system.

1.7 He must acquire the knowledge of working principles of the total system i.e. C.P.U., peripherals, interfaces and system software.

2. Skill

2.1 He must acquire skill in finding faults in a computer system. The fault may be at component level or at card level or at sub system level. After finding fault he must be able to repair to it.

2.2 He must acquire skill in preparation of site for installation of a computer.

2.3 He must acquire skill in installing different subsystem (Power supply, Video display unit, C.P.U. , Printer, Plotter, Graphic monitor, Disc drives etc.).

2.4 He must acquire skill in operating and testing the working of different subsystems installed.

2.5 He must acquire skill making (or designing) layout on printer circuits board for a given electronic circuit.

2.6 He must acquire skill in fabricating (electronic circuit using different electronic components including ICs) on a printed circuit board according to a giveen circuit diagram.

2.7 He must acquire skill testing the performance of an electronic circuit fabricated on a printed circuit board making use of different electronic instruments.

3. Attiude:

3.1 He should have open minded approach while finding fault in the system.

3.2 He should have analytical approach while dealing with any problem.

3.3 He should be a keen observer while finding fault with the system and circuits.

3.4 He should have habit of reading commerical and technical literature regarding computer.

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COURSE OBJECTIVE	CURRICULUM AREA			
	Specialised Tech. Area	Core Engg. For Computer Engineering	Basic Engg. Science Subject	Basic Science Subject
1.1 He must have acquire basic concept in Electronic Drawing (including standard symbols for electronic components (active as well as passive).		Electronic component & Material	Engineering Drawing, Electrical & Electronic Drawing.	Applied Physics
1.2 He must acquire basic concepts and principles of working of linear and digital circuits using discrete components & integrated circuits.		Electronic Devices & ckts principles of digital electronics.	Electrical Engineering	Applied Physics, Applied Mathematics
1.3 He must have the knowledge of testing procedure of active and passive components (including integrated circuits) by making use of different test instruments as per to their specification.		Electronic Device & circuits; digital ckts Electronic measurement & instrument Electronic workshop (Printed circuits.	Electrical & Electronics Drawing.	
1.4 He must acquire knowledge of system block diagram and working principles of different computer peripherals.	Computer architecture, peripherals & interface.	Digital Ckts & systems.	Applied Electrical Engineering.	Applied Physics, Applied Mathematics
1.5 He must acquire the knowledge of making PCs layouts and learn drafting technique.	Project (He should make layouts of PCB in this project.	Electronic drawing & design; Electronic workshop.		
1.6 He must acquire the knowledge of efficient use of system software by writing a small diagnostic programme to test the system.	Communication & Data Transmission computer architecture microprocessor & application, Communication Data transmission peripherals & Interfaces, Introduction to system software data structure.			Applied Mathematics
1.7 He must acquire the knowledge of working principles of the total system, i.e. C.P.U., peripherals, interface and system software.	Peripherals & Interface Introduction to system software computer architecture & microprocessor & its application.	Digital Electronics, Computer test measureing equipment	Engineering Drawing	Applied Mathematics
2. Skills				
2.1 He must have acquire skill in finding faults in a computer system. the fault may be at component level or at card level or at subsystem level. After finding fault he must be able to repair it.	Fault diagnosis installation & Maintenance documentation & fabrication.	Digital Electronics, Electronic devices & circuits Test & measuring equipment	Electronic Drawing, Engineering Drawing.	
2.2 He must acquire skill in preparation of site for installation of computer.	Installation & Maintenance.	Applied Electrical Engg. Principles of Electrical Engg.	Engineering Drawing, Mechanical Engineering Drawing.	

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COURSE OBJECTIVE	CURRICULUM AREA			
	Specialised Tech. Area	Core Engg. For Computer Engineering	Basic Engg. Science Subject	Basic Science Subject
2.3 He must acquire skill in installing different subsystem power supply, VDU, Printer, Plotter, Graphic monitor, Disc drive etc.	Computer architecture installation & maintenance peripherals & interface.	Electronic Devices & Circuits. Digital Electronics.	Engineering Drawing, Workshop Practice	Applied Physics
2.4 He must acquire skill in operating and testing the working of different subsystem installed.	Inatallation & Maintenance Computer Architecture peripheral & interfaces.	Electronic Instruments & Measuring & Digital electronics, Electronic devices & circuits.		
2.5 He must acquire skill in making (or designing layouts on printed circuited board for a given electronic circuit.	Project	Electronic workshop, Electronic device & circuits.		
2.6 He must acquire skill in fabrication an electronic components (inclucing ICs) on a printed circuit board according to a given circuit diagram.	Project & Industrial training	Electronic workshop, Electronic devices & circuits, Digital circuit & system, Electronic drawing.	Engineering Drawing, Workshop Practice (Mechanical)	
2.7 He must acquire skill in testing the performance of an electronic circuit fabricated on a printed circuit board.	Project fundamental of digital control	Digital circuits & system, Electronic Device & circuits, Electronic Instrument & measurement, Electronic measurement & Instrument, Electronic drawing, Electric workshop.	Engineering Drawing	
2.8 He must acquire skill in writing specification of a computer and its subsystem and peripherals. Making use of the quotations he must be able to make a comparative statement.	Computer architecture peripheral & interfaces industrial management			
2.9 He must acquire skill in arranging demonstration of a computer system and its peripherals.	Computer architecture Test & measuring equipment Microprocessor & Application. Peripheral & Interface. Industrial training.	Principles of Electrical Engg., Applied Electrical Engg., Electronics Drawing.	Engineering Drawing, Workshop Practice	
2.10 He must acquire skill in preparation of documents (to be used in production, sales, maintenance & installation) with the help and guidance from an engineer.	Documentation Fabrication. Reporting writing. Installation & Maintenance Fault diagnosis peripherial &	Electronic Drawing, Digital Electronics. Electronic Devices & Circuits. Electronic	Engineering Drawing, Workshop Practice	

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COURSE OBJECTIVE	CURRICULUM AREA			
	Specialised Tech. Area	Core Engg. For Computer Engineering	Basic Engg. Science Subject	Basic Science Subject
	interface project. Computer organisation & programming.	Workshop.		

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I Semester

1.1 PROFESSIONAL COMMUNICATION

[Common to All Engineering/Non Engineering Courses]

L	T	P
5	-	3

Rationale:

Communication forms an important activity of diploma holder. It is essential that he/she should be in a position to communicate in writing and orally with superiors,equals and subordinates. This subject aims at providing working knowledge of languages like Hindi and English so as to train the students in the art of communication. It is suggested that maximum attention should be given in developing Communication abilities in the students while imparting instructions by giving maximum emphasis on practice.

Sr.No.	Units	Coverage time L	T	P
1.	Introduction to communication methods meaning,channels & media written and verbal.	5	-	-
2.	Development of comprehension of English & Hindi through study of text material& language exercises.	10	-	-
3.	Development of expression through			
	A. Letters(English & Hindi)	10	-	-
	B. Report writing (English) Note making and minutes writing	10	-	-
4.	Paragraph writing, Essey writing, Proposal writing	10	-	-
5.	Composition	10	-	-
6.	Remecial Grammer & Vocabulary Building	15	-	-
		70	-	42

1. PART I : COMMUNICATION IN ENGLISH (40 Marks)

1.1 Concept of communication, importance of effective communication, types of communucation, formal, informal, verbal and nonverbal, spoken and written. Techniques of communication, Listening, reading, writting and speaking, Barriers in communication, Modern tools of communication- Fax, e-mail, Telephone, telegram, etc.

1.2 Technical communication Vs. General Communication : Development of comprehension and knowledge of English through the study of text material and language exercises based on the prescribed text book of English.

1.3 Development of expression through:

1.3.1 Paragraph writing, Essay writing, Proposal writing.

1.3.2 Business and personal correspondence (Letters) :
Kinds of letters:-
Official, demi-offical, unofficial , for reply or in reply, quotation, tender and order giving letters. Application for a job, Resume.

1.3.3 Report writing and Note making and minutes writing.

1.4 Functional Grammer : Study of sentences and parts of speech (word class), Preposition, Verb, Articles, Abbreviations.

1.5 Vocabulary Building : Homophones, One word substitution, Idioms and Phrases.

1.6 Composition on narrative, descriptive, imaginative, argumentative, discussion and factual topics.

2. PART II : COMMUNICATION IN HINDI (10 Marks)

2.1 Development of comprehension and knowledge of Hindi usage through rapid reading and language exercises based on prescribed text material developed by IRDT.

2.2 Development of expression through ;

Letter writing in Hindi:
Kinds of letters:-
Official, demi-offical, unofficial , for reply or in reply, quotation, tender and order giving letters, Application for a job, Press release in Hindi, Report writing.

Note: Paper should be in two parts, part I - English and part II Hindi.

REFERENCE BOOKS

1. Bookshelf worksheet of Professional Communication, New Delhi : Bookshelf 2008

2. Functional Skills in language and literature by R. P. Singh, New Delhi : Oxford University Press.

3. Oxford Engilsh Hindi English Dictionary, New Delhi : Oxford 2008

LANGUAGE LAB PRACTICE

For the practice/exercise the following is suggested :-

1.A. Phonetic transcription
B. Stress and intonation :
(At least 10 word for writting and 10 word for pronunciation)

2. ASSIGNMENT : (Written Communication)

Two assignment of approximately 400 word each decided by the teacher concerned.

THE FOLLOWING MODEL IS PROPOSED :

1. a picture/photograph

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2. an opening sentence or phrase
3. a newspaper/magzine clipping or report
4. factual writting which should be informative or argumentative.

(The students may refer to "Bookshelf worksheet" for technical communication)

3. Oral Conversation:

1. Short speeches/declamation : Bid farewell, Felicitate somebody, Celebrate a public event, Offer condolences
2. Debate on current problems/topics
3. MockInterview : Preparation, Unfolding of personality and Expressing ideas effectively
4. Group discussion on current topics/problems
5. Role Play/ general conversation : Making polite enquiries at Railway Station, Post Office, Banks and other Public places, Replying to such enquiries, enquiring about various goods sold in the market and discussing their prices. Complaining about service at Hotel, restaurant, Offering apologies in reply to such complaints, complain to a company about a defective product you have brought, reply to such complaints.
6. Presentation skill, Use of OHP and LCD.
7. Through drilling of model words involving different phonetic symbols (Vowels, Consonants, Difthongs).

4. Aural :

Listening to conversation/talk/reading of short passage and then writting down the relevant or main points in the specified number of words and answering the given questions

The assignments/project work are to be evaluated by the internal/ external examiner. The distribution of 30 marks e.g.

10 marks for assignment (Given by subject teacher as sessional marks)
10 marks for conversation and viva-voce
10 marks for phonetic transcription

STRUCTURE OF THE PAPER OF PROFESSIONAL COMMUNICATION

Distribution of Marks

Theory Paper : 50 Marks
Sessional : 20 Marks
Pratices : 30 Marks

Q1. Question based on the topics of the prescribed syllabus will be set for testing candidates ability to understand the content, explain words and phrases, making sentence of given words and ability to summarise will be included. All questions will have to be answered.

A. from English Text Book 10 Marks
B. from Hindi Text Book 5 Marks

Q2. Candidates will be required to write one letter (English) and one letter in (Hindi) from a choice of two -

A. English Letters 5 Marks

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B. Hindi Letters 5 Marks

Q3. Report Writting on given outlines 5 Marks

Q4. There will be a number of short answer questions to test the candidates knowledge of functional grammer, structure and usage of the language. All the items in this question will be compulsory. The grammar questions has four parts -

(Total Part: A For 5 Marks, B For 3 Marks, C For 3 Marks and D For 4 Marks)

A. This part of the question has to do with the transformation of sentences. English uses several patterns of sentence formation and the same meaning can be expresed by several patterns e.g. Active to Passive voice and vice versa, Direct to Indirect and vice versa, Reframing sentences by changing part of speech e.g Noune to Adjective, Interchanging degree of comparison.

Interchanging Moods - Affirmative to Negative, Assertive to Interrogative or to exclamatory

B. The second part usually requires blanks in a sentence to be filled in with a suitable preposition and articles.

C. The third part is usually an exercise on tenses.

D. The fourth part concerns with one word substitution and abbrevation, uses of idioms and Phrases, Homophones.

Q5. COMPOSITION : (About 300 Words) (5 marks)

Candidates will be required to select one composition topic from a choice of five. The choice will normally include narrative descriptive, argumentative, discussion and factual topics. The main ceteria by which the composition will be marked are as follows

A. the quality of the language employed, the range and appropriateness of vocabulary and sentence structure the correctness of grammatical construction, punctuation and spelling.

B. The degrees to which candidate have been successfully in organising both the composition as a whole and the individual paragraphs.

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1.2 APPLIED MATHEMATICS I(A)

[Common to All Engineering Courses]

L	T	P
3	2/2	-

Rationale:

The study of mathematics is an important requirement for the understanding and development of any branch of engineering. The purpose of teaching mathematics to diploma engineering students is to impart them basic knowledge of mathematics which is needed for full understanding and study of engineering subjects.

S.N.	Units	Coverage L	Time T	P
1.	Algebra- I	8	3	-
2.	Algebra- II	8	3	-
3.	Trignometry	6	2	-
4.	Differential Calculus-I	10	3	-
5.	Differential Calculus-II	10	3	-
		42	14	-

DETAILED CONTENTS:

1. ALGEBRA-I : (10 Marks)

1.1 Series : AP and GP; Sum, nth term, Mean

1.2 Binomial theorem for positive, negative and fractional index (without proof). Application of Binomial theorem.

1.3 Determinants : Elementary properties of determinant of order 2 and 3, Multiplication system of algebraic equation, Consistency of equation, Crammer's rule

2. ALGEBRA-II:(10 Marks)

2.1 Vector algebra : Dot and Cross product, Scaler and vector triple product.

2.2 Complex number.

Complex numbers, Representation, Modulus and amplitud Demoivre theorem, its application in solving algebraic equations, Mod. function and its properties..

3. TRIGONOMETRY :(8 Marks)

3.1 Relation between sides and angles of a triangle : Statement of various formulae showing relation ship between sides and angle of a triangle.

3.2 Inverse circular functions : Simple case only

4. DIFFERENTIAL CALCULUS - I : (12 Marks)

4.1 Functions, limits, continuity, - functions and their graphs, range and domain, elementary methods of finding limits (right and left), elementary test for continuity and differentiability.

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4.2 Methods of finding derivative, - Function of a function, Logaritimic differentiation, Differentiation of implicit functions.

5. DIFFERENTIAL CALCULUS -II :(10 Marks)

5.1 Higher order derivatives, Leibnitz theorem.

5.2 Special functions (Exponential, Logarithmic, Inverse circular and function), Definition, Graphs, range and Domain and Derivations of each of these functions.

5.3 Application - Finding Tangants, Normal, Points of Maxima/Minima, Increasing/Decreasing functions, Rate, Measure, velocity, Acceleration, Errors and approximation.

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1.3 APPLIED PHYSICS-I

[Common to All Engineering Courses]

L	T	P
3	2/2	-

Rationale:

Engineering physics is a foundation Course. Its purpose is to develop proper understanding of physical phenomenon and scientific temper in the students. While teaching the subject,teachers should make maximum use of demonstrations to make the subject interesting to the students.

TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Topics	L	T	P
1.	Units & Dimensions	3	1	-
2.	Errors in Measurement	3	1	-
3.	Circular Motion	4	1	-
4.	Motion of Planets	4	1	-
5.	Dynamics of rigid body (Rotational Motion)	5	1	-
6.	Fluid Mechanics and Friction	4	1	-
7.	Friction	4	1	-
8.	Harmonic Motion	5	2	-
9.	Heat & Thermodynamics	6	4	-
10.	Acoustics	4	1	-
		42	14	-

DETAILED CONTENTS:

1. Units and Dimensions (4 Marks)

S.I. Units & Dimensions of physical quantities, Dimensional formula and dimensional equation. Principle of homogenity of dimensions and applications of homogenity principle to:

i) Checking the correctness of physical equations,

ii) Deriving relations among various physical quantities,

iii) Conversion of numerical values of physical quantities from one system of units into another. Limitations of dimensional analysis.

2. ERRORS AND MEASUREMENT (4 Marks)

Errors in measuremnts, accuracy and precision, random and systematic errors, estimation of probable errors in the results of measurement(Combination of erros in addition, substraction, multipication and powers). Significant figures, and order of accuracy in respect to instruments,

3. Circular Motion (5 Marks)

Central forces. Uniform Circular motion (Horizental and Vertical cases),angular velocity,angular acceleration and centripetal acceleration.Relationship between linear and angular velocity and acceleration. Centripetal and

centrifugal forces. Practical applications of centripetal forces. Principle of centrifuge.

4. MOTION OF PLANETS AND SATELLITES :(5 Marks)

Gravitational force, Acceleration due to gravity and its variation w.r. to height and depth from earth, Kapler's Law, Escope and orbital velocity, Time period of satellite, Geo-stationary, Polar satellites (Concept Only)

5. Dynamics of Rigid Body (Rotational Motion) (6 Marks)

Rigid body,Rotational motion, Moment of inertia,Theorems(Perpendicular and Parallel axis) of moment of inertia (Statement). Expression of M.I. of regular bodies (Lamina, Sphere, Disc, Cylindercal),Concept of Radius of gyration, angular momentum, Conservation of angular momentum, Torque, Rotational kinetic energy. Rolling of sphere on the slant plane . Concept of Fly wheel.

6. Fluid Mechanics :(5 Marks)

Surface tension, Capillary action and determination of surface tension from capilary rise method, Equation of continuity (A1V1=A2V2), Bernoulli's theorem, and its application stream line and Turbulent flow, Reynold's number.

7. Friction :(4 Marks)

Introduction, Physical significance of friction, Advantage and disadvantage of friction and its role in every day life. Coefficients of static and dynamic friction and their measurements. viscosity, coeff. of viscosity, & its determination by stoke's method.

8. Harmonic Motion (6 Marks)

Periodic Motion , characterstics of simple harmonic motion; equation of S.H.M. and determination of velocity and acceleration. Graphical representation. Spring-mass system. Simple pendulum. Derivation of its periodic time. Energy conservation in S.H.M.. Concept of phase, phase difference, Definition of free, forced, undamped and damped vibrations, Resonance and its sharpness, Q-factor.

9. Heat & Thermodynamics: (6 Marks)

Modes of heat transfer (Conduction, Convection and Radiation), coefficient of thermal conductivity Isothermal and adiabatic process. Zeroth First, Second Law of Thermodynamics and Carnot cycle, Heat Engine (Concept Only).

10. Acoustics (5 Marks)
Definition of pitch, loudness, quality and intensity of sound waves. Echo, reverberation and reverberation time. Sabine's formula without Derivation. Control of reverberation time (problems on reverberation time). Accoustics of building defects and remedy.

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1.4 APPLIED CHEMISTRY

[Common to All Engineering Courses]

L	T	P
6	-	-

Rationale:

Engineering Chemistry has profound and deep relationship with the industrial and environmental technology. This curriculum intends to impart technical knowledge alongwith productive practice to the students of the diploma engineering. The teachers are expected to guide the students in the classroom and the laboratories according to the curriculum by demonstrations and by showing relevant materials and equipments to inculcate interests in learning among students.

TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Topics	L	T	P
1.	Atomic Structure	4	-	-
2	Chemical Bonding	6	-	-
3.	Classification of Elements	4	-	-
4.	Electro Chemistry-I	7	-	-
5.	Electro Chemistry-II	8	-	-
6.	Chemical Kinetics	4	-	-
7.	Catalysis	4	-	-
8.	Solid State	4	-	-
9.	Fuels	4	-	-
10.	Water Treatment	6	-	-
11.	Colloidal State	4	-	-
12.	Lubricants	4	-	-
13.	Hydrocarbons	7	-	-
14.	Organic Reactions & Mechanism	8	-	-
15	Polymers	4	-	-
16	Synethetic Materials	6	-	-
		84	-	56

DETAILED CONTENTS:

1. ATOMIC STRUCTURE :(3 MARKS)

Basic concept of atomic structure, Matter wave concept, Quantum number, Haisenberg's Uncertainty Principle, Shaples of orbitals.

2. CHEMICAL BONDING :(4 MARKS)

Covalent bond, Ionic & Co-ordinate, Hydrogen bonding, Valence bond theory, Hybridisation, VSEPR theory, Molecular orbital theory.

3. CLASSIFICATION OF ELEMENTS :(3 MARKS)

Modern classification of elements (s,p,d and f blcok elements), Periodic properties : Ionisation potential electro negativity, Electron affinity.

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4. ELECTRO CHEMISTRY-I:(3 MARKS)

Arrhenius Theory of electrolytic dissociation, Transport number, Electrolytic conductance, Ostwald dilution law. Concept of Acid and bases : Bronsted, Arrhenius and Lewis theory. Concept of pH and numericals. Buffer solutions, Indicators, Solubility product, Common ion effect with their application,

5. ELECTRO CHEMISTRY-II:(3 MARKS)

Redox reactions, Electrode potential(Nernst Equation), Electro-chemical cell (Galvanic and Electrolytic). EMF of a cell and free energy change. Standard electrode potential, Electro chemical series and its application. Chemical and Electrochemical theory of corrosion, Galvenic Series. Prevention of corrosion by various method.

6. CHEMICAL KINETICS :(3 MARKS)

Law of mass action, order and molecularity of rection. Activation energy, rate constants, Ist order reactions and 2nd order reactions.

7. CATALYSIS :(2 MARKS)

Definition Characteristics of catalytic reactions, Catalytic promotors and poison , Autocatalysis and Negative catalysis, Theory of catalysis, Application.

8. SOLID STATE :(2 MARKS)

Types of solids (Amorphous and Crystalline), Classification (Molecular, Ionic, Covalent, Metallic), Band theory of solids (Conductors, Semiconductors and Insulators), types of Crystals, FCC, BCC, Crystal imperfection.

9. FUELS :(3 MARKS)

Definition, its classification, high & low Calorific value.Determination of calorific value of solid and liquid fuels by Bomb calorimeter.

Liquid fuel - Petroleum and its refining, distillate of petroleum (Kerosene oil, Disel and Petrol), Benzol and Power alchol. Knocking, Anti-knocking agents, Octane number and Cetane number.

Cracking and its type, Gasoling from hydrogenation of coal (Bergius process and Fischer tropsch's process)

Gaseous Fuel - Coal gas, Oil gas, Water gas, Producer gas, Bio gas, LPG and CNG.

Numerical Problems based on topics

10. WATER TREATMENT :(3 MARKS)

Hardness of water, Its limits and determination of hardness of water by EDTA method. Softening methods (Only Sods lime, Zeolote and Ion exchange resin process). Disadvantage of hard water in different industries, scale and sludge

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formation, Corrosion, Caustic embritlement, primming and foarming in biolers.

Disinfecting of Water By Chloramine-T, Ozone and Chlorine. Advantage and disadvantage of chlorinational, Industrial waste and sewage, Municipality waste water treatment, Definition of BOD and COD. Numerical Problems based on topics.

11. COLLOIDAL STATE OF MATTER :(3 MARKS)

Concept of collidal and its types, Different system of colloids, Dispersed phase and dispersion medium.
Methods of preparation of colloidal solutions, Dialysis and electrodialysis. Properties of colloidal solution with special reference to absorption, Brownian Movement, tyndal effect, Electro phoresis and coagulation. relative stability of hydrophillic and hydrophobie colloids. Protection and protective colloids. Emulsion, Types, preparation,properties and uses. Application of colloids chemistry in different industries.

12. LUBRICANTS :(3 MARKS)

Definition, classification, Necessasity and various kinds of lubricants. Function and mechanism of action of lubricants and examples. Properties of lubricants, Importance of additive compunds in lubricants, Synthetic lubricants and cutting fluids. Industrial application, its function in bearing.

13. HYDROCARBONS:(4 MARKS)

A. Classification and IUPAC nomeuclature of organic compounds hamologous series (Functional Group)

B. Preparation, properties and uses of Ethane, Ethene, Ethyne (Acetylene), Benzene and Toluene.

14. ORGANIC REACTIONS & MECHANISM:(4 MARKS)

1. Fundamental auspects -

   A. Electrophiles and nucleophiles, Reaction Intermediates, Free radical, Carbocation, Carbanion
   B. Inductive effect, Mesomeric effect, Electromeric effect.

2.A. Mechanism of addition reaction (Markonicove's Rule, Cyanohydrin and Peroxide effect),

B. Mechanism of Substitution reactions; (Nucleophillic) hydrolysis of alkyle halide, electrophillic substitution halogenation, Sulphonation, Niration and friedel-Craft reaction.

C. Mechanism of Elimination reaction - Dehydration of primary alcohol, Dehyrohalogenation of primary alkyl halide.

15. POLYMERS :(3 MARKS)

1. Polymers and their classification. Average degree of polymerisation, Average molecular weight, Free radical polymerisation (Mechanisms)

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2. Thermosetting and Thermoplastic resen -

A. Addition polymers and their industrial application- Polystyrene, PVA, PVC, PAN, PMMA, Buna-S, Buna-N, Teflon.

B. Condensation polymer and their industrial application : Nylon 6, Nylon 6,6, Bakelite, Melamine formaldehyde, Urea formaldehyde, Terylene or Decron, Polyurethanes.

3. General concept of Bio polymers, Biodegradable polymers and inorganic polymers(Silicon)

16. SYNETHETIC MATERIALS :(4 MARKS)

A. Introduction - Fats and Oils
B. Saponification of fats and oils , Manufacturing of soap.
C. Synthetic detergents, types of detergents and its manufacturing.
3. EXPLOSIVES: TNT, RDX, Dynamite.
4. Paint and Varnish

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1.5 Components of Information Technology

(Common to Computer Science & Engineering, Post Graduate Diploma in Computer Application).

L	T	P
8	4	-

Rationale

Computers have become an integral part of modern industrial atmosphere. Every technician is supposed to be aware of the application of computers. A student having knowledge of popular software and computer peripherals will prove useful to accept any challenge in day today working.

TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage Time L	T	P
1.	Introduction of Information Technology	20	10	-
2.	Component of Information technology	20	10	-
3.	Data Representation	20	10	-
4.	Emerging Trends	20	10	-
5.	Components of Computers	16	8	-
6.	Mobile Computing	16	8	-
		112	56	-

1. Intoduction of Information Technology

Definition Of Information, difference betwwen data and information,need for information, qualities of information,value of information, categories of information,level of Information. Use of Information Technology in Office Automation, Computers & Its Types.

2. Components of Information Technology:

Components Hardware & its Functioning - Input Unit, Control Processing Unit, Output Unit, Types of Input Units & Output Units Computer Software - Types of Software, System Software, Application Software.

3. Data Resentation :

Binary Number System, Conversion from Decimal to Binary, Conversion from Binary to Decimal, Hexadecimal and Octadecimal No. System, Memory Addressing and its Importantance, ASCII and EBCDIC coding System.

4. Emerging Trends in Information Technology -

Concepts of Networking and Local Area Networking, Advanced Input/Output Devices and their use(MICR,OCR,Scanners, Light pen,Plotters, Microfilms, Rewritable, CD-ROMS ,Multimedia, Video Conferencing, Tele Comferencing .

5. Components of computer

Types of PC e.g. Desktops, Labtops, Notebooks, Palmtops,

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Memory System of a PC, Primary Memory,RAM(Ramdom Access Memory, ROM(read only Memory), Secondary Memory, Types of Secondary Storage, Acces Mechanism of storage Devices, PC setup and ROM-BIOS, Elemantary Trouble shooting.

6. MOBILE COMPUTING :

Introduction, Personnel Communication Services (PCS), Gobal System Mobile Communication (GSM), GPRS, Mobile Data Communication, WAP, 3G Mobile service.

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II Semester

2.1 APPLIED MATHEMATICS I (B)

[Common to All Engineering Courses]

L	T	P
3	2/2	-

Rationale:

The study of mathematics is an important requirement for the understanding and development of any branch of engineering. The purpose of teaching mathematics to diploma engineering students is to impart them basic knowledge of mathematics which is needed for full understanding and study of engineering subjects.

S.N.	Units	Coverage Time L	T	P
1.	Integral Calculus-I	12	4	-
2.	Integral Calculus-II	12	4	-
3.	Coordinate Geometry (2 Dimensional)	10	3	-
4.	Coordinate Geometry (3 Dimensional)	8	3	-
		42	14	-

DETAILED CONTENTS:

1. INTEGRAL CALCULUS - I : (14 Marks)

Methods of Indefinite Integration :-

1.1 Integration by substitution.

1.2 Integration by rational function.

1.3 Integration by partial fraction.

1.4 Integration by parts.

2. INTEGRAL CALCULUS -II :(14 Marks)

2.1 Meaning and properties of definite integrals, Evaluation of definite integrals. Integration of special function.

2.2 Application : Finding areas bounded by simple curves, Length of simple curves, Volume of solids of revolution, centre of mean of plane areas.

2.3 Simposns 1/3rd and Simposns3/8th rule and Trapezoidal Rule : their application in simple cases.

3. CO-ORDINATE GEOMETRY (2 DIMENSION):(14 Marks)

3.1 CIRCLE :

Equation of circle in standard form. Centre - Radius form, Diameter form, Two intercept form.

3.2 Standard form and simple properties

Parabola x2=4ay, y2=4ax,

Ellipse $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$

Hyperbola $\frac{x^2}{a^2} - \frac{y^2}{b^2} = 1$

4. CO-ORDINATE GEOMETRY (3 DIMENSION):(8 Marks)

4.1 Straight lines and planes in space -

Distance between two points in space, direction cosine and direction ratios, Finding equation of a straight line and Plane (Different Forms),

4.2 Sphere $x^2 + y^2 + z^2 + 2gx + 2fy + 2wz = d$ (Radius, Centre and General Equation)

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2.2 APPLIED PHYSICS-II

[Common to All Engineering Courses]

L	T	P
3	2/2	4

Rationale:

Engineering physics is a foundation Course. Its purpose is to develop proper understanding of physical phenomenon and scientific temper in the students. While teaching the subject,teachers should make maximum use of demonstrations to make the subject interesting to the students.

TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Topics	L	T	P
1.	Optics	4	1	-
2.	Introduction To Fiber Optics	4	1	-
3.	Laser & its Application	4	1	-
4.	Electrostatics	4	1	-
5.	D.C. Circuits	4	1	-
6.	Magnetic Materials & Their Properties	4	1	-
7.	Semi Conductor Physics	4	1	-
8.	Introduction Diode & Transistors	4	2	-
9.	Introduction To Digital Electronics	4	2	-
10.	Non-conventional energy sources	6	3	-
		42	14	56

1. Optics (4 Marks)

Nature of light, Laws of Reflection and Refraction, Snell's Law, Interference (Constructive and Deotructive), Diffraction and Polarization (Concept Only), Law of Mallus and Polaroids.

2. Introduction To Fibre Optics :(5 Marks)

Critical angle, Total internal reflection, Principle of fibre optics, Optical fibre, Pulse dispersion in step-index fibres, Graded index fibre, Single mode fibre, Optical sensor.

3. Lasers and its Applications (4 Marks)

Absorbtion and Emission of energy by atom, Spontaneous and Stimulated Emission, Poluation inversion, Main component of laser and types of laser- Ruby Laser, He-Ne laser and their applications. Introduction to MASER.

4. Electrostatics :(4 Marks)

Coutomb's Law, Electric field, Electric potential, Potential energy, Capacator, Energy of a charged capacitor, Effect of dielectric on capacators.

5. D.C. Circuits (5 Marks)

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Ohm's Law, Kirchoff's Law and their simple application, Principle of Wheat Stone bridge and application of this principle in measurement of resistance (Meter bridge and Post Office Box); Carey Foster's bridge, potentiometer.

6. Magnetic Materials and Their Properties: (5 Marks)

Dia, Para and Ferro-magnetism, Ferrites, Magnatic Hysteresis Curve and its utility. Basic idea of super conductivity, Meissner's effect.

7. Semiconductor Physics (4 Marks)

Concept of Energy bands in soldis, classification of solids into conductors, insulators and semiconductors on the basis of energy band structure. Intrinsic and extrinsic semi conductors, Electrons and holes as charge carriers in semiconductors, P-type and N-type semiconductors.

8. Junction Diode and Transister : (6 Marks)

Majority and Minority charge carriers,P-N junction formation, barrier voltage, Forward and reverse biasing of a junction diode, P-N junction device characteristics, Formation of transistor, transistor-action, Base, emitter and collector currents and their relationship LED's.

9. Introduction To Digital Electronics : (6 Marks)

Concept of binary numbers, Interconversion from binary to decimal and decimal to binary. Concepts of Gates (AND, NOT, OR).

10. Non-conventional energy sources: (7 Marks)

(a) Wind energy : Introduction, scope and significance, measurement of wind velocty by anemometer, general principle of wind mill.

(b) Solar energy: Solar radiation and potentiality of solar radiation in India, uses of solar energy: Solar Cooker, solar water heater, solar photovoltaic cells, solar energy collector.

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PHYSICS LAB

Note: Any 4 experiments are to be performed.

1. Determination of coefficient of friction on a horizontal plane.

2. Determination of 'g' by plotting a graph T2 verses l and using the formula g=4n2/Slope of the graph line

3. Determine the force connstant of combinationof springs incase of 1. Series 2. Parallel.

4. To verify the series and parallel combination of Resistances with the help of meter bridge.

5. To determine the velocity of sound with the help of resonance tube.

6. Determination of viscosity coefficient of a lubricant by Stoke's law.

7. Determination of E1/E2 of cells by potentio meter.

8. Determination of specific resistance by Carry Foster bridge.

9. Determination of resitivity by P.O.Box.

10. Verification of Kirchoff's Law.

11. To draw Characteristics of p-n Junction diode.

12. To measure instantaneous and average wind velocity by indicating cup type anemometer/hand held anemometer.

NOTE :

Students should be asked to plot a graph in experiments (where possible) and graph should be used for calculation of results. Results should be given in significant figures only.

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2.3 ELECTRICAL ENGINEERING-I

(Common With Diploma In Electronics Engineering, Instrumentation Engineering and Computer Science & Engineering)

L	T	P
6	-	4

RATIONALE

Electrical energy is most convinient neat and clean source of energy for industrial applications. The student is supposed to posses basic knowledge of electrical engineering materials such as conducting, non conducting, insulating, magnetic, semi conductor and some special purpose materials. Fundamental knowledge of electrostatics, electromagnetism will be helpful in understanding the performance of D.C. and A.C. circuits. To face the routine problems of world of work chapters on batteries, transients and harmonics have also been added.

TOPIC WISE DISTRIBUTION OF PERIODS

Sr. No.	Units	Coverage Time L	T	P
1.	Classification	4	-	-
2.	Conducting Materials	8	-	-
3.	Insulating Materials	8	-	-
4.	Magnetic Materials	8	-	-
5.	Semi Conductor & Special Purpose Materials	8	-	-
6.	D. C. Circuits	8	-	-
7.	Electrostatics	8	-	-
8.	Electromagnetism	8	-	-
9.	A. C. Theory	8	-	-
10.	Batteries	8	-	-
11.	Transients & Harmonics	8	-	-
	Total	84	-	56

DETAILED CONTENTS

1. CLASSIFICATION:

Classification of materials into Conducting materials, Insulating materials, Semi-conducting materials with reference to their atomic structure.

2. Conducting Materials:

A. Resistivity and factors affecting resistivity such as temperature, alloying and mechanical stressing.

B. Classification of conducting materials into low resistivity and high resistivity materials. Some examples of each and their typical applications.

3. Insulating Materials:

A. Electrical Properties:

Volume resistivity, Sarface resistance, Dielectric loss, Dielectric strength (Break down valtage) and Dieclectric constant.

B. Chemical Properties:

Solubility, Chemical resistance, Weather ability.

C. Physical Properties:

Hygroscopicity, tensile and Compressive strength, Abrassive resistance, Brittleness.

D. Thermal Properties:

Heat resistance, classification according to permissible temperature rise, Effect of electrical overloading on the life of an electrical appliance.

E. Plastic Insulating Materials:

Classification into thermoplastic and thermosetting catagories, examples of each and their typical applications.

4. MAGNETIC MATERIALS:

A. Ferromagnetism, domains, permeability, hysterisis loop- (including coerrecive force and residual magnetism) and magnetic saturation.

B. Soft and Hard magnetic materials, their examples and typical applications.

5. SEMI CONDUCTOR AND SPECIAL PURPOSE MATERIALS:

N-type and P-type materials, application of semi-conductor materials, materials used in transistor and I.C. manufacture.

6. D.C. CIRCUITS:

(i) Ohm's law, resistivity, effect of temperature on resistances, heating effect of electric current, conversion of mechanical units into electircal units.

(ii) Kirchoff's laws, application of Kirchoff's laws to solve, simple d.c. circuits.

(iii) Thevenins theorem, maximum power trasfer theorem, Norton's theorem and super position theorem, simple numerical problems.

7. ELECTROSTATICS:

(i) Capacitance and capacitor, definition, various types.

(ii) Charging and discharging of a capacitor, growth and decay of current in a capacitive circuit.

(iii) Energy stored in a capacitor.

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(iv) Capacitance in terms of dimensions of parallel plate capacitor.

(v) Dielectric constant of material, Break down voltage of a capacitor.

(vi) Series and parallel connection of capacitors.

8. ELECTRO MAGNETISM:

(i) Concept of mmf, flux, reluctance and permeability.

(ii) Energy stored in a magnetic field and an inductor.

(iii) Solution of problems on magnetic circuits.

(iv) Faraday's laws of electromagnetic induction, Lenz's law, Physical explanation of self and mutual inductance.

(v) B-H curve, Hysterisis, Eddy currents elementary ideas and significance.

(vi) Growth and decay of current in an inductive circuit.

(vii) Force between two parallel current carrying conductors and its significance.

(viii) Current carrying conductor in a magnetic field and its significance.

9. A.C. THEORY:

(i) Concept of alternating voltage and current, difference between A.C and D.C..

(ii) Generation of alternating voltage, equation of sinusoidal waveform.

(iii) Definition and concept of cycle, frequency, Time period, amplitude, instantaneous value, average value, RMS value, peak value, form factor, Peak factor.

(iv) Phase and phase difference, representation of alternating quantities by phasor, addition and subtraction of alternating quantities.

10. BATTERIES:

(i) Construction of lead acid and nickel cadmium batteries.

(ii) Charging and maintenance of batteries.

(iii) Rating of batteries.

(iv) Back up batteries (Lithium & Silver Oxide batteries)

(v) Shelf life of batteries.

11. TRANSIENTS & HARMONICS:

Introduction, Types of trasients, Important differential

equations, First and Second order equations, Transients in R-L series circuits (D.C.), Short circuit current, Time constant, Transients in R-L series circuits (A.C.), Transients in R-C series circuits (D.C.), Transients in R-C series circuits (A.C), Double energy transients.

Fundamental wave and harmonics, Different complex waveforms, Gemeral equation of complex wave, R.M.S. value of a complex wave, Power supplied by complex wave, Harmonics in single phase a.c. circuits, Selective resonance due to harmonics, Effect of harmonics on measurement of inductance and capacitance

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ELECTRICAL ENGINEERING-I LAB:

LIST OF PRACTICALS:

1. Ohm's law verification.

2. To verify the laws of series and parallel connections of resistances i.e. to verify:-

   (i) The total resistance in series connections.

   $$RT=R1+R2+R3.....$$

   Where RT is the total resistance and R1,R2,R3 etc.are the resistances connected in series.

   (ii) The total resistance in parallel connections.

   $$1/RT=1/R1 + 1/R2 + 1/R3.....$$

   Where RT is the total resistance and R1,R2,R3 etc. are the resistances connected in parallel. Also to conclude that the total resistance value of a parallel circuit is less than the any individual resistance.

3. To verify Kirchoff's following laws:-

   (i) The algebric sum of the currents at a junction is zero.

   (ii) The algebric sum of the e.m.f. in any closed circuit is equal to the algebric sum of IR products (drops) in that circuit.

4. To measure the resistance of an ammeter and a voltmeter and to conclude that ammeter has very low resistance whereas voltmeter has very high resistance.
5. To verify Thevenin's and maximum power transfer theorems.
6. To find the ratio of inductance values of a coil having air core and iron core respectively and thus see that by the introduction of a magnetic material inside the coil,the inductance value of the coil is substantially increased.

7. To verify the relation:-

   $$CT=(C1*C2)/(C1+C2)$$
   and
   $$CT=C1+C2$$

   For two capacitors,connected in series and parallel respectively.
8. To test a battery for charged and discharged conditions and to make connections for its charging.
9. To show that the range of an ammeter (d.c. and a.c.) and a voltmeter (d.c. and a.c.) can be extended with the use of shunts and multiplier.
10. To convert the given galvanometer into a voltmeter and an ammeter.

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2.4 ENGINEERING MECHANICS AND MATERIALS

(Common With Electronics Engg & Instrumentation & Control Engg. & Computer Science & Engineering)

L	T	P
4	1	-

RATIONALE

TOPIC WISE DISTRIBUTION OF PERIODS

SL.No.	Topic	L	T	P
1.	Introduction	6	2	
2.	Force Analysis	10	3	
3.	General condition of equilibrium	10	3	
4.	Stress & Strain	10	2	
5.	Beam & Trusses	10	2	
6.	Materials & Concepts Use In Electronics	10	2	
	Total	56	14	-

DETAILED CONTENTS

1. Introduction:

Mechanics and its utility. Concept of scaler and vector quantities. Effect of a force. Tension & compression. Rigid body. Principle of physical independence of force. Principle of transmissibility of a force.

2. Forces Analysis:

Concept of coplaner and non-coplaner forces including parallel forces. Concurrent and non-concurrent forces. Resultant force. Equilibrium of forces. Law of parallelogram of forces. Law of triangle of forces and its converse. Law of polygon of forces. Solution of simple engineering problems by analytical and graphical methods such as simple wall crane, jib crane and other structures. Determination of resultant of any number of forces in one plane acting upon a praticle,conditions of equilibrium of coplaner concurrent force system.

3. General Condition of Equilibrium:

General condition of equilibrium of a rigid body under the action of coplaner forces, statement of force law of equilibrium, moment law of equilibrium, application of above on body.

4. Stresses and strains:

Concept of stress and strain. Concept of various types of stresses and strains . Definitions of tension, compression shear, bending, torsion. Concept of volumetric and lateral strains, Poisson's ratio. Mechanical properties of MS, SS, CI Al and etc.

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5. Beams & Trusses:

Definition of statically determinate and indeterminate trusses. Types of supports. Concept of tie & strut, calculation of reaction at the support of cantilever and simply supported beams and trusses. (simple problems only)

6.A. MATERIALS & CONCEPT USED IN ELECTRONICS :

Soldering materials - Type, chemical composition and properties, Soldering alloys - Tin lead, Tin antimony, Tin silver, Lead silver, Tin zinc, Different types of flux and their properties, Properties of plastics materials, Epoxy materials for PCB (Single and multi layer board), Emulsion parameters, Film emulsion, Type of laminates (Phenolic, Epoxy, Polyster, Silicon, Melamine, Polymide), Properties of copper clad laminates, Material (Filler, Resin, Copper Foil) Photo printing basic for double side PCB, Photo resin materials coating process materials, Screen printing and its materials Etching agent, Film processing and used materials.

(B) Soldering & Brazing:

For black Galvanised and Tincoated Iron sheet, brass and copper sheets only.

(1) Its concept, comparison with welding as joining method and classification, electric soldering and forge soldering.

(2) Soldering operation- edge preparation of joints, Pickling and degreasing, Fluxing, Tinning and Soldering. Wave soldering, solder mask, Dip soldering, Drag soldering,

(3) Materials Used-Common fluxes, soft and hard solder, solder wire (Plain and Resin core) and sticks, spelters and their specifications and discription (For Identification Only), forge soldering bits.

(4) Electric soldering iron, other soldering tools.

(5) Common defects likely to occurs during and after soldering.

(6) Safety of Personnel, Equipment & Tools to be observed.

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2.5 OPERATING SYSTEM

(Common to Diploma In Information Technology, P. G Diploma In Computer Application)

L	T	P
8	_	6

TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage Time L	T	P
1.	Introduction	15	-	-
2.	File System	20	-	-
3.	C.P.U. & Disk,Drum scheduling	26	-	-
4.	Memory Management	26	-	-
5.	Deadlock	25	-	-
		112	-	84

DETAILED CONTENTS

1. Introduction

   Operating System and Function, Evolution of Operating System, Batch, Interactive, Time Sharing and Real Time System.

2. File System

   File concepts,Access methods,Allocation methods,Directory System.

3. C.P.U.& Disk,Drum Scheduling.

   Scheduling concepts,Scheduling Algorithm,Multiprocessor,FCFS Schedulin,Shortest Seek-time first,Scan.

4. Memory Management

   Swapping,Multiple partitions,Paging,Segmentation,Demand paging,page replacement.

5. Deadlock :

   Introduction to Deadlock, Necessary Condition for Deadlock, Method For Handling Deadlock, Brier overview of Deadlock Prevention, Deadlock Avoidance (Banker Algorithm); Deadlock Detection & Recovery.

List Of Practicals

1. Excercise on Widows Latest Version.

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LIST OF BOOKS

1. Milenekovie - Operating System Concept - McGraw Hill

2. Petersons - Operating System - Addision Wesley

3. Dietal - An Introduction To Operating System- Addision Wesley

4. Tannenbaum - Operating System Design adn Implementation -PHI

5. Gary Nutt- Operating System, A Modern Perspective- Addision Wesley

6. Stalling, Willium - Operating System - Maxwell Macmillan

7. Silveschatza, Peterson J - Operating System Comcpts - Willey

8. Crowley - Operating System - TMH

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2.6 FUNDAMENTALS OF ELECTRONICS DEVICES.

(Common With Three Year Diploma Course In Information Technology)

L	T	P
4	-	3

Rationale:

Knowledge of Electronics Devices is quit essential for a students of diploma Computer Engineering. The knowledge of concepts , constructions & working of these devices, will help students in understanding the working and behaviour of different hardware constituents of computer.

TOPIC WISE DISTRIBUTION OF PERIODS

Sr. No.	Units	Coverage Time L	T	P
1.	Introduction	4	-	-
2.	Semiconductor Physics	6	-	-
3.	Semiconductor Diodes	6	-	-
4.	Transistor	6	-	-
5.	Transistor as an amplifier	8	-	-
6.	Concepts of Feedback	6	-	-
7.	Transistor as a Switch	6	-	-
8.	Multivibrators	4	-	-
9.	Multivibrators as a Memory Elements	4	-	-
10.	Integrated Circuits	6	-	-
	Total	56	-	42

1. INTRODUCTION:

1.1 Application of electronics in different fields.

1.2 Electronic devices in computer system. e.g. power supply, micro processor and other ICs, amplifiers, clock & other signal generators.

1.3 Advancements in electronics technology and its impact on computers size reduction, capacity expansion, increase in reliability, cost reduction)

2. SEMICONDUCTOR PHYSICS:

2.1 Analyzing conductivity of elements, Types of conductors.

2.2 Pure(Intrinsic) semiconductors-Silicon, Germenium:Thermal Generation(formation of charge carrier-Positive & Negative charge carriers i.e. electron-hole pair), Recombination, Displacement of hole, mobility of free electron and moving hole, effect of variation in temperature, behavior of instrinsic semiconductors at 0 K.

2.3 Doping the Intrinsic semiconductors with a pentra-valent/tri-valent element(i.e. doner and accepter type impurity) in small amount, effect of doping on strength of charge carrirs(formation of immobile ions and majority and

minority carriers), P,N Junction.

2.4 Effect of doping a crystal parity 'P' type and parity: concepts of diffusion & drift, formation of deplition layer(potential barrier)i.e. formation of P-N Junction.

3. SEMICONDUCTORS DIODES:

3.1 Effect of applying electrical potential across a P-N Junction in the following ways:

(a) Positive of the source to 'P' type terminal & Negative to the 'N' type terminal

(b) Positive of the source to 'N' type terminal & Negative to the 'P' type terminal.

3.2 Analyzing the flow of current in both the directions, cause of the difference in magnitudes of current in the two directions.

3.3 Characteristics of a P-N Junction diode in forward/reverse biasing.

3.4 Concepts of unidirectional and bi-directional flow of currents. Effect of putting in diode in series with a load connected across an ac source.

3.5 Half wave rectifier, Full wave rectifier9 using C.T. transformer, using bridge circuits)

3.6 Special purpose diodes:Zener diode, Vractor diode,Photo Diode,Light emiiting Diode (LED), their chractersitics and uses.

4. TRANSISTOR:

4.1 Growing a Crystal having two P-N Junction back to back (i.e.PNP & NPN); Junction transistor structure; acton of transistor in FF,RR,FR and RF biasiing; working of a tranistor; relation between different currents in a transistor;

4.2 Various configurations of transistor (CB,CE,CC);ralation between.Transistor action in three configuration; Comparison between the three configuration of transistor;

4.3 Input and Output characteristics of a transistor;

4.4 Field - effect transistor (JFET,IGFET,MOSFET);

5. TRANSISTOR AS AN AMPLIFIER:

5.1 Transistor biasing: DC Operating: need of biasing & bias stablization in a transistor circuit; various biasing circuits(Fixed, Collector to base, emitter, and potential devider.);

5.2 DC and AC load lines in a typical CE amplifier circuit;

5.3 Need of using multi- stages; how to couple two stages ; various coupling arrangements(R-C coupling,Transformer coupling, Direct coupling):

5.4 Effect of coupling arrangement on the requency response of a two stage amplifieer; frequency response curve of a RC coupled amplifier; a transformer coupled amplifier; band with of an amplfier.

6. OPERATIONAL AMPLIFIERS:

6.1 Specifications of ideal operational amplifier and its block diagram.

6.2 Definition of inverting and noninverting inputs, differential voltage gain and input and output off set, voltage input offset current, input bias current, common mode rejection ratio (CMMR), power supply rejection ratio (PSRR) and slew rate.

6.3 Method of offset null adjustments, use of op.amp. as an inverter scale changer, adder, subtractor, differential amplifier, buffer amplifier, differentiator, integrator, comparator, Schmitt Trigger, Generation of Square and Triangular Waveform, log and anti-log amplifiers, PLL and its appliation and IC power amplifier.

7. FEED BACK IN AMPLIFIER:

7.1 Concept of Feed back;

7.2 Types of feed back(Positive, Negative); different arrangement of feed back(series voltage, series- current, shunt -voltage, shunt current);

7.3 Voltage gain of feed back amplifier;(A'=A/(a) +A)

7.4 Analysis of Negative feed back arrangement on (Gain,Stability, Noise, Input/output impedances, Band width); Amplifier circuits with negative feed back;

7.5 Positive feed back; condition for infinite gain(AB=1 in Positive feed back)

7.6 Oscillator as an infinite gain feed back.

8. TRANSISTOR AS A SWITCH:

8.1 Control action of base current on the colector current in a transitor circuit .

8.2 Large singal amplifier (input changing from cut-off to saturation).

8.3 Remote control of a realy - opertated lamp employing amplifier .

8.4 Requirements of a transistor - switch .

9. MULTIVIBRATORS:

9.1 Regeneration: relaxation oscllators;

9.2 Simple astable MV circuit arrangement for its self starting;

9.3 Study and analysis of BI - STABLE MULTIVIBRATOR;

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9.4 Study and analysis of mono stable multivabrator;

9.5 Triggering requirements;

9.6 Schmit trigger circuit;

10. INTEGRATED CIRCUITS:

10.1 Introduction;

10.2 Manufacturing process;

10.3 SSI, MSI, LSI, VLSI, ICs;

10.4 Linear and Digital ICs;

10.5 Switching and Gating ICs;

10.6 DTL, TTL, ICs;

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LIST OF PRACTICALS

1. To Identify electronic devices and common passive components: such as Diodes (Rectifier, Zeners, Signal Diodes, Varacter diode, etc.); LED's; Transistors; Ics; Resistors, Capacitors, (Colour code for them); Inductors, Transformers.

2. To Plot characteristics (FB/RB) of Semiconductor rectifier diode.

3. To Plot characteristics (FB/RB) of a zener diode.

4. Observe the output wave of a Half wave rectifier circuit with/without shunt capacitor filter.

5. Observe the O/P wave of a full wave (C.T.) Rectifier circuit with/without Shunt capacitor filter.

6. Observe the O/P wave of a Bridge Rectifier circuit with/without shunt capacitor filter.

7. To Plot input/output characteristics of a Transistor in CB.

8. To Plot input/output characteristics of a Transistor in CE.

9. To Plot input/output characteristics of a FET.

10. To measure Voltage gain of a transistor amplifier at 1 KHz signal, at different load.

11. To measure over all Voltage gain of a 2 stage RC coupled transistor amplifier a 1 KHz signal.

12. To plot frequency response of a RC coupled amplifier at 1 KHz signal.

13. To measure input and output impedance of a negative feedback amplifier.

14. To fabricate a transistor switch and verify its working.

15. To observe the output of an Astable multivibrator.

16. To observe the output of a Bi-stable multivibrator.

17. To observe the output of an Monostable multivibrator.

18. Use OP-AMP as inverting and non-inverting amplifier, Use as Adder, Subtractor, Intergator and differentator.

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III Semester

3.1 APPLIED MATHEMATICS II

[Common to All Engineering Courses]

L	T	P
5	2	-

Rationale :

The study of mathematics is an important requirement for the understanding and development of concepts of Engg.The purpose of teaching mathematics to the Diploma Engg. students is to give them basic foundation and understanding of mathematics so that they can use the same for the understanding of engineering subjects and their advancements.

Sl.No.	Units	Coverage L	T	Time P
1.	Matrices	16	6	-
2.	Differential Calculus	15	6	-
2.	Differential Equations	15	6	-
4.	Integral Calculus	12	5	-
5.	Probability & Statistics	12	5	-
		70	28	-

DETAILED CONTENTS

1. MATRICES :(12 Marks)

1.1 Algebra of Matrices, Inverse :

Addition, Multiplication of matrices, Null matrix and a unit matrix, Square matrix, Symmetric, Skew symmetric, Hermitian, Skew hermition, Orthagonal, Unitary, diagonal and Triangular matrix, Determinant of a matrix.

Definition and Computation of inverse of a matrix.

1.2 Elementry Row/Column Transformation :

Meaning and use in computing inverse and rank of a matrix.

1.3 Linear Dependence, Rank of a Matrix :

Linear dependence/independence of vectors, Definition and computation of a rank of matrix. Computing rank through determinants, Elementary row transformation and through the concept of a set of independent vectors,Consistency of equations.

1.4 Eigen Pairs, Cayley-Hamilton Theorem :

Definition and evaluation of eign values and eign vectors of a matrix of order two and three, Cayley-Hamilton theorem (without Proof) and its verification, Use in finding inverse and powers of a matrix.

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2. DIFFERENTIAL CALCULUS :(10 Marks)

2.1 Function of two variables, identification of surfaces in space, conicoids

2.2 Partial Differentiation :

Directional derivative, Gradient, Use of gradient f, Partial derivatives, Chain rule, Higher order derivatives, Eulens theorem for homogeneous functions, Jacobians.

2.3 Vector Calculus :

Vector function, Introduction to double and triple integral, differentiation and integration of vector functions, gradient, divergence and curl, differential derivatives.

3. DIFFERENTIAL EQUATION :(10 Marks)

3.1 Formation, Order, Degree, Types, Solution :

Formation of differential equations through physical, geometrical, mechanical and electrical considerations, Order, Degree of a differential equation, Linear, Nonlinear equation.

3.2 First Order Equations :

Variable seperable, equations reducible to seperable forms, Homogeneous equtions, equtions reducible to homogeneous forms, Linear and Bernoulli form exact equation and their solutions.

3.3 Higher Order Linear Equation :

Property of solution, Linear differential equation with constant coefficients (PI for X=eax, Sin ax, Cos ax, Xn, eaxV, XV.

3.4 Simple Applications :

LCR circuit, Motion under gravity, Newton's law of cooling, radioactive decay, Population growth, Force vibration of a mass point attached to spring with and without damping effect. Equivalence of electrical and mechanical system

4. INTEGRAL CALCULUS - II: (12 Marks)

4.1 Beta and Gamma Functions :

Definition, Use, Relation between the two, their use in evaluating integrals.

4.2 Fourier Series :

Fourier series of f(x),-n<x<n, Odd and even function,Half range series.

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4.3 Laplace Transform :

Definition, Basic theorem and properties, Unit step and Periodic functions, inverse laplace transform, Solution of ordinary differential equations.

5. PROBABILITY AND STATISTICS :(6 Marks)

5.1 Probability :

Introduction, Addition and Multiplication theorem and simple problem.

5.2 Distribution :

Discrete and continuous distribution, Bionimal Distribution, Poisson Distribution, Normal Distribution..

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3.2 PROGRAMMING IN C & C++

(Common to Diploma In Information Technology, Post Graduate In Computer Application, Post Diploma In Information Technology)

L	T	P
6	-	6

Rationale :

For solution of different problems, C is a very powerful high level language. It is widely used in research and engineering problems. A software technician must be aware of this language for working in computer environment.

TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage Time L	T	P
1.	Concept of Programming	9	-	
2.	Programming in C	25	-	-
3.	Classes & Objects	25	-	
4.	Programming in C++	25	-	
		84	-	84

DETAILED CONTENTS

1. CONCEPT OF PROGRAMMING:

Concept of Flowcharing, algorithm,programming, Structured Programming Various techniques of programming, Use of programming.

2. Programming in C:

Data Types, Operators and Expressions;Input & Output printf, scanf, clibrary Control Statement: IF- ELSE, While, For, Do-While, Switch; Functions and modular programming; Scope of variables, parameter passing, recursion, block structure; preprocessor statements; pointers and arrays; structures and unions; File handling.

3.CLASSES & OBJECT:

What is a class,what is an object,constructors,types of object(external,automatic static, Dynamic objects) Metaclass,role of meta class.Scope of classes, array of objects, objects as a function argument.

4.Programming in C++

What is object-orientation, area of object technology,C++, getting to grips with C++(data types,escape sequence,characters, variables, operator, notation, Arrays,Function conditional statements.call by value,call by reference.Pointer : C++ memory map, dynamic allocation pointers,pointers with arrays.Structure,structure with arrays,passing, structure of function.Enumerated data types, Inherentance, apolymorphism & Overloading.

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PROGRAMMING IN C & C++

List of Experiments

1. Exercises involving output and input format controls in Pascal.
2. Exercises involving control transfer statements in C & C++
3. Exercises with arrays & Pointers in C & C++.
4. Exercises with functions in C & C++.
5. Exercises with files in C & C++.

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3.3 COMPUTER HARDWARE & MAINTENANCE

(Common to Post Graduate Diploma Computer Application)

L	T	P
6	-	6

Rationale :

Servicing of computer peripherals and system such as Key Board, Disk Drives, Printers, Power Supplies and different stages of the computer results in increasing efficiency and life of the computer centre. A technician having skills of servicing the above peripherials and systems will prove useful for a computer centre.

TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage Time L	T	P
1.	Topic 1	6	-	
2.	Topic 2	7	-	
3.	Topic 3	6	-	
4.	Topic 4	7	-	
5.	Topic 5	9	-	
6.	Topic 6	9	-	
7.	Topic 7	9	-	
8.	Topic 8	9	-	
9.	Topic 9	8	-	
10.	Topic 10	7	-	
11.	Topic 11	7	-	
		84	-	84

DETAILED CONTENTS

1. Component and peripharal devices, Connected with computer.

2. Mother Board : BUS, Mothre board components, Battery, Connections on the Mother Board, Keeping CPU cool, Mother board trouble shooting.

3. Key Board : Switches, Keyboard organization, Key board type trouble shooting.

4. Mouse : Mouse type, Connecting Mouse, Trouble shooting Mouse.

5. HDD : Magnetic recording, Data Encoding Method, HDD feature, Head barking, HDD trouble shooting.

6. Compact Disc Drive : CD-R, CD-W, CD-RW, DVD-R, DVD-RW, Blue Ray. Working and Maintenance.

7. Printers : Image formation method, Printing mechanism, DMP, Ink Jet, Laser Printer, Multi functional printer. How printer works and Trouble shooting.

8. Network Devices: Hub, Switch, Router, Bridge, Gateway, Ethernet Card.

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9. Scanner- Flat Bed.

10. External Devices- Pen Drive, Flash Drive, External Hard Disk.

11. Power Supply : Operating charactersics, Types and maintenance.

HARDWARE MAINTENANCE

List Of Practicals

(I) Study of devices on motherboard

(II) Study of Key board & Keyboard decoder

(III) Study of Video Adopter & display controllers

(IV) Study of Floppy Drive, CD Drive and Hard Disk.

(V) Study of Multifunction Input/Output controllers

2. Troubleshooting & repair of following equipment

(I) Dot Matrix Printer, Laser, Inkjet Printer.

(II) Digital Plotter

(III) C. P. U.

(IV) Disk Drive

3. Study and Trouble Shooting of

(I) Network

(II) Power Supplies.

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3.4 ELECTRONIC INSTRUMENTS AND MEASUREMENTS

(Common with Instrumentation & Control Engineering and Electronics Engineering)

L	T	P
5	1	6

TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage Time L	T	P
1.	Introduction	2	1	-
2.	Multimeters	6	1	-
3.	Electronic Multimeter	6	1	-
4.	A. C. Millivoltmeter	6	1	
5.	Cathode Ray Oscillograph	12	3	-
6.	Audio Power Meter	6	1	-
7.	Signal Generator	6	1	-
8.	Impedance Bridges & Meters	6	1	-
9.	Regulated Power Supply	9	2	-
10.	Digital Instrument	9	2	-
		70	14	84

DETAILED CONTENTS

1. INTRODUCTION TO THE PROCESS OF MEASUREMENTS:

1.1 Review of the terms, accuracy, precision, sensitivity range and errors, difference between accuracy, precision and resolution.

1.2 Precaution against high frequency noise pick up and remedies, shielding and grounding (two terminal and three terminals).

1.3 Concept of selective wide band measurements.

2. MULTIMETERS:

2.1 Principle of measurement of D.C. voltage and D.C. current, A.C. voltage and A.C. current and resistance in a multimeter.

2.2 Specifications of a multimeter and their significance.

2.3 Limitations with regards to frequency and impedance.

3. ELECTRONIC MULTIMETER:

3.1 Advantage over conventional multimeter for voltage measurement with respect to input impedance and sensitivity, principles of voltage, current and resistance measurements.

3.2 Specification of electronic multimeter and their significance.

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4. A. C. MILLIVOLTMETER:

4.1 Types of AC millivoltmeters: Amplifier-rectifier and rectifier amplifier, block diagram and explanation of the above types of A.C. milli voltmeter.

4.2 Typical specifications and their significance.

5. CATHODE RAY OSCILLOSCOPE:

5.1 Construction of CRT, Electron gun, Electrostatic focussing and acceleration (Explanation only-no mathematical treatment) Deflection sensitivity, Brief mention of screen phospher for CRT. Internal Block Diagram of CRO.

5.2 Explanation of time base operation and need for blanking during flyback, synchronisation.

5.3 Block diagram and explanation of a basic CRO and a triggered sweep oscilloscope, front panel controls.

5.4 Specifications of CRO and their significance.

5.5 Use of CRO for the measurement of voltage (D.C. & A.C.) frequency using Lissagious figure, time period, phase.

5.6 Special features of dual trace, delayed sweep and storage CROs (Brief mention only).

5.7 CRO probes including current probes.

5.8 Working Principle of Spectrum Analyzer.

6. AUDIO POWER METER:

6.1 Block diagram of an audio power meter.

6.2 Principles of working its application and high frequency limitations.

6.3 Scale conversion from power to db.

7. SIGNAL GENERATORS:

7.1 Block diagram explanation of laboratory type low frequency and RF signal generators, pulse generator and function generator.

7.2 Specification for low frequency signal generator, RF generator,pulse generator and function generator. Brief idea of testing specification for the above instrumets.

7.3 Standard signal generator.

8. IMPEDANCE BRIDGES Q METERS:

8.1 D.C. and A.C. Bridges :

D.C. bridges- Wheat stone bridge, Kelvins bridges, Senstivity- Null indicators.

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A. C. Bridges - Inductance bridges (Maxwell bridge), Capacitance bridges, Hays bridge, Anderson bridge, Schering bridge, Wein bridge, Twin betwork, Storage factor, Dissipation factor and their measurments.

8.2 Block diagram explanation and working principle of laboratory types (balancing type) RLC bridge. Specifications of a RLC bridge, Principle of digital RLC bridge.

8.2 Block diagram and working principles of a Q meter.

9. REGULATED POWER SUPPLY:

9.1 Block diagram of regulated power supply, IC based power supply.

9.2 Major specifications of regulated power supply, and their measurement (line and load regulation, output ripple and transients).

9.3 Basic working principles of switched mode power supply.

9.4 Concept of floating and grounded power supplies and their interconnections to obtain multipple output supplies.

9.5 Basic working principle of uninterupted power supply

10. DIGITAL INSTRUMENTS:

10.1 Comparison of Analog and Digital instruments, characteristics of digital meter.

10.2 Working principle of Ramp, Dual slope and integrating type of digital voltmeter.

10.3 Block diagram and working of a digital multimeter.

10.4 Working principle of time interval frequency and period measurement using universal counter, frequency counter, time base stability and accuracy and resolution.

List of Books

1. A. K. Sawhney - A course in Electrical & Electronic Measurement & Instrumentation - Dhanpat Rai & Sons
2. Helfric & Cooper - Modern Electronic Instrumentation and Measurment Techniques- PHI

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ELECTRONIC INSTRUMENTS AND MEASUREMENT LAB

List Of Practicals

1. Loading effect of a multimeter and its limitations to measure high frequency voltages.

2. Measurement of Q of a coil and its dependence on frequency using a Q meter.

3. Measurement of voltage, frequency, time period, phase angle and delay time using CRO : (use of Lissagious Figures).

4. Measurement of time period, frequency, average period using universal counter frequency counter.

5. To test a power supply for ripple, line and load regulation, Tracing of wave form, To findout operating range of power supply.

6. Measurement of rise, fall and delay time using a CRO.

7. Measurement of distortion of a LF signal generator using distortion factor meter.

8. Measurement of R.L. and C using a LRC bridge/universal bridge.

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IV Semester

4.1 DATA COMMUNICATION AND COMPUTER NETWORKS

(Common to Diploma In Information Technology, Post Diploma In Information Technology, Diploma In Computer Science & Engineering)

L	T	P
6	-	4

TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage Time L	T	P
1.	Topic 1	12	-	-
2.	Topic 2	9	-	-
3.	Topic 3	12	-	-
4.	Topic 4	9	-	-
5.	Topic 5	12	-	-
6.	Topic 6	9	-	-
7.	Topic 7	12	-	-
8.	Topic 8	9	-	-
		84	-	56

DETAILED CONTENTS

1. OVERVIEW OF DATA COMMUNICATION AND NETWORKING :

   Introduction; Data Communication; Components, data representation (ASCII, ISO, etc.). Direction of Gata Flow (Simples, Half duplex, Full duplex), Network; Distributed processing, Network criteria, Physical structure (Types of connection, Topology), Categories of network (LAN, MAN, WAN); Internet; Brief history, Internet today; Protocols and standards; Reference models; OSI reference model TCP/IP reference model, their comparative study.

2. PHYSICAL LAYER :

   Overview of data (Analog and Digital), Singnal (Analog and Digital), Transmission (Analog and Digital) and Transmission media (Guided and Non-guided); TDM, FDM, WDM; Circuit switching; Time division and space division switch, TDM bus; Telephone network.

3. DATA LINK LAYER :

   Types of errors, Framing (Character and bit stuffing), Error detection and Correction methods; Flow control; Protocols Stop and wait ARQ, Go-Back, NARQ, Selective repeat ARQ, HDLC.

   Medium Access Sub Layer :

   Point to point protocol, LCP, NCP, FDDI, Token bus, Toke ring; Reservation, Polling, Concetration; Multiple access protocols, CSMA,CSMA/CD, FDMA, TDMA, CDMA; Traditional Ethernet, Fast Ethernet.

4. NETWORK LAYER :

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Internetworking and devices : Repeaters, Hubs, Bridges, Switches, Router, Gateway; Addressing : Internet address, Classful address, Subnetting; Routing : Techniques, Static vs. dynamic routing, Routing table for glassful address; Routing algorithms: Shortest path algorithm, Flooding, Distance vector routing, Link state routing; Protocols ARP, RARP, IP, ICMP, IPV6; Unicast and multicast routing protocols.

5. TRANSPORT LAYER :

Process to process delivery; UDP, TCP; Congestion control algorithm; Leaky bucket algorithm, Token bucket algorithm, Choke packets; Qualit of service; Techniques to improve Qos.

6. SESSION LAYER :

Functioning of session layer, OSI primitives.

7. APPLICATION LAYER :

DNS;SMTP;SNMP;FTP; HTTP & WWW; Security; Cryptography, Use authentication, Security protocols in internet Firewalls

8. EMERGING TECHNOLOGIES IN NETWORKING :

ISDN services and ATM; DSK technology, Cable modem, Sonet wireless LAN: IEEE 802.11; Introduction to blue-tooth, VLAN's, Cellular telephony and Satellite network.

Text Books

1. B. A. Forouzan - Data Communication and Networking (3 Ed.) - TMH.

2. A. S. Tanebaum - Computer Networks (4 Ed.) - Pearson Education/ PHI.

3. W. Stallings - Data and Computer Communication (5 Ed.) - Pearson Education/ PHI.

LIST OF PRACTICALS

1. Identification of various networks components

- Connection, BNC, RJ-45, I/O box
- Cables, Co-axial, twisted pair, UTP
- NIC (Network Interface Card)
- Switch, Hub

2. Sketch wiring diagram of network cabling considering a computer lab of 20 systems.
3. Interfacing with the network card (Ethernet)
4. Preparing of network cables.
5. Establishment of a LAN
6. Use of protocols in establising LAN
7. Trouble shooting of networks.
8. Installation of network device drivers.
9. Installation of networks (Peer Networking client server interconnection.
10. Use/installation of proxy server.

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4.2 OFFICE TOOLS

(Common to Post Diploma in Computer Application, Three year Diploma In Information Technology)

L	T	P
6	-	8

Rationale :

The PC's are gaining their image as personal assistants to every individual in day today life. It is only because of the softwares like Electronic spread sheet, Data base and Word Star,Without these this image of the pc's is of no worth.

TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage Time L	T	P
1.	MS Word	21	-	-
2.	MS Excel	21	-	-
3.	Power Point	21	-	-
4.	Electronic Mail	21	-	-
		84	-	112

DETAILED CONTENTS

1. MS WORD PROCESSING:

File : Open, Close, Save and Find File, Print and Page Setup
Edit : Cut, Copy, Find, Replace
Insert: Page Insert, Page No., Symbole
Font : Paragraph, Tabs, Boder & Shading, Change Case
Tools : Spelling, Mail Merge
Table : Insert Table, Delete Cells, Merge Cell, Sort Text

2. MS Excel:

File : Open, Close, Save and Find File, Print and Page Setup
Edit : Cut, Copy, Find, Replace, Undo, Redo
Insert: Cell, Row, Worksheet, Chart
Format: Data, Sort, Filter, Form, Table

3. POWER POINT

File : New,Open,Close,Save as HTML,Pack and Go,Page setup,Send to ,Properties
Edit : Cut, Copy, Find, Replace, Undo, Redo,Duplicate.
View : Slide_Outline,Slide_sorter,Notepage,Slideshow,Master, Black & white slide,Toolbars,Ruler ,Guides
Insert : New slide,Duplicate slide,Picture,Text box,Movies & sound,Hyperlink.
Format : Font,Bullet,Alignment,Line spacing,Slide layout.
Tool : Power point,Presentation & conference,Expand slide,Macro,customise.
Slide show: View show,Rehearse timing,Naration,View on two screen ,Active buttons,Preset Animation,Custom -

animation,Slide transition.
Window : New window,Arrange icons,Fit to page,Cascade.

4. Electronic Mail Using Outlook Express :

- Composing an Email Message
- Working with Address Book
- Automatically Add contents to Your Address Book
- Reading Email using Outlook Express
- Reading a message
- Checking for New Messages
- Reading file Attachment
- Taking Acting on a Messages
- Web Based Email
- Advantage os using Web Based Email.

MS-OFFICE

List Of Practicals

1. Create a document using funcation :Saveas, Page Number, Bullets adn Numbering.
2. Create a document using styles and formatting option
3. Create a document using different fonts.
4. Create a document using the function page setup and page preview, then print that document.
5. Create a table and perform operation in it.
6. Create a table, chart in excel and implement all formula as addition, substraction, multiplication and division.
7. How to use mail merge in MS Word.
8. Create a Power Point presentation using slide designing.
9. Create, Save and Print the Power Point Presentation.
10. Create a Power Point Presentation using Clipart, Word Art Gallery and then add transition and animation effect.

LIST OF BOOKS

1. Microsoft Office 2010 For Dummies By Wallace Wang
2. 2007 Microsoft Office System Plain & Simple by Jerry Joyce-Microsoft Press
3. Office XP : The Complete Reference- Stephen L. Selson - Tata McGraw Hill Education.
4. Working in Microsoft Office - Richard Mansfield - Tata McGraw Hill Education.

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4.3 DOT(.) NET TECHNOLOGY

(Common to Post Graduate Diploma in Computer Application, Diploma in Information Technology, One year P. G. Diploma In Information Technology)

L	T	P
6	-	6

TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage Time L	T	P
1.	Topic 1	12	-	-
2.	Topic 2	15	-	-
3.	Topic 3	15	-	-
4.	Topic 4	15	-	-
5.	Topic 5	15	-	-
6.	Topic 6	12	-	-
		84	-	84

1. THE DOT(.) NET FRAMEWORK :

Introduction, Common Language Routime, Common Types System, Common Language Specification, The Base Class Library, The .NET class library Intermediate language. Justin- Time compilation, garbage collection, Application installation and Assemblies, Web Services, Unified classes.

2. C# BASICS :

Getting started with .NET framework, Elploring Visual Studio .NET, Inside a C# Program, Data Types, Statements, Arrays, Using Strings, Objects, Classes and Structs, Properties, Inheritance, Indexers, Delegates, Events, Namespaces, Generics.

3. ADVANCED FEATURES OF C# :

Collection and Data Structure, Exception, Handling, Threading, Using Streams and Files, Reflection, Assemblies, Verioning, Windows Forms, Controls, Data binding to Controls, Advanced Database Programming using ADO.net, Using GDI+, Networking, .net Remoting, Manipulation XML.

4. VB .NET :

Creating Applications with Visual Basic .NET, Variables, Constants adn Calculations, Making Decisions and Working with Strings, List, Loops, Validations, Sub Procedures adn Functions, Multiple Forms, Standard Modules and Menus. Array, Timers, Form Controls, File Handling, Exception Handling, Working with Database, Advanced Database Programming using ADO.net, Classes, Generics, Collections, Inheritance, Custom Controls, Packaging and deployment, Using Crystal Reports.

5. ASP .NET 2.0 :

Features of ASP .NET 2.0, Stages in Web Forms Processing,

Introduction to Server Control, HTML Controls, Validation Controls, User control, Data Binding Controls, Configuration, Personalization, Session State, ADO.NET., Database Programming - Connecting with Database using DAO, RDO & ADO.

6. Working with inbuilt Active X, Window Common Control, Creating Own Active X through Active X Control, Active X EXE, Difference between EXE and DLL.

LIST OF PRACTICAL

1. Develop small software using . NET Technology.

LIST OF BOOKS

1. Application of .NET Technology, ISRD Group- McGraw Hill.

2. Beginning ASP.NET 4:in C# and VB by Imar Spaanjaars

3. Introduction to .NET 4.0 with Visual Studio 2010 From Apress Publication - Alex Mackey

4. Understanding .NET (2nd Edition) - David Chappell

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4.4 MICROPROCESSORS AND APPLICATIONS

(Common with Electronics Engineerint, Instrumentation & Control Engineering and Computer Engineering)

L	T	P
6	-	6

TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage Time L	T	P
1.	Over View of Microcomputer System	6	-	-
2.	Memory of A Microcomputer	15	-	-
3.	C.P.U. and Control	12	-	-
4.	Introduction To 8085 Microprocessor	15	-	-
5.	Architecture of 8086 Microprocessor	12	-	-
6.	Assembly Language Programming	15	-	-
7.	Basic I/O Interfacing	12	-	-
8.	Memory Interfacing	12	-	-
9.	Advance Microprocessor & Micro Controllers	12	-	-
		84	-	84

DETAILED CONTENTS

1. OVERVIEW OF MICROCOMPUTERS SYSTEM:

1.1 Functional block.

(a) CPU.

(b) Memory.

(c) Input/Out devices (Key board, Floppy drive, Harddisk drive, Tape drive, VDU, Printer, Plotter).

1.2 Concept of programme and data memory.

(a) Registors (general purpose).

(b) external memory for storing data and results.

1.3 Data transfer between registers.

1.4 Concept of tristate bus.

1.5 Control on registers.

2. MEMORY OF A MICROCOMPUTER:

2.1 Concept of byte organised memory.

(a) Address inputs.

(b) Address space.

(c) Data input/output.

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2.2 Addressing and Address decoding.

(a) Memory system organisation.

(b) Partitioning of total memory space into small blocks.

(c) Bus contention and how to avoid it.

2.3 Memory chips.

(a) Types of ROM, RAM, EPROM, PROM.

(b) Read/Write inputs.

(c) Chip enable/select input.

(d) Other control input/output signals.

- Address latching.
- Read output.
- Address strobes.

(f) Power supply inputs.

2.4 Extension of memory.

- In terms of word length and depth.

3. C P U & CONTROL:

3.1 General microprocessor architecture.

3.1 Instruction pointer and instruction register.

3.2 Instruction format.

- Machine and Mnimonics codes.
- Machine and Assembly language.

3.3 Instruction decoder and control action.

3.4 Use of Arthematic Logic Unit.

- Accumulator.
- Temporary Register.
- Flag flip-flop to indicate overflow, underflow, zero result occurance.

3.5 Timing and control circuit.

- Crystal and frequency range for CPU operation.
- Control bus to control peripherals.

4. INTRODUCTION OF 8085 MICROPROCESSOR:

Evolution of Microprocessor, Register Structure, ALU, BUS Organization, Timing and Control.

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5. INTRODUCTION OF 8086 MICROPROCESSOR:

Internal organization of 8086, Bus Interface Unit, Execuation Unit, Unit, register, Organization, Sequential Memory Organization, Bus Cycle.

6. ASSEMBLY LANGUAGE PROGRAMMING :

Addressing Modes, Data Transfer, Instructions, Arithmetic and Logic Instruction, Program Control Instructions (Jumps, Conditional Jumps, Subroutine Call) Loop and String Instructions, Assembler Directives.

7. BASIC I/O INTERFACING :

Programmed I/O, Interrupt Driven I/O, DMA, Parallel I/O (8255-PPI, Centronics Parallel Port), Serial I/O (8251/8250, RS-232 Standard), 8259-Programmable Interrupt Controller, 8237-DMA Controller, 8253/8254-Programmable Timer/Counter, A/D and D/A conversion.

8. MEMORY INTERFACING :

Types of Memory, RAM and ROM Interfacing with Timing Considerations, DRAM Interfacing.

9. ADVANCE MICROPROCESSOR AND MICRO CONTROLLERS :

Brief idea of Microcontroller 8051, Pentium and Power PC

NOTE :

Study of Popular ICs Read/Write Chips-8155/8156, 2114,2148,2164. ROM Chips- 8355,2716,2732,8755. Other support chips - 8279,8257,8275,8205.

LIST OF BOOKS

1. Singh, B. P. - Advanced Microprocessor and Microcontrollers- New Age International.
2. Singh, B. P. - Microprcessor Interfacing and Application - New Age International.
3. Brey, Barry B. - INTEL Microprocessor - Prentic Hall (India)-4th Edition.
4. Liu and Gibson G.A. - Microcomputer System - The 8086/8088 Faimly-Prentice Hall (India) 2nd Edition.
5. Sombir Singh - Microprocessor and Its Application - Jai Prakesh Publication, Meerut

MICROPROCESSORS AND APPLICATIONS LAB

List Of Practicals

1. Assembly language programming :- Programming of simple problems.
2. Simple programming problems using 8085 and 8086 microprocessor. Trainer kit to gain competence in the use of
   (a) 8085 and 8086 Instruction set.
   (b) Support chips of 8085 and 8086.

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V Semester

5.1 INDUSTRIAL MANAGEMENT AND ENTREPRENEURSHIP DEVELOPMENT

L	T	P
6	**2**	**-**

RATIONALE

The knowledge of this subject is required for all engineers/technicians who wish to choose industry/field as their career. This course is designed to develop understanding of various functions of management, role of workers and engineers and providing knowledge about industrial and tax laws.

TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage Time L	T	P
1.	Principles of Management	8	-	-
2.	Human Resource Development	10	-	-
3.	Wages and Incentives	4	-	-
4.	Human and Industrial Relations	6	-	-
5.	Professional Ethics	2	-	-
6.	Sales and Marketing management	10	-	-
7.	Labour Legislation Act	10	-	-
8.	Material Management	8	-	-
9.	Financial Management	8	-	-
10.	Entrepreneurship Development	8	-	-
11.	Fundamental of Economics	5	-	-
12.	Accidents and Safety	5	-	-
		84	-	-

DETAILED CONTENTS

1. **Principles of Management**
   - 1.1 Management, Different Functions: Planning, Organising, Leading, Controlling.
   - 1.2 Organizational Structure, Types, Functions of different departments.
   - 1.3 Motivation: Factors, characteristics, methods of improving motivation, incentives, pay, promotion, rewards, job satisfaction, job enrichment.
   - 1.4 Need for leadership, Functions of a leader, Factors for accomplishing effective leadership, Manager as a leader, promoting team work.
2. **Human Resource Development**
   - 2.1 Introduction, objectives and functions of human resource development (HRD) department.
   - 2.2 Recruitment, methods of selection, training strategies and career development.
   - 2.3 Responsibilities of human resource management – policies and functions, selection – Mode of selection – Procedure – training of workers, Job evaluation and Merit rating.
3. **Wages and Incentives**
   - 3.1 Definition and factors affecting wages, methods of wage payment.
   - 3.2 Wage incentive – type of incentive, difference in wage, incentive and bonus; incentives of supervisor.
   - 3.3 Job evaluation and merit rating.
4. **Human and Industrial Relations**
   - 4.1 Industrial relations and disputes.
   - 4.2 Relations with subordinates, peers and superiors.
   - 4.3 Characteristics of group behaviour and trade unionism.
   - 4.4 Mob psychology.
   - 4.5 Grievance, Handling of grievances.

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4.6 Agitations, strikes, Lockouts, Picketing and Gherao.
4.7 Labour welfare schemes.
4.8 Workers' participation in management.

5. **Professional Ethics**
   5.1 Concept of professional ethics.
   5.2 Need for code of professional ethics.
   5.3 Professional bodies and their role.

6. **Sales and Marketing management**
   6.1 Functions and duties of sales department.
   6.2 Sales forecasting, sales promotion, advertisement and after sale services.
   6.3 Concept of marketing.
   6.4 Problems of marketing.
   6.5 Pricing policy, break even analysis.
   6.6 Distribution channels and methods of marketing.

7. **Labour Legislation Act (as amended on date)**
   7.1 Factory Act 1948.
   7.2 Workmen's Compensation Act 1923.
   7.3 Apprentices Act 1961.
   7.4 PF Act, ESI Act.
   7.5 Industrial Dispute Act 1947.
   7.6 Employers State Insurance Act 1948.
   7.7 Payment of Wages Act, 1936.
   7.8 Intellectual Property Rights Act

8. **Material Management**
   8.1 Inventory control models.
   8.2 ABC Analysis, Safety stock, Economic ordering quantity.
   8.3 Stores equipment, Stores records, purchasing procedures, Bin card, Cardex.
   8.4 Material handling techniques.

9. **Financial Management**
   9.1 Importance of ledger and cash book.
   9.2 Profit and loss Account, Balance sheet.
   9.3 Interpretation of Statements, Project financing, Project appraisal, return on investments.

10. **Entrepreneurship Development**
   10.1 Concept of entrepreneur and need of entrepreneurship in the context of prevailing employment conditions.
   10.2 Distinction between an entrepreneur and a manager.
   10.3 Project identification and selection.
   10.4 Project formulation.
   10.5 Project appraisal.
   10.6 Facilities and incentives to an entrepreneur.

11. **Fundamental of Economics**
   11.1 Micro economics.
   11.2 Macro economics.

12. **Accidents and Safety**
   12.1 Classification of accidents based on nature of injuries, event and place.
   12.2 Causes and effects of accidents.
   12.3 Accident-prone workers.
   12.4 Action to be taken in case of accidents with machines, electric shock, fires and erection and construction accidents.
   12.5 Safety consciousness and publicity.
   12.6 Safety procedures.
   12.7 Safety measures – Do's and Don'ts and god housing keeping.

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5.2 DATA STRUCTURE USING C & C++

(Common to Post Diploma in Information Technology and Post Graduate Diploma In Computer Application, Diploma In Information Technology)

L	T	P
6	-	4

Rationale :

For solution of different problems 'C' is a very powerful high level language. It is widely used in research and engineering problems. A software technician aware of this language will be useful for working in computer environment.

TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage Time L	T	P
1.	Basic Concepts.	8	-	
2.	Stacks And Queues	10	-	
3.	Lists	15	-	
4.	Sorting & Merging	12	-	
5.	Tables	12	-	
6.	Trees	15	-	
7.	Graphs	12	-	
		84	-	56

DETAILED CONTENTS

1. BASIC CONCEPTS:

Basic concepts and notation & Mathematical background

2. Stacks And Queues

Representation of stacks & queues,linked sequential.

3. LISTS:

List representation techniques,Multilinked structures, Dynamic storage allocation techniques.

4. SORTING ALGORITHMS

Insertion sorts, Bubble sort, Quicksort, Mergesort, Heapsort

5. Tables: -

Searching sequential tables,Hash tables and Symbol tables, Heaps.r

6. TREES

Definitions and basic concepts, Linked tree representations,binary tree traversal algorithms,B-trees and their applications.

7. Graphs:

Depths-first-search.

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DATA STRUCTURE USING C & C++

List of Experiments

1. Write a program on Linked List Using 'C' & C++.
2. Exercise on Stack, Queues. Using C & C++
3. Exercises on Sorting .

DATA STRUCTURE

1. Data Structure - Schaum's Outline Series - McGraw Hill
2. Data Structure - Schaum's Series - McGraw Hill Publications
3. Horwitz and Sartaj Sahni - Data Structure
4. Tanenbaum - Data Structures - Prentice Hall of India, New Delhi
5. Kanekar Yashwant - Data Structure through C, BPB Publication

Corrected and Approved by B.T.E. Meeting On Dated 02.06.2015

5.3 RELATIONAL DATABASE MANAGEMENT SYSTEM

(Common to Post Graduate Diploma In Computer Application, Diploma in Information Technology, Post Diploma In Information Technology).

L	T	P
6	-	6

Rationale:

Relational Database management system is the modern technique of managing data. The knowledge of DBMS is very useful & effective in prepration of different types of application software like Inventory, Financial & Accounting system etc. The student equiped with knowledge of this subject will be useful in the areas of the computer application.

TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage L	T	Time P
1.	Topic 1	12	-	-
2.	Topic 2	12	-	-
3.	Topic 3	12	-	-
4.	Topic 4	12	-	-
5.	Topic 5	9	-	-
6.	Topic 6	9	-	-
7.	Topic 7	9	-	-
8.	Topic 8	9	-	-
		84	-	84

DETAILED CONTENTS

1. OVERVIEW OF DBMS :

Data, Representation of Data, Record, Data item, Field name, File, Data and Information, Database (Properties), Benifits of Database approach, Database Management System (Capabilities, Advantages, Disadvantages) and Functions of DBMS. Basic DBMS terminology (Data items, Entities and Attributes, Schama and Subschama, Database users, Instrance and Schanas). Three views of Data (External View, Conceptual View, Internal View), Three level architecture of DBMS, Data Independence.

2. DATA MODELS :

Define data model, classify data model, Local Models : Object and Record based- Object Oriented Model- Entry relationship Models - Entity sets and relationship sets- Attributes - Keys in entity and relationship sets : (a) Super Key (b) Candidate Key (c) Primary Key (e) Unique Key - Mapping constraints.Object based logical models, E-R model, E-R diagram, Notations, Hierarchical Model (Advantage, Disadvantages), Network model (Advantages, Disadvantages), Relational Model (Advantages, Disadvantages), Object oriented database, Object oriented relational database.

3. RELATIONAL MODEL :

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Advantages, Disadvantages, Codd's 12 rules, Definition of Relations, Degree and Cardinality, Relational Model Constraints (Domain, Tuple Uniquiness, Key Constraints, Integrity Constraints, Entity constraints). Relations algebra (Basic operation : Union intersection and difference), Additional Relational Abgebraic Operations (Projection, Selection rows, Division)

4. RELATIONAL DATABASE DESIGN :

Functional dependencies (I, II & III), Normal forms, Normalization, Boyce Codd Normal Form, Multivalued dependencis and Forth Normal Form, Join Dependencies and Fifth normal forms.

5. STRUCTURE QUERY LANGUAGE (SQL) :

SQL, Object naming conventions, Object naming guidelines, Data types (Varchar 2, Number, Long, Date, Raw, Long Raw, Rowid, Char etc.), Tables, Views, Indexes, SQL Commond :- DESCRIBE, SELECT, COLUMN ALIASES, CONCATENATION OPERATOR, DISTINCT CLAUSE, ORDER BY, WHERE CLAUSE, LOGICAL OPERATIONS, SQL OPERATORS.

6. DATABASE IMPLEMENTATION USERS:

Database integrity, Locking techniques for concurrency control, Concurrency control based in Time Stamp Ordering, Multiversion Concurrency control techniques, Database Security.

7. RATIONAL DATABASE :

Data definition language- Data mainpulation language- Relational algebra - Operators : Select, Project, Join, Rename, etc. - Simple example.

8. SECURITY :

Authorization and View- Security constraints - Integrity Constraints- Encryption.

LIST OF BOOKS

1. An Introduction to Database System - C. J. Date

2. Database System Concepts - A. Silberschatz & H. F. Korth

3. Database Concepts and Systems - Lvan Bayroos/SPD

4. Fundamental of Database System - R. Elmashri & S. B. Navathe

RELATIONAL DATABASE MANAGEMENT SYSTEM LAB

STRUCTURED QUERY LANGUAGE

1. Creating Database

- Creating a database
- Creating a table
- Specifying relational data types
- Specifying constraints
- Creating indexes

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2. Table and Record Handling

- INSERT statement
- Using SELECT and INSERT together
- DELETE, UPDATE, TRUNCATE Statement.
- DROP, ALTER statement

3. Retrieving Data From a Database

- The SELECT statement
- Using the WHERE clause
- Using Logical Operators in the WHERE clause
- Using In, BETWEEN, LIKE, ORDER BY, GROUP BY & HAVING clause
- Using Aggregate Functions
- Combining Tables Using JOINS

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5.4 JAVA PROGRAMMING

(Common To Post Graduate Diploma in Computer Application, Diploma In Information Technology)

L	T	P
6	-	6

TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage Time L	T	P
1.	An Overview of Java	15	-	-
2.	Data Types & Control Statement	15	-	-
3.	Introducing Classes & Methods	15	-	-
4.	Inheritance	15	-	
5.	Multi threaded Programming	12	-	-
6.	Input/Output Applits	12	-	-
		84	-	112

1. An Overview of JAVA:-
   Introduction to Object Oriented Programming (two paradigms, abstraction, the three oops principles) creation of JAVA, JAVA Applits & applications, security & portability.

2. Data Types & Control statements:
   Integer,floating point type, character, boolean, all Operators, JAVA's selection statements,iteration and jump statement

3. Introducing Classes & Methods:
   Class fundamentals, declaring objects, overloading methods & constructs,access control, nested and inner classes, exploring the string class,Inheritance

4. Inheritance:

   Inheritance basics,member access and inheritance.

5. Multithreaded Programming.:
   The JAVA thread model,thread priority, synchronozation, Messaging.

6. Input/Output Applits:
   I/O Basics, byte streams & character streams, predefined streams, reading and writing console input/output, reading and writing files, applet fundamentals,applete class.

LIST OF PRACTICALS

PROGRAMS USING CONTROL STATEMENTS.

LIST OF BOOKS

1. Core Java II Advanced Feature 8th Edition, Sun Microsystem
2. The Complete Reference JAVA Seventh Edition
3. Thinking in Java, Third Ediction, Bruce Eckel Pearson Eduction.
4. JAVA 6 By Rogers Cadenhead, Laura Lemay, Pearson Education.

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5.5 E-COMMERCE AND ERP

(Common to Post Diploma in Information Technology, P. G. Diploma in Computer Application, Diploma In Information Technology)

L	T	P
6	-	-

TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage Time L	T	P
1.	Topic 1	7	-	
2.	Topic 2	7	-	
3.	Topic 3	7	-	
4.	Topic 4	7	-	
5.	Topic 5	7	-	
6.	Topic 6	7	-	
7.	Topic 7	7	-	
8.	Topic 8	7	-	
9.	Topic 9	7	-	
10.	Topic 10	7	-	
11.	Topic 11	7	-	
12.	Topic 12	7	-	
		84	-	-

1. ELECTRONIC COMMERCE :

   Overview, Definitions, Advantages and Disadvantages of E-commerce, threats of E-commerce, Managerial Prospective, Rules and Regulations For controlling E-commerce, Cyber Laws.

2. TECHNOLOGY :

   Relationship Between E-Commerce and Networking, Different Types of Networking For E-commerce, Internet, Internet and Extranet, EDI System Wireless Application Protocol : Definition, Hand Held Devices, Mobility and Commerce, Mobile computing, Wireless Web, Web Security, Infrastructure Requirement Form E-Commerce.

3. BUSINESS MODELS OF E-COMMERCE :

   Model based on transaction, Type, Model Based on Transaction Party -B2B, B2C,C2b, C2c, E-Governance.

4. E-STRATEGY :

   Overview, Strategic, Methods for developing E-commerce.

5. FOUR C's:

   Four C's (Convergence, Collaborative Computing, Content Management and Call Center)

6. SUPPLY CHAIN MANAGEMENT :

   E-logistics, Supply Chain Portal, Supply Chain Planning

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Tools (SCP Tools), Supply Chain Execution (SCE), SCE-Framework, Internet's effect on Supply Chain Power.

7. E-PAYMENT MECHANISM :

   Payment through card system, E-Cheque, E-Cash, E-Payment Threats and protections.

8. E-MARKETING :

   Home-Shopping, E-Marketing, Tele-Marketing.

9. ELECTRONIC DATA INTERCHANGE (EDI):

   Meaning, Benifits, Concepts, Application, Edi Model.

10. RISK OF E-COMMERCE :

    Overview, Security for E-commerce, Security Standards, Firewall, Cryptography, Key Management, Passward system, Digital certificates, Digital signatures.

11. ENTERPRISE RESOURCE PLANNING (EPR) :

    Feature, capabilities and overview of commerical software, re-engineering work pressure of IT applications, Business Process Redesign, Knowledge Engineering and data warehouse.

12. SINESS MODULES :

    Finance, Manufacturing (Production), Human Resource, Plant Maintenance, Materials Management, Quality Management, Sales and Distribution.

LIST OF BOOKS

1. E-Commerce-M. M. Oka- EPH
2. Electronic Commerce- Technologies & Application - Bhaskar Bharat - TMH
3. E-Commerce :Strategy Technologies and Applications - Tata McGraw Hill

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VI Semester

6.1 ENVIRONMENTAL EDUCATION & DISASTER MANAGEMENT

L	T	P
4	-	-

RATIONALE:

A diplima student must have the knowledge of different types of pollution caused due to industrialisation and construction activities, so as he may help in balancing of eco-system and control pollution by providing controlling measures. They should be also aware of the environmental laws for effectively controlling the pollution of environment. The topics are to be taught in light of legislation Para-3.

TOPIC WISE DISTRIBUTION OF PERIODS:

SL. NO.	TOPIC	L	T	P
1.	Introduction	6		
2.	Pollution	4		
2.1	Water Pollution	8		
2.2	Air Pollution	8		
2.3	Noise Pollution	4		
2.4	Radio Active Pollution	6		
2.5	Solid Waste Management	6		
3.	Legislations	4		
4.	Environmental Impact Assessment	4		
5.	Disaster Management	6		
	TOTAL	56	-	-

DETAILED CONTENTS

1. INTRODUCTION :

- Basics of ecology, Ecosystem, Biodiversity Human activities and its effect on ecology and eco system, different development i.e. irrigation, urbanization, road development and other engineering activities and their effects on ecology and eco system, Mining and deforestation and their effects.

- Lowering of water level , Urbanization.

- Biodegradation and Biodegradibility, composting, bio remediation, Microbes .Use of biopesticidies and biofungicides.

- Global warning concerns, Ozone layer depletion, Green house effect, Acid rain,etc.

2. POLLUTION :

Sources of pollution, natural and man made, their effects on living environments and related legislation.

2.1 WATER POLLUTION :

- Factors contributing water pollution and their effect.

- Domestic waste water and industrial waste water. Heavy metals, microbes and leaching metal.

- Physical, Chemical and Biological Characteristics of waste water.

- Indian Standards for qulity of drinking water.

- Indian Standards for quality of treated waste water.

- Treatment methods of effluent (domestic waste water and industrial/ mining waste water), its reuse/safe disposal.

2.2 AIR POLLUTION :

Definition of Air pollution, types of air pollutants i.e. SPM, NOX, SOX, GO, CO2, NH3, F, CL, causes and its effects on the environment.

- Monitoring and control of air pollutants, Control measures techniques. Introductory Idea of control equipment in industries i.e.

A. Settling chambers
B. Cyclones
C. Scrubbers (Dry and Wet)
D. Multi Clones
E. Electro Static Precipitations
F. Bog Fillers.

- Ambient air qulaity measurement and their standards.

- Process and domestic emission control

- Vehicular Pollution and Its control with special emphasis of Euro-I, Euro-II, Euro-III and Euro IV.

2.3 NOISE POLLUTION :

Sources of noise pollution, its effect and control.

2.4 RADISACTIVE POLLUTION :

Sources and its effect on human, animal, plant and material, means to control and preventive measures.

2.5 SOLID WASTE MANAGEMENT :

Municipal solid waste, Biomedical waste, Industrial and Hazardous waste, Plastic waste and its management.

3. LEGISLATION :

Preliminary knowledge of the following Acts and rules made thereunder-

- The Water (Prevention and Control of Pollution) Act - 1974.

- The Air (Prevention and Control of Pollution) Act - 1981.

- The Environmental Protection (Prevention and Control of Pollution) Act -1986. Rules notified under EP Act - 1986 Viz.

  # The Manufacture, Storage and Import of Hazardous Chemical (Amendment) Rules, 2000

  # The Hazardous Wastes (Management and Handling) Amendment Rules, 2003.

  # Bio-Medical Waste (Management and Handling) (Amendment) Rules, 2003.

  # The Noise Pollution (Regulation and Control) (Amendment) Rules, 2002.

  # Municipal Solid Wastes (Management and Handling) Rules, 2000.

  # The Recycled Plastics Manufacture and Usage (Amendment) rules, 2003.

4. ENVIRONMENTAL IMPACT ASSESSMENT (EIA) :

- Basic concepts, objective and methodology of EIA.

- Objectives and requirement of Environmental Management System (ISO-14000) (An Introduction).

5. DISASTER MANAGEMENT :

Definition of disaster - Natural and Manmade, Type of disaster management, How disaster forms, Destructive power, Causes and Hazards, Case study of Tsunami Disaster, National policy- Its objective and main features, National Environment Policy, Need for central intervention, State Disaster Authority- Duties and powers, Case studies of various Disaster in the country, Meaning and benifit of vulnerability reduction, Factor promoting vulnerability reduction and mitigation, Emergency support function plan.

Main feature and function of National Disaster Management Frame Work, Disaster mitigation and prevention, Legal Policy Frame Work, Early warning system, Human Resource Development and Function, Information dissemination and communication.

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6.2 INTERNET & WEB TECHNOLOGY

(Common with Post Graduate Diploma In Computer Application, Diploma In Inforamtion Technology, Post Graduate Diploma In Information Technology)

L	T	P
6	-	6

TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage Time L	T	P
1.	Internet	19	-	-
2.	Web Technology	65	-	
		84	-	84

INTERNET

Introducing Internet, Its Uses : Why Internet, Basic internet Tools, E-Mail, Ftp, Telnet, Usenet News, Web Browsers, Search Engines, Yahoo, Archie, Infoseak, Veronica, World Wide Web.

How Internet works: Administration of Internet, How to Go On Internet : Requirements, Hardware, Software, ISP, Internet Account PPP/Shell. How to Use E-Mail Services On Internet Introducing Hotmail/Yahoo/Vsa-Net, How To Operate E-Mail address, How to Operate E-Mail Services : Sending E-Mail, Forwording, Saving, Reading etc., How to attach files,

2. WEB TECHNOLOGY :

A. HTML:

Elements of HTML, HTML sources & Rules of nesting, syntax conventions, HTML Categories, text tags, Formatting WebPages by using Styles, adding pictures, image attribute , introduction to forms, tables and models,advantages & limitations of tables, frames, links. SS cascading style sheets, XHTML, XML, Cient Side Scripting, Server Side Scripting, Managing data with SQL.

B. JAVA SCRIPTS:

what is a Java Scripts, adding, Java scripts to documents, embedding java scripts, linking java scripts, creating a page program with scripts. What is a Java and its appletes, to make webpages run server sripts, activeX.

Data types, variables, operators, conditional statements, array object, date object, string object.

C. JAVA SERVLET :

Servlet environment and role, HTML support, Servlet API, The servlet life cycle, Cookies and Sessions.

D. JSP :

JSP architecture, JSP servers, JSP tags, understanding the layout in JSP, Declaring variables, methods in JSP, inserting java expression in JSP, processing request from user and generating dynamic response for the user, inserting

applets and java beans into JSP, using include and forward action, comparing JSP and CGI program, comparing JSP and ASP program; Creating ODBC data soruce name, introduction ot JDBC, prepared statement and callable statement.

E. DYNAMIC WEB PAGES :

The need of dynamic web pages; an overview of DHTML, Cascading Style Sheet (CSS), Comparative studies of different technologies of dynamic page creation.

F. ACTIVE WEB PAGES :

Need of active web pages; Java applet life cycle.

PRACTICAL

1. Excercises on E-Mail.
2. Excercises on to see web sites.
3. Development of different Websites using all tools.
4. Development of Websites useing Frontpage

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6.3 COMPUTER GRAPHICS

L	T	P
6	-	6

Rationale :

Computers are, now a days, used in industry for designing and manufacturing purposes also. Computer graphics is a powerful tool for obtaining plenty of designs by variation of different parameters which are not ordinarily possible. It also gives quality assurance in the manufacturing industries. A student equiped with must knows, how will be useful in the relevant field.

TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage Time L	T	P
1.	Topic 1	15	-	-
2.	Topic 2	12	-	-
3.	Topic 3	12	-	-
4.	Topic 4	12	-	-
5.	Topic 5	12	-	-
6.	Topic 6	11	-	-
7.	Topic 7	10	-	-
		84	-	84

DETAILED CONTENTS

1. OVERVIEW OF GRAPHICS SYSTEM :

Refresh Cathode Ray Tubes, Random Scan and Raster Scan Mointors, Colour CRT Monitors, DVST, Plasma Panel Displays, LED and LCD Monitors, Laser Devices, Three dimensional momitors, Hard copy devices - Printer, Plotters, Display processes- Random-Scan systems, DVST system, Raster Scan System.

2. OUTPUT PRIMTIVES :

Points and lines, Line drawing alogerthims, DDA algorthim, Presentations Line Algorthim, Antialiasing Lines, circle generating algorthims - Circle equation, Presentations circle algorthim

3. ATTRIBUTES OF OUTPUT PRIMITIVES :

Line styles, Line type, Line width, Line colour, Area filling- Scan line algorthim, Boundary fill algorthim, Flood fill algorthim.

4. TWO DIMENSIONAL TRANSFORMATIONS :

Basic trnasformations, Translation, Scaling and Rotation, Matrix irepresentation of homogeneous co-ordinates, Composite transformations, Translations, scalings and protection, scaling relative to a fixed point, Rotation

about fixed point, Arbitary scaling directions, Other transformations- Reflection and Shear.

5. WINDOWING AND CLIPPING :

Windowing concepts, Clipping algorthims - Line clipping, Area clipping, Text clipping, Blanking, Window to viewport transformations.

6. INTERACTIVE INPUT METHODS :

Touch panel, Light pens, Graphics tablets, Joy sticks, Track ball, Mouse, Voice systems, Ligical classification of input devices, Locator devices, Stroke devices, String device, Valuator devices, Choice device, Pick device.

7. THREE DIEMNSIONAL CONCEPTS :

Three dimensional co-ordinate system, Three diemnsional display techniques, Parallel projection, Perspective projection, Intensity cueing, Hidden line removal, Three dimensional transformation, Translation, Rotation and scaling.

LIST OF BOOKS

1. Computer Graphics - Hearn & Baker
2. Computer Graphics - Bresenham

LIst of Experiments

1. Practice on Computer Aided Drafting and Design.
2. Exercies Based on all tools of graphics

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6.4 PROJECT

L	T	P
-	-	8

Rationale:

The purpose of including project in curriculum is to develop skill and knowledge specifications of hardware used in computers. It will also develop the capability of assembly and testing of project and its stages.

GENERAL OBJECTIVE:

Purpose of the project work is :

(i) To develop abilities of diagnosing problems.

(ii) To develop the abilities to :

(a) Make literature survey.

(b) Design/develop/frbricate/test simple circuits.

(c) Prepare documents for electronic work.

(d) Work as a team.

1. COMPUTER SCIENCE PROJECT (SW/HW):

   The student is expected to work on a project in consultation and acceptance with the instructor on either system software or hardware aspects related to industrial environment. The student is also expected to fabricate different cards used in PC, their testing and assembly of PC.

   The end targets for the project should be well defined and evaluation should place major importance on meeting these targets.

2. DATA PROCESSING PROJECT:

   The student is expected to work and learn from implementing an application software and study its functional and performance aspects and submit a report.

   The evaluation must be based on the project report and the seminars.

3. MAINTENANCE PROJECT:

   Similar as Computer Science Project (Software & Hardware), related to maintenance operation and evaluation of the systems.

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DIPLOMA IN COMPUTER SCIENCE AND ENGINEERING
STAFF STRUCTURE

Intake of the Course 60
Pattern of the Course SEMESTER SYSTEM

Sl. No.	Name of Post	No.	
1.	Principal	1	
2.	H.O.D.	1	
3.	Lecturer Electronics	1	
4.	Lecturer In Computer Science & Engineering	6	
5.	Computer Programmer Cum Operator	3	
6.	Lecturer in Maths	1	Part time or common with other discipline
7.	Lecturer in Physics	1	
8.	Lecturer in Comm. Tech.	1	
9.	Lecturer in Elect. Engg.	1	
10.	Steno Typist	1	
11.	Accountant / Cashier	1	
12.	Student / Library Clerk	1	
13.	Store Keeper	1	
14.	Class IV	6	
15.	Sweeper	Part time as per requirement	
16.	Chaukidar & Mali	As per justification	

Note :

1. Services of other discipline staff of the Institute may be utilized if possible

2. Qualifications of Staff : as per service rule

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SPACE REQUIREMENT

[A] ADMINISTRATIVE BLOCK

Sl. No.	Details of Space	Floor Area Sq. metres
1.	Principal's Room	30
2.	Confidencial Room	10
3.	Steno's Room	6
4.(a)	Office including Drawing Office	80
(b)	Record Room	20
5.	Staff Room	
	(a) Head 1	15
	(b) Lecturer 10 sq.m./ Lect. for 8 Lecturers	80
6.	Library and Reading room	150
7.	Store	100
8.	Students Common room	80
9.	Model Room	90

[B] Academic Block

Sl.No.	Detail of Space	@ Sq.m	Floor Area Sq.m.
1.	Class Room	60	180
2.	Drawing Hall	90	90
3.	Physics Lab		75
4.	Electrical Engg. Lab		120
5.	Electronic Laboratory		120
6.	Digital Electronics & Microprocessor Lab		120
7.	Computer Centre (Air Cond.Glass Partition and Special type pvc flooring and false ceiling), Two Computer Centers For Space of 60 Sq. m		120

[D] Student's Aminities

1.	Hostel	40 %	of Strength of Students
2.	Cycle Stand	50 %	of Strength of Students
3.	Canteen and Tuck shop	50	
4.	N.C.C. Room	70	
5.	Dispensary	40	
6.	Guest Room(Attached Bath) incuding kitchen & store	45	

[E] STAFF RESIDENCES

1.	Principal	1	100	100

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2.	Head of the Department	1	100	100
3.	Lecturer	4	80	320
4.	Non teaching & Supporting staff	8	60	480
5.	Class IV	6	30	180

Priorty to be given in following order

(1)
 a. Administrative Building
 b. Labs
 c. Over head Tank
 d. Boundary Wall
 e. Principal Residence
 f. Forth Class Quarters (2/3)

(2)
 a. Hostel
 b. Students Aminities

(3)
 Residences of employee

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ELECTRONICS LABORATORY

Electronic Components And Devices Lab.

S.No.	Name of the Equipment/ Board/Kit Etc.	Elex. Components & Devices Lab.		Elex. Devices & Ckts.Lab.		Total		Total No. Recommended		Rate per Piece	Total Cost	
		Intake		Intake		Intake		Intake		In Rs.	Intake	
		60	75	60	75	60	75	60	75		60	75
1.	Audio Oscillator (20HZ-50KHZ)	4	5	12	13	30	34	26	28	3500	91000	98000
2.	Multimeter, 20 K. Ohm per volt Sensitivity, + 1% accuracy d.c. voltage 1000 v. max.	4	5	-	-	12	15	10	12	2500	25000	35000
3.	Digital Elex. multimeter. 3.5/4.5/5.5 Digit Led, AC & DC Voltage Current, Frequency, Resistance, Capaciters, DC Voltage Accuracy +0.005 AC Voltage + 0.1	14	16	16	17	48	54	24	27	4500	108000	121500
4.	Regulated Power Supply 0-30 V, 0.5/1 Amps.	10	12	16	17	30	34	20	22	4000	80000	88000
5.	Multi output Power Supply 0-30V 1 Amp. 0-+-12 V, 1 Amp., 5 V. 2 Amp.	4	5	4	5	8	10	6	7	3500	21000	24500
6.	Power Supply 0-300 Volt, 1 Amp.	-	-	-	-	4	5	4	5	4000	16000	20000
7.	Dual Trace C.R.O. (0-30 MHz) Operating Mode Channel I, Channel II, Channel I & II, Accuracy +3, Hold off-variable control for stable triggering slope +ve or -ve, sensitivity Int, 0.5 div, Ext 0.8v, Trace Rotation- Adjustable on Front Panel, Interface-USB	4	5	10	11	24	27	16	18	30000	480000	540000
8.	R.F.Signal Generator (AM/FM) 500 KHZ to 1.3 GHZ Standard Mak	-	-	4	5	4	5	4	5	10000	40000	50000
9.	Function Generator upto 10MHZ, Amplitude 0-20V PP LED Display, Frequency Variation Fine Control Output Protected against short circuit, Input 230V AC +10 50HZ	-	-	6	7	6	7	6	7	10000	60000	70000
10.	A.C. Millivolt Meter/Micto Meter (Elex.)	-	-	8	9	8	9	8	9	3500	28000	28500
11.	Out Put Audio Power Meter 4 Ohm.- 20 K & 1 MW - 10 W	-	-	2	3	2	3	2	3	1500	3000	4500
12.	Digital MultiMeter/Micro Meter Digital Millivoltmeter (Suitable range)	4	9	-	-	12	14	8	9	600	4800	5400
13.	D.C. Voltmeter /D.C. Milliammeter/D.C. Micrometer (suitable range)	30	40	10	12	40	52	30	35	600	18000	21000
14.	Decade Resistance Box (Different ranges) Min 4/5/6 Dials Max Working Voltag 500V	-	-	-	-	6	7	6	7	1200	7200	8400
15.	Decade Capacitor Box (Different range) Min 4/5/6 Dial Cont	-	-	-	-	8	9	8	9	3000	24000	27000
16.	Decade Inductance Box Min 4/5 Dials	-	-	-	-	8	9	8	9	3500	28000	31500
17.	Different Transducers : pressure type, thermo couple, LVFT, Opto pick electromagnetic pick up; Thermal relay, ultra-sonic pick up and potentiometer etc. including strain gauge,	-	-	-	-	8	8	LS (8 set of experimental kit/ board)	LS	8000	64000	64000

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S.No.	Name of the Equipment/ Board/Kit Etc.	Elex. Components & Devices Lab.		Elex. Devices & Ckts.Lab.		Total		Total No. Recommended		Rate per Piece	Total Cost	
		Intake		Intake		Intake		Intake		In Rs.	Intake	
		60	75	60	75	60	75	60	75		60	75
	Piezoelectric Transduser, Diff. types of Photo sources & Detector,Optical Fibre sensors											
18.	Experimental Kit/ Teaching Modules/ Training boards/ Learning kits. of relevant subject.	2* + 30	3* + 40	0 + 60	0 + 80	4* + 140	6* + 182	LS	LS	50000	100000	100000
19.	Component Storage rack	4	4	4	4	16	16	16	16	8000	128000	128000
20.	Consumable Items	LS	LS	LS	LS	LS	LS	LS	LS	--	30000	30000
21.	Miscellaneous	LS	LS	LS	LS	LS	LS	LS	LS	--	50000	50000
22.	Power Operated Drilling Machine	2	3	2	3	2	3	2	3	3500	7000	10500
23.	Servo Voltage Stablizer 5 KVA	1	2	1	2	1	2	1	2	75000	75000	150000
24.	Invertor 1 KVA with Battery	1	2	1	2	1	2	1	2	15000	15000	30000
25.	One Desk Top Core i5/i7 -760 Processor, Genuine Window-7 Professional, 18 inch HD,Flat Panel MOnitor, Optical Mouse Key Board and All related media Or Latest Version	2	3	2	3	2	3	2	3	40000	80000	120000
26.	Electronics Software For Electronics Lab Virtual Lab/ Circuit Maker etc. of Latest Version	LS	LS	LS	LS	LS	LS	LS	LS	--	300000	300000

NOTE:- * Represents the quantiy of learning kits/teaching module. This item is more costly as compared to training boards/
experimental kits etc.

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DIGITAL ELECTRONICS AND MICROPROCESSOR LAB

Principles of Digital Electronics Lab. (Second Year)
Microprocessors And Applications Lab. (Third Year)

S.No.	Name of the Equipment/ Board/Kit Etc.	Principles of Digital Eltx. Lab. Intake 60	75	Micropro-cessors & Applicat-ion Lab. Intake 60	75	Total Intake 60	75	Total No. Recommen-ded Intake 60	75	Rate per Piece @ Rs.	Total Cost Intake 60	75
1.	CRO dual trace with delayed time base, 25 MHz or higher band width.	2	2	-	-	4	4	4	4	25000	100000	100000
2.	CRO dual trace 100MHz. Digital storage oscilloscope 4 Kpts of Memory, 2 Channels with additional external trigger input, Large 15 Cm. colour display, 20 automatic measurement & 4 math function advance triggering selectable video, mask test,USB inter face for PC Connectivity	2	3	-	-	2	3	2	3	30000	60000	90000
3.	CRO dual trace 30 MHz. Accuracy +3%, Variable Cont. For Stable triggering, Slope Positive or Negative Trace Rotation adjustable on front panel, CRT 140 mm Z Modulation	4	4	2	3	8	10	6	7	15000	90000	105000
4.	Multimeter, 20 K Ohm/volt sensitivity, 1% accuracy in D.C. voltage range, Max. D.C. voltage range 2500 V, A.C Curr-ent.	4	6	-	-	6	10	6	8	3500	21000	28000
5.	Multimeter,Digital hand held 3.5/4.5digit, 0.3% accuracy 1000 V D.C. and 20 m ohm res-istance range protected against transients.	4	6	2	4	8	14	8	10	3500	28000	35000
6.	Logic Probe	30	35	10	15	40	50	40	50	500	20000	25000
7.	Logic board/trainer including +5 Volt, 1Amp + 15 V, 0.3 Amp. power supply and bread board and flexible leads.	20	28	-	-	20	28	20	28	5000	100000	140000
8.	Microprocessor trainer kits with 8085 system (EC 85 or similar).	-	-	16	20	16	20	16	20	12000	192000	240000
9.	Component rack 144 tray (small) & 24 large tray.	4	4	2	2	6	6	6	6	8000	48000	48000
10.	Consumable material such as components ICs, resistors transistors etc.	LS	LS	LS	LS	LS	LS	LS	LS	--	80000	
11.	Miscellaneous	LS	LS	LS	LS	LS	LS	LS	LS	--	100000	
12.	Micro Controller Kits/PLC	LS	LS	LS	LS	LS	LS	LS	LS	--	50000	
13.	Trainer Kits of Universal Shift Register (SISO,SIPO,PIPO,PISO) Decade Counter, Universal Counter(Up, Down & Updown) & Different Flip Flops	LS	LS	-	-	LS	LS	LS	LS	--	50000	
14.	Dual power supply (0-30v/.5amp)	-	-	-	-	4	6	4	6	5000	20000	30000
15.	Minimum 12 line electronic telephone exchange with teleph-one instrument sets and power supply (Cardless)	-	-	-	-	2	2	2	2	50000	100000	100000
16.	Mobile Phone-GSM 3G/HSDPA Supported with Wi-Fi, Bluetooth Connectivity,Abdroid 2.3 Operating System Supported with Colour Display TFT Screen	-	-	-	-	8	8	8	8	15000	120000	120000

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S.No.	Name of the Equipment/ Board/Kit Etc.	Principles of Digital Eltx. Lab.		Micropro-cessors & Applicat-ion Lab.		Total		Total No. Recommen-ded		Rate per Piece	Total Cost	
		Intake		Intake		Intake		Intake		@ Rs.	Intake	
		60	75	60	75	60	75	60	75		60	75
	with SD Memory Card, Battery 1300 mAH or Higher											
17.	Tablet PC-Min 7 inch Capactive Touch Screen,Android 4.0 or Upper Operating System,2D/3D Graphic Processor, 4GB internal Memory Expendable upto 40GB with Front Camera , Battery 2800 mAH or Higher	-	-	-	-	8	8	8	8	1000	8000	8000
18.	Experimental Kits for demonstr-ating ASK, FSk, PSK circuits	-	-	-	-	2	2	2	2	80000	160000	160000
19.	Experimental Kits for Optical Fibre Communication	-	-	-	-	LS				LS	100000	
20.	Mobiles Phones Trainer Kit with Fault Finding Facilities, Various Test Point Faculties	-	-	-	-	4	4	2	2	25000	50000	50000
21.	Computers System Dual Core i5/i7 with internet connection and UPS	-	-	-	-	2	2	2	2	50000	100000	100000
22.	Microprocessor Training Kit of 8086	-	-	12	15					LS	100000	
23.	Fax Machine (Multi Function)	-	-	-	-	2	3	2	3	10000	20000	30000
24.	Universal Data Book	1	1	1	1	1	1	1	1	5000	5000	5000
25.	Software	-	-	-	-	-	-	-	-	LS	200000	

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ELECTRONICS WORKSHOP AND PROJECT LABORATORY

Electronics Workshop
Electronics Instruments and Measurements Lab.

S.No.	Name of the Equipment/ Board/Kit Etc.	Electronics Work-Shop		Electronics Inst. & Measurements Lab		Total		Total No. Recommended		Rate per Piece	Total Cost	
		Intake		Intake		Intake		Intake		In Rs.	Intake	
		60	75	60	75	60	75	60	75		60	75
1.	D C Voltmeter (1K/2K/10K/20K Ohm per Volt)	-	-	8	8	8	8	8	8	600	4800	4800
2.	Gen.purpose multimeter	4	6	4	6	12	18	8	10	2500	20000	25000
3.	Digital Multimeter	4	6	6	8	14	20	10	12	3500	35000	42000
4.	Regulated Power Supply Variable 0-30 V; 1 A	2	2	4	6	14	18	8	10	3000	24000	30000
5.	Transistor power supply (+,-,Comm)0-30 V / 1 A variable	2	2	2	3	12	15	8	10	3500	28000	35000
6.	Unregulated power supply 0-30 V; 1 A	2	2	2	2	4	4	2	2	2500	10000	10000
7.	A.F. signal generator. Output Digital AES 75W on a BN connector,AES/EBU on terminal block connector, S/PDIF on a RCA connector and To link balanced Stereo 600 W on a Terminal block connector with power adaptor	4	6	8	10	16	22	10	12	10000	100000	120000
8.	RF signal generator Frequency Range 100KHz to 150 Mhz in seven steps, accuracy on sacle +5%, RF output min 100mv (upto 30 Mhz), RMS modulation AM, Audio Frequency Range 150 Hz-1.5 Khz, Audio output 2V RMS, Ext. Audio Input 50 Hz to 20 Khz at less than IV RMS Mains 230 V	4	6	10	12	18	24	10	12	15000	100000	180000
9.	Function Generator Operating modes sine, square, triangle and DC output Frequency Range 0.1-1Mhz in seven decade steps, Variable control between steps, Frequency Accuracy +0.5% Display LCD controlled by micro controller, Main supply 200V +10%, 50 Hz output voltage max 10V into 50W, attenuation two step variable	2	3	2	3	6	9	4	6	25000	100000	150000
10.	Std. Signal Generator	4	6	2	2	8	11	4	6	15000	60000	90000
11.	AC/DC Voltmeter (M.I.type)	-	-	4	6	4	6	4	6	600	2400	3600
12.	CRO 200 Mhz Digital Storage oscilloscope-upto 1GSa/s Simple Rate Memory 4 Kpts or Higher, 2 Chennel with additional ext. trigger input, Colour Display 15 cm(5.7 inc.) 20 automatic measurement & 4 math function including FFTs, Advance Triggering,Delayed Sweep Mode Mask Test, USB Interface For PC Connectivity	-	-	4	4	10	14	8	10	35000	280000	350000
13.	Dual Trace CRO 100 MHz Digital Storage oscilloscope-upto 1GSa/s Simple Rate Memory 4 Kpts or Higher, 2 Chennel with additional ext. trigger input, Colour Display 15 cm(5.7 inc.) 20 automatic measurement & 4 math function	-	-	4	4	10	14	8	10	35000	280000	350000

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	including FFTs, Advance Triggering,Delayed Sweep Mode Mask Test, USB Interface For PC Connectivity										
14.	Q Meter-8 Digit LED 0.8 inch Height, Range Indicator .999 count & Status indicators Via 3 LEDs, Measuring Frequency 250 ms	-	-	2	3	2	3	2	3	8000	16000 24000
15.	RLC/Universal Bridge AC/DC Bridge	-	-	2	3	2	4	4	5	8000	32000 40000
16.	Universal Digital Freq. Counter	-	-	2	3	4	6	2	3	20000	40000 60000
17.	Distortion Factor Meter	-	-	2	2	2	2	2	2	12000	24000 24000
18.	Decade Resistance Box 4/5/6 Dials	-	-	2	3	4	6	4	6	1500	6000 9000
19.	Decade Cap. Box 4/5/6 Dials	-	-	1	2	2	4	2	3	3000	6000 9500
20.	Std. Inductance (Diff. Value)	-	-	4	6	4	6	4	6	600	2400 3600
21.	Charts, Models, displays for safety/rules etc.	LS	LS	-	-	LS	LS	LS	LS	--	10000 10000
22.	Digital Multimeter 4.5 Digit Display, AC/DC Voltage, AC/DC Current 20A Resistance, Capacitors Frequency Diode Test, Transistor Test & Continuity Test	2	3	6	6	12	15	6	8	5000	30000 40000
23.	Single Phase Variac 5 Amp, 15 Amp (Oil/Air cool)	4	10	2	4	18	22	10	12	5000 av.	50000 60000
24.	Calibrated Dual Trace CRO 100 Mhz Digital Storage oscilloscope-upto 1GSa/s Simple Rate Memory 4 Kpts or Higher, 2 Chennel with additional ext. trigger input, Colour Display 15 cm(5.7 inc.) 20 automatic measurement & 4 math function including FFTs, Advance Triggering,Delayed Sweep Mode Mask Test, USB Interface For PC Connectivity	2	3	-	-	6	8	4	6	30000	120000 180000
25.	Tools Kit	20 SET	30 SET	-	-	40 SET	60 SET	30 SET	40 SET	1500	45000 60000
26.	Misc. Active Components	LS	LS	-	-	LS	LS	LS	LS	--	15000
27.	Misc. Accessories as per req.	LS	LS	-	-	LS	LS	LS	LS	--	10000
28.	Misc. Passive components.	LS	LS	-	-	LS	LS	LS	LS	--	15000
29.	Working Models of analog and digital equipment	LS	LS	-	-	LS	LS	LS	LS	--	20000
30.	Dark room with Camera,Enlarger, Developing setup, Fixing & Printing setup etc.	LS	LS	-	-	LS	LS	LS	LS	--	80000
31.	Manual Etching Setup	LS	LS	-	-	LS	LS	LS	LS	--	10000
32.	Mechanised Etching Setup	LS	LS	-	-	LS	LS	LS	LS	--	10000
34.	Drill Machine Power Operated	2	3	-	-	4	8	4	6	3500	14000 21000
35.	PCB Drill Machine	2	3	-	-	6	9	4	6	500	2000 3000
36.	Misc. Items	LS	LS	-	-	LS	LS	LS	LS	--	80000
37.	Consumable(Not specified above)	LS	LS	LS	LS	LS	LS	LS	LS	--	258000

Corrected and Approved by B.T.E. Meeting On Dated 02.06.2015

LIST OF EQUIPMENTS

Only those of the equipments given below which are essentially required for the conduction of practicals mentioned in the curriculum are to be procured by the institutions.

"Machine/Equipments/Instruments of old BTE list which are not included below are to be retained in the Lab/Shop for Demonstration purpose but not to be demanded fresh for purchase."

NOTE : Equipment for different shop and lab of latest verson should be purchased.

I. APPLIED PHYSICS LAB

S.No.	Name of Equipment	No.	@ Rs. Aprox.	Amt.in Rs. Aprox.
1.	Brass ball with hook dia 1.8 Cm to 2 Cm diameter	2	50	100
2.	Stop watch least count Least Count 0.1 Sec.(non-megnetic) 0.01 sec to 0.001 sec (Electronic Desirable)	4	750	3000
3.	Wall bracket with clamping arrangement 8" to 10" length	2	50	100
4.	Meter scale Least count 0.1cm,wooden 1meter	5	40	200
5.	Meter scale Least count 0.1cm,wooden 50 Cm	5	40	200
6.	Searl's conductivity apparatus with copper & steel rods 25 cm length 4 cm.diameter with all accessaries	2 set	1500	3000
7.	Constant Level Water Flow Container of one liter capacity vertical stand & rubber tubing	2	250	500
8.	Thermometer 0-110oC(Least count 0.1oC desirable)	4	100	400
9.	Potentiometer - 10 wires (1 meter length of each wire) with jockey, sunmoical top	4	750	3000
10.	Moving coil galvenometer 30-0-30 with moving mounting	5	300	1500
11.	Rheostat 50 ohm.,100 Ohm.,150 Ohm. capacity	16	300	4800
12.	Lead Accumulator 2V,6V (1 No.Each)	2	250	500
13.	Meterbridge 1 meter length, sunmica top copper strips fitted with scale	2	300	600
14.	Resistance Coil (Standard) 1 ohm. to 10 ohm.	10	50	500
15.	Moving coil ammeter 0-1 amp., 0-2 amp., 0-5 amp. with mounting	8	250	2000
16.	Moving coil voltmeter 0-1 V.,0-2V 0-5 V., 0-10 V. with mounting	8	250	2000
17.	Denial cell with complete accessories	2	250	500

S.No.	Name of Equipment	No.	@ Rs. Aprox.	Amt.in Rs. Aprox.
18.	Leclaunche Cell with complete accessories	2	250	500
19.	Standard Cadmium Cell with complete accessories	2	250	500
20.	Battery Charger with complete accessories	1set	1800	1800
21.	Battery Eliminator Multi range	2set	750	1500
22.	Multimeter(Digital)	1set	800	800
23.	Carey Foster Bridge (With all accessories)	2set	4500	9000
24.	Resistance Box (2 No. Each) 0-1 Ohm, 0-100 Ohm.	4	850	3400
25.	Fractional Resistance Box 0-1 Ohm.	2	1200	2400
26.	Post office box Key type	2	1200	2400
27.	Post office box Dial type	2	1200	2400
28.	Resistance Wire(100 Gm.) (Constanton/Maganin)	1 lacchi	100	100
29.	Connecting Wire Copper(1/2 Kg.) (Cotton Insulated)	1 lacchi	700	700
30.	Screw gauge L.c 1/100 mm	5set	150	750
31.	Vernier Callipers L.c. 1/10 mm	5set	100	500
32.	Appratus for determining character-stics of P-N junction diode complete with all accessaries	2 set	1500	3000
33.	Resonance Column of steel One Meter length and 3-4 Cm diameter fitted with scale & water level arrangement	2	1600	3200
34.	App. for determining coefficient of friction on a horrizontal plane (Complete with all accessories)	2 set	700	1400
35.	Tuning Fork's Sets Set of different frequency (with rubber pad)	3set	350	1050
36.	Physical balance with weight box Complete with Fractional weight	2	800	1600
37.	Anemometer with counter cup type	1	1000	1000
38.	Spring Force Constant Apparatus with graduated mirror & pointer, weight set with hanger	2	1200	2400
39.	Viscosity Apparatus (Stock law) with steel balls and viscous liquid & timer	2set	1600	3200
40.	Thermometer of different range Mercury thermometer 0-50oC to 0-110oC	10set	100	1000
41.	Wall Thermometer Alcohal Filled 0-50oC	2set	20	40
42.	Sprit Level Technical Type	1set	60	60
43.	Drilling Machine Electric with different size bits	1set	800	800
44.	LPG Gas Burner with Cylinder	1set	800	800
45.	Tool Kit with different tools Complete	1set	800	800
46.	Lab stools	30		

Corrected and Approved by B.T.E. Meeting On Dated 02.06.2015

S.No.	Name of Equipment	No.	@ Rs. Aprox.	Amt.in Rs. Aprox.
47.	Lab tables	8		
48.	Plug Keys One Way	5	50	250
49.	Plug Keys Two Way	5	100	500
50	Helical Springs - Soft, 10 cm each	6	100	600

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ELECTRICAL ENGINEERING LAB

Sl. No.	Equipment	Qty.	Price
1.	Ammeter -dynamometer type portable, moving coil, permanent magnet 150 mm uniform scale		
a.	Range 0 - 2.5 - 5 Amp.	2	1200
b.	Range 0 - 50 m A	1	500
c.	Range 0 - 500 mA	2	1000
2.	Ammeter - moving iron type Portable moving iron permanent magnet, 150 mm uniform scale		
a.	Range 0 - 5 Amp.	2	1000
b.	Range 0 - 10/20 Amp.	2	1000
c.	Range 0 - 500 mA/1000 mA	2	1000
3.	Voltmeter dynamometer type portable moving coil permanent magnet 150 mm uniform scale		
a.	Range 0 - 5/10 V	2	1000
b.	Range 0 - 15/30 V	1	1000
c.	Range 0 - 50 mv/100 mv	1	1000
d.	Range 0 - 125/500 V	1	1000
e.	Range 250/500 V		
4.	Digital multimeter 3.5 digit - display D.C. voltage 0 - 1000 V in 5 steps A.C. voltage 0 - 750 V in 5 steps Resistance 0 - 20 M ohm in 6 steps D.C. 0 - 10 A in 6 steps A.C. 0 - 10 A in 6 steps Power supply 9 V.	1	3000
5.	Analog multimeter (Portable) D.C. Voltage 0 0 1000 V AC Voltage 0 2/5/10/25/100/250/1100 V. Resistance 0 200 M ohm DC 0 - 50 micro Amp./1 mA/10 mA/100mA/1A/10A AC 0 - 100 mA/1A/25 A/10A	1	1000
6.	Wattmeter single phase (LPF= 0.2) portable dynamometer type, scale 150 mm current range 0 - 5/10 Amps voltage Range 0 - 250/500 V	2	5000
7.	Decade resistance box constantan coils, single dial 10x10, 10x100, 10x1000, 10x10,000 ohms	1	1000
8.	Continuously variable 0 - 1000 micro farad, 250 V	1	1000
9.	Energymeter single phase induction type, industrial grade 5 A or 10 A, 250 V, 50 Hz.	1	2000
10.	Energymeter(Substandard) single phase, induction type	1	3000

Corrected and Approved by B.T.E. Meeting On Dated 02.06.2015

	5 A/10A, 250 V, 50 Hz.		
11.	Power factor meter dynamometer type, eddy current damping, 50 Hz, scale length 150 mm range upto 20 amp, voltage range 300 V 10 F. range 0.5 log, unity 0.5 load.	1	5000
12.	Frequency meter (Reed type) 230 V, range for having 21 reeds for 40-60 Hz range.	1	500
13.	Rheostat sliding rheostats wound with evenly oxidised iron free nickel copper on vitreous enamelled round steel tube 150 ohms 2 Amps. 110 ohms 2.5 Amps.	 1 1	 600 600
14.	Variable inductor single phase, 250 V, 2.5 KVAr continuously variable	1	2000
15.	Battery charger 12 V silicon bridge rectifier AC input 230 V, DC output suitable for charging 6 V And 12 V batteries provided with MC voltmeter 0 - 20 V and ammeter 0 - 5 A	1	1000
16.	Capacitors 2.5 microfarod, electrolytic type	4	200
17.	Q Meter frequency 0 - 30 MHz Q 0 to 500	 1	 4000
18.	LCR meter (digital) 3.5 digit display capacitance 0 to 20,000 microfarad inductance 0 to 200 Henry resistance 0 to 20 M ohms	1	8000
19.	LCR/Q bridge capable of measuring resistance, inductance and capacitance of range 8 amps, 0.012 to 10 M ohms, 4 to 10,000 H, 0.5 pico farad to 10 F.	1	5000
20.	Kelvin double bridge 10 x 0.1 ohms circular slide wire devided into 200 equal parts		
21.	Energy meter 3 phase induction type, 4 wire, industrial grade, 50 Hz, 10 A, 440 Volt	1	5000
22.	Energy meter (Sub standard) 3 phase, 4 wire, 440 V, 10A, 50 Hz induction type.		

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23.	Transformer single phase core type, 230/110 V, 1 KVA, 50 Hz.	1	5000
24.	Universal shunt 0 - 75 A	1	2000
25.	Current transformer 10/25/50/5A as per IS 4201/1967 and 2705/1981	1	2000
26.	Potential transformer 10 VA, 415/110 V as per IS 4201/1967 and 2705/1981	1	2000
27.	Maxwells bridge	1	1000
28.	Laboratory D.C. power supply (220 V) static converter input from 3 phase 50 Hz, 415 volts A.C., output rating of 200 vatts to 260 watts, 50 amps, continuously varibale.	1	50,000
29.	Watt meter 3 phase induction type 2 element voltage range 0/300/600 V current range 0/5/10 A	1	2000
30.	Frequency meter - portable (Reed type) 45-55 Hz with 21 reeds	1	2000
	Frequency meter digital portable 3.5 digit LED display range 20-99 Hz	1	2000
31.	Phase sequence indicator (Rotary) 3 phase, 415 V, 50 Hz	1	1000
32.	Phase sequence indicator (Indicating type) 3 phase, 400 V, 50 Hz	1	1000
33.	Galvanometer centre zero response time 1.8 sec.	1	1000
34.	VAR meter 1/5 A, 300/600 V	1	2000
35.	Wire wound rheostats		
	15 ohms, 10 A	2	1200
	100 ohms, 5 A	2	1200
	250 ohms, 5 A	2	1200
	1000 ohms, 0.5 A	2	1200
	2500 ohms, 0.1 A	2	1200
36.	Stop watch least count 0.01 Sec.	2	2000
37.	Stop watch (digital) LED	2	2000

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COMPUTER CENTRE

S.No.	DESCRIPTION	QTY.	APPROX. COST (in Rs.)
1.	Core-2 Quad Processor, 4GB RAM 1 GB SATA HDD, 19" TFT Mointor OS-Windows 2007/2008/Latest Version	02 Server	1,20,000=00
2.	General Desktop Computer-Intel i5 60 node or Higher, 2GB RAM, 320 GB SATA HDD, 17" TFT/LCD/LED Monitor, DVD Wirter Multi Media Kit with Speakers & Microphone Key Board-Multimedia, Mouse- Optical Scroll or Latest, 32 Bit PCI ETHERNET CARD (10/100) Mbps, Internet Modem, Pen Drive 16 GB, Pre loaded Windows 2007/2008/latest Pre Loaded Latest Anti Virus with Life time Subscription, Licence Media and Manual with UPS 660 VA OR Computer of latest Specification		36,00,000=00
3.	Lap Top (Latest Version) with damage Warranty & 3 Hour backup battery	04	250000.00
4.	Software (With Licence): i. ORACLE 11i/My SQL 5.5 or Latest Window based (30 users) & Development (Latest) ii. VISUAL STUDIO (Professional 2012) iii. MS OFFICE 2010 iv. COMPILER 0 'C', C++, JAVA-7 v. Unix & Linux - Red Hat/UBUNTU/Fedora or Latest vi. Page Maker, Corel Draw(Full Package), Adobe Reader, Adobe Dream Weaver CS6, Flash Photoshop, Net Beams vii. Tally ERP 9 viii. Personal Web Server, HTML, IIS		LS
5.	Hardware i. Switch-32 Port ii. Router iii.Hub iv. Ext. Modem v. Wireless N/W Adaptor vi. Series Access Point vii.LAN Cable Meter viii. LAN Cable Analyzer ix. LAN Trainer Board x. DATA Communication Trainer Board ix. Crimping Tool and all other accessories related to Networking		5,00,000.00 LS 02 02 04(8 Port) 02 02 02 05 05 05 05 15
6.	Scanner- Flat Bed A4/Auto Lighter (Bit depth 48)	02	20,000

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7.	132 Column 600 CPS or faster 9 Pin dot matrix printer with 500 million character head life	02	50,000
8.	Laser Jet-A4 All In one 20 page per min (2 Each)	04	10,000
9.	Desk Jet-A4 Photo Smart (2 Each)	04	40,000
10.	5 KVA on line UPS with minimum 30 miniute battery backup along with sealed maintenance free batteries. Provision for connecting external batteries with network connectivity.(For 2 Labs)	04	8,00000
11.	Split Air Conditioner 1.5 tones capctity with ISI mark alongwith electronic voltage stablizer with over viltage and time delay circuit	08	35,0000
12.	Room preparation and furniture	LS	
13.	19" rack, 24-port switch. connector RJ-45 Cat-6 cabling for network	LS	10,0000
14.	2 KVA Inverter Cum UPS	02	6,0000
15.	Digital Camera (Latest Version)	01	20000
16.	Fire Extinguisher (2 Kg.)	04	15000
17.	Fire Extinguisher (5 Kg.)	04	25000
18.	Vaccum Cleaner	02	25000
19.	LCD Projector 3000 Lumen with all accessories	02	350000
20.	Pen Drive 16 GB	10	10000
21.	DVD Writer External	02	10000
22.	HDD External 500 GB	02	15000
23.	PAD (Latest Configuration)	02	15000
24.	Boardband For Internet(Speed Min. 8mbps)	04	LS
25.	USB Modem	02	8000
26.	Generator 15 KVA Water Coolent	01	450000

NOTE : All the above items should be equally distributed in the 2 computer centres

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HARDWARE MAINTENANCE & PROJECT LAB

S.No.	Descirption	Qty.	Approximate Cost.
1.	Digital Multimeter3 1/2 to 4 1/2 digits, 1000 Volt DC, 2 Mega Ohm range, Resistance, capacitance, Freq., Diode, transistor, Continuity testing, AC/DC Change	15	55,000
2.	Power Supply Regulated/ transistorized 0-30 V	15	50,000
3.	Intel i5 or Highere-2 Processor 2 GB RAM, 320 GB HDD, or Higher,CD/DVD Drive	15	1000000
4.	Printer (600 cps) a) Dot Matrix b) Desk Jet c) Laser	3 Each	200000
5.	Constant Voltage Transformer	5	50,000
6.	PC Card Sets (One Mother Board, 4 Cards)	5	50,000
7.	Spike Buster	15	20,000
8.	Trainer Board i. To demonstrate asse- mbly & working of multimedia computer system ii.To study mother board with different chip set and processor iii To study Hard Disk (SATA/IDE) iv.To study construction and working of TFT/ LCD/LED monitor v. To study dot-matrix, Ink Jet, Laser Jet Printer	05 Set of each Board	500000
9.	Tool Kit	15	75000

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7.	LEARNING RESOURCE MATERIALS			
1.	LCD Projector with Screen	1	--	20000
2.	Handicam	1	--	30000
3.	Cutting, Binding & Stitching equipment.	1	--	30000
4.	Desk Top Computer with Internet Core i5/i7- 760, Processor, Genuine Windiw 7, Professional 18 inch HD, Flat Panel Monitor Optical Mouse, Key Board & all related media or latest version	1	--	40000
5.	Home Theater Support Disc type CD. CDR/CDRW DVDR/DVDRW, VCD Supported with USB Port Support-DIVX/JPEG/MP3	1	--	25000
6.	Commerical P A System 16 W-220W output, AC & 24V DC Operated, 5 Mic. & 2 Auxilary input, Speaker output 4 Ohm, 8 Ohm, 17 V & 100 V	1	--	20000
7.	Interactive Board	1	--	50000

ote :

1. This center will be only one at the institute level irrespective of all branches.

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ANNEXURE-QUESTIONNAIRE

INSTITUTE OF RESEARCH,DEVELOPMENT AND TRAINING U.P.KANPUR -208024

SUBJECT: Questionnaire for ascertaining the job potential and activities of diploma holder in Computer Science (Semester System).

PURPOSE: To design and develop Three Year (Six Semester) diploma curriculum in Computer Science (Semester System).

NOTE: 1.Please answer the questions to the points given in the questionnaire.
2.Any other point or suggestion not covered in this questionnaire may be written on a separate paper and enclosed with the questionnaire.

1.Name of the organisation:_____
_____

2.Name & Designation of the officer filling the questionnaire _____
_____

3.Name of the department/section/ shop _____
_____

4.Important functions of the department/section/shop _____
_____

5.Number of diploma holder employees under your charge in the area of Computer Science. _____

6.Please give names of modern equipments/machines handled by a diploma holder in Computer Science.

1. 2. 3.

4. 5. 6.

7.What proficiencies are expected from a diploma holder in Computer Science.

1. 2. 3.

4. 5. 6.

8.Mention the approximate percentage of the following desired in Diploma teaching.

1. Theoretical knowledge ----------%
2. Practical knowledge ----------%
3. Skill Development ----------%

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9.Do you think " on the job training" / Industrial training should form a part of curriculum. (Yes/ No)
if yes then
(a) Duration of training ----------
(b) Mode of training 1. Spread over different semesters

2. After completion of course

3. Any other mode

10.What mode of recruitment is followed by your organisation.

1. Academic merit
2. Written test
3. Group discussion
4. Interview
5. On the job test.

11. Mention the capabilities/ Qualities looked for while recruiting diploma holder in Computer Science.
(a) Technical knowledge ----------
(b) Practical skill ----------
(c) Etiquettes and behaviour ----------
(d) Aptitude ----------
(e) Health, habit and social background ----------
(f) Institution where trained ----------

12. Does your organisation have any system for the survey of Home articles of different countries/States. Yes/No

13. Does your organisation conduct field survey to know users views regarding. Yes/No
1. Home Articles for different age groups and sex.
2. Effect of climatic conditions
3. Any other
If yes ; Please give brief account of each.

14. Which type of assignment do you suggest for an entrepreneur in Computer Science.

15. In which types of organisations can a diploma holder in Computer Science can work or serve.

1 2 3

4 5 6

16. Job prospects for the diploma holder in Computer Science the next ten years in the state / country.

17. In your opinion what should be the subjects to be taught to a diploma student in Computer Science.

Theory Practical

18. Kindly mention particulars regarding topics/areas which should be given more emphasis in the curriculum .

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Theory Practical

19. Kindly state whether your organisation can contribute towards improvement of curriculum in above field. If yes : Please give names of experts in your organisation to whom contact. Yes/ No

20. Kindly give your valuable suggestions for being considered at the time of finalisation of curriculum.

21. What changes in technologies are to be incorporated in the development of curriculum in Computer Science.

(Signature)

Kindly mail the above questionaire duly filled to:-

Litil Kumar
Assistant Professor
Institute of Research,Development & Training,U.P.
Kanpur-208024

(Please note that all information in this survey is confidential for the use of curriculum design only)

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ANNEXURE- 2 FIELD EXPOSURE SCHEDULE

All the students of second year after annual examination will undergo in industrial training for a period of four week in Industries dealing with computers. It will in all respect end by the end of summer vacation. It will be arranged and supervised by institute staff . The performa for preparing a report of his stay. There in the industry given below can be taken as a guide for the purpose.

1. Name & Address of the organisation

2. Nature of the industry and its activity.

3. Date of

   i. Joining

   ii. Leaving

4. Details of the sections of the industry visited.

   i. Name of tools, equipments instruments in use.

   ii. Activities of the section

   iii. Study of the components, devices used in complete assemblies.

   iv. Soldering and de-soldering techniques used in circuit fabrication.

   v. Study of PCB Lay out developing and preparation.

   vi. Checking and testing of the components used.

   vii. Final checking of the product.

   viii. Discription of quality control measures taken in industry.

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