

CURRICULUM FOR THREE YEAR  
(SIX SEMESTER)  
DIPLOMA COURSE IN

=====  
: INFORMATION TECHNOLOGY :  
: Effective from Session :  
=====

=====

=====

=====  
:Semester System :  
Revised Syllabus :  
=====

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 17.08.2016:  
=====

STUDY AND EVALUATION SCHEME FOR  
THREE YEAR SIX SEMESTER) DIPLOMA COURSE IN INFORMATION TECHNOLOGY  
(Effective From )

I Semester-(Common To Computer Science and Engineering)

Curriculum						S U B J E C T	Scheme of Examination								
Periods Per Week							Theory			Practical			Grand		
Le	Tut	Dr	Lab	Work	Tot		Examination	Sess.	Total	Examination	Sess.	Total		Tot-	
c.	ori	aw		Shop	al	Dur.	Marks	Marks	Dur.	Marks	Marks	al			
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 Elements of Electrical Engg and Engineering Mechanics	2.5	50	20	70	3	50	25	75	145
-	-	-	4	-	4	1.6 Student Center Activity#	-	-	-	-	-	-	-	-	-
T O T A L							250	100	350	-	70	35	105	455	
GAMES/NCC/Social and Cultural activities + Discipline (15+10)													25		
Total													480		

II Semester-(Common To Computer Science and Engineering)

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
4	-	-	3	-	7	2.3 Fundamental of Electronic Devices	2.5	50	20	70	3	50	25	75	145
6	-	-	6	-	12	2.4 Concept of Programming using C	2.5	50	20	70	3	50	30	80	150
4	-	-	4	-	8	2.5 Basics of Information Technology	2.5	50	20	70	3	50	25	75	145
-	-	-	4	-	4	2.6 Student Center Activity#	-	-	-	-	-	-	-	-	-
T O T A L							250	100	350	-	190	100	290	640	
GAMES/NCC/Social and Cultural activities + Discipline (15+10)													25		
Total													665		

- 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.
- # Non credit Subject  
Student Center Activity (Annexure 3)

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				
Le	Tut	Dr	Lab	Work	Tot		Examination	Sess.	Total	Examination	Sess.	Total				
c.	ori	aw		Shop	al		Dur.	Marks	Marks	Dur.	Marks	Marks		Marks	al	
al																
5	2	-	-	-	7	3.1 Applied Mathematics-II	2.5	50	20	70	--	--	--	70		
5	-	-	5	-	10	3.2 Data Structure using C	2.5	50	20	70	3	60	30	160		
4	-	-	4	-	8	3.3 Web Technology-I	2.5	50	20	70	3	70	35	175		
6	-	-	4	-	10	3.4 Computer Organization and Microprocessor	2.5	50	20	70	3	60	30	160		
4	-	-	6	-	10	3.5 Office Automation Tools	2.5	50	20	70	3	50	25	145		
-	-	-	1	-	1	3.6 Student Center Activity#	-	-	-	-	-	-	-	-		
<b>24</b>						<b>T O T A L</b>	<b>250</b>	<b>100</b>	<b>350</b>	<b>-</b>	<b>240</b>	<b>120</b>	<b>360</b>	<b>710</b>		
Games/NCC/Social and Cultural activities + Discipline (15+10)													25			
Total													735			

IV Semester-(Common To Computer Science and Engineering)

6	-	-	4	-	10	4.1 Data Communication & Computer Network	2.5	50	20	70	3	60	30	160
6	-	-	6	-	12	4.2 Web Technology-II	2.5	50	20	70	3	60	30	160
6	-	-	4	-	10	4.3 Operating System	2.5	50	20	70	3	50	30	150
-	-	-	4	-	4	4.4 Employable Skills(VIVA)	2.5	-	-	-	-	25	15	40
4	-	-	6	-	10	4.5 IT Infrastructure	2.5	50	20	70	3	70	35	175
-	-	-	2	-	2	4.6 Student Center Activity#	-	-	-	-	-	-	-	-
<b>22</b>						<b>T O T A L</b>	<b>200</b>	<b>80</b>	<b>280</b>	<b>-</b>	<b>265</b>	<b>140</b>	<b>405</b>	<b>685</b>
Games/NCC/Social and Cultural activities + Discipline (15+10)													25	
Total													710	

- 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.

# Non credit Subject  
Student Center Activity (Annexure 3)

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

V Semester-(Common To Computer Science and Engineering)

Curriculum						C O U R S E S	Scheme of Examination								
Periods Per Week						S U B J E C T S	Theory				Practical				Gr-nd
Le	Tut	Dr	Lab	Work	Tot		Examination	Sess.	Total	Examination	Sess.	Total	Tot-		
c.	ori	aw	Shop	al	Dur.		Marks	Marks	Marks	Dur.	Marks	Marks	Marks	al	
6	2	-	-	-	8	5.1 Industrial Management and Entrepreneurship Development	2.5	50	20	70	--	--	--	70	
6	-	-	6	-	12	5.2 Database management System	2.5	50	20	70	3	60	30	160	
8	-	-	8	-	16	5.3 Java programming	2.5	50	20	70	3	60	30	160	
6	-	-	-	-	6	5.4 E-Commerce	2.5	50	20	70	--	--	--	70	
-	-	-	4	-	4	5.5 Student Center Activity#	-	-	-	-	-	-	-	-	
26	2	-	18	-	46	T O T A L		200	80	280	-	120	60	460	

Games/NCC/Social and Cultural activities + Discipline (15+10) | 25 |

Total | 485 |

VI Semester-(Common To Computer Science and Engineering)

4	-	-	-	-	4	6.1 Environmental Education & Disaster Management	2.5	50	--	--	-	--	--	--
6	-	-	4	-	10	6.2 Information Security & IT Laws	2.5	50	20	70	3	60	30	160
6	-	-	8	-	14	6.3 Multimedia & Animation	2.5	50	20	70	3	60	30	160
-	-	-	8	-	8	6.4 Project -i. Problem	--	--	--	--	3	90	50	140
-	-	-	-	-	-	ii Exposure	--	--	--	--	-	40	20	60
-	-	-	-	-	-	iii Seminar	--	--	--	--	-	20	20	20
-	-	-	4	-	4	6.5 Student Center Activity#	-	-	-	-	-	-	-	-
16	-	-	24	-	40	T O T A L		100	40	140	-	250	150	540

Games/NCC/Social and Cultural activities + Discipline (15+10) | 25 |

Total | 565 |

30% Carry Over of I & II | 344 |

70% Carry Over of III & IV | 1012 |

100% Carry Over of V & VI | 1050 |

NOTE:-(1) Each period will be of 50 minutes duration. Grand Total | 2406 |

(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 compulsory and sessional marks for this should be allotted to the student. (No External Exam.)

# Non credit Subject  
Student Center Activity (Annexure 3)

STUDY AND EVALUATION SCHEME FOR LATERAL AND ITI PASSED STUDENTS  
THREE YEARS(SIX SEMESTER) DIPLOMA COURSE IN INFORMATION TECHNOLOGY  
(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
Le c.	Tut ori al	Dr aw	Lab	Work Shop	Tot al		Examination Dur.	Sess. Marks	Total Marks	Examination Dur.	Sess. Marks	Total Marks		
5	2	-	-	-	7	3.1 Applied Mathematics-II	2.5	50	20	70	-	-	-	70
5	-	-	5	-	10	3.2 Data Structure using C	2.5	50	20	70	3	60	30	160
4	-	-	4	-	8	3.3 Web Technology-I	2.5	50	20	70	3	70	35	175
6	-	-	4	-	10	3.4 Computer Organization and Microprocessor	2.5	50	20	70	3	60	30	160
4	-	-	6	-	10	3.5 Office Automation Tools	2.5	50	20	70	3	50	25	145
-	-	-	1	-	1	3.6 Student Center Activity#	-	-	-	-	-	-	-	-
24	2	-	20	-	46	T O T A L		250	100	350	-	240	120	710
													Games/NCC/Social and Cultural activities + Discipline (15+10)	25
													Total	735

A. COMPULSORY SUBJECT OF I Semester INFORMATION TECHNOLOGY TO BE TAUGHT IN III Semester TO ITI PASSED STUDENTS OF TRADES ARE AS FOLLOWS :

I. IT SECTOR

Curriculum						S U B J E C T	Scheme of Examination							
Periods Per Week							Theory				Practical			Grand Total
Le c.	Tut ori al	Dr aw	Lab	Work Shop	Tot al		Examination Dur.	Sess. Marks	Total Marks	Examination Dur.	Sess. Marks	Total Marks		
5	-	-	3	-	8	1.1 Professional Communication (*)	2.5	50	--	50	3	20	-	70
3	1	-	-	-	4	1.2 Applied Mathematics-I(A) (*)	2.5	50	--	50	-	-	-	50
3	1	-	-	-	4	2.1 Applied Mathematics-I(B) (*)	2.5	50	--	50	-	-	-	50
3	1	-	-	-	4	1.3 Applied Physics-I (*)	2.5	50	--	50	-	-	-	50
14	3	-	3	-	20	<-----TOTAL----->	--	200	--	200	--	20	-	220

IV Semester-(Common To Computer Science and Engineering)

6	-	-	4	-	10	4.1 Data Communication & Computer Network	2.5	50	20	70	3	60	30	160
6	-	-	6	-	12	4.2 Web Technology-II	2.5	50	20	70	3	60	30	160
6	-	-	4	-	10	4.3 Operating System	2.5	50	20	70	3	50	30	150
-	-	-	4	-	4	4.4 Employable Skills(VIVA)	2.5	-	-	-	25	15	40	40
4	-	-	6	-	10	4.5 IT Infrastructure	2.5	50	20	70	3	70	35	175
-	-	-	2	-	2	4.6 Student Center Activity#	-	-	-	-	-	-	-	-
22	-	-	26	-	48	T O T A L		200	80	280	-	265	140	685
													Games/NCC/Social and Cultural activities + Discipline (15+10)	25
													Total	710

# Non credit Subject  
Student Center Activity (Annexure 3)

STUDY AND EVALUATION SCHEME FORM LATERAL AND ITI PASSED STUDENTS  
THREE YEARS(SIX SEMESTER) DIPLOMA COURSE IN INFORMATION TECHNOLOGY  
(Effective From )

B. COMPULSORY SUBJECT OF II Semester INFORMATION TECHNOLOGY TO BE TAUGHT IN IV Semester TO ITI PASSED STUDENTS OF TRADES ARE AS FOLLOWS :  
I. IT SECTOR

Curriculum						Scheme of Examination										
Periods Per Week						Theory				Practical			Grand			
Le	Tut	Dr	Lab	Work	Tot	Examination	Sess.	Total	Examination	Sess.	Total	Tot				
c.	ori	aw	Shop	al		Dur.	Marks	Marks	Dur.	Marks	Marks	al				
6	-	-	-	-	6	1.4	Applied Chemistry(*)	2.5	50	--	50	-	-	-	50	
3	1	-	4	-	8	2.2	Applied Physics-II(*)	2.5	50	--	50	3	40	-	40	90
9	1	-	4	-	14	<-----TOTAL----->		--	100	--	100		40	-	40	140

- NOTE:-
- (1) (\*) It is compulsory to appear & to pass in examination From III Semester To VI Semester, But marks will not be included for division and percentage of obtained marks.
  - (2) (\*) Four Semester (Two Years) of Extra Time will be given after diploma curriculum period (If Required) to pass the above paper (1.1 To 1.4 and 2.1 to 2.2) examination (As Per G. O. No. 2221/16-Pra. Shi.-3-2009 Dated 28-08-2009) & Revised G.O. No. 2704/16-Pra.Shi.-3-2013-46(8)/2002 Dated 09-01-2013
  - (3) Each period will be of 50 minutes duration.
  - (4) Each session will be of 16 weeks.
  - (5) Effective teaching will be at least 14 weeks.
  - (6) 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 ).
  - (7) At least 2 industrial visits should be scheduled during the session.
  - (8) At least 1 seminar should be organised at the institute level with in the session.

STUDY AND EVALUATION SCHEME FOR LATERAL AND ITI PASSED STUDENTS  
THREE YEARS(SIX SEMESTER) DIPLOMA COURSE IN INFORMATION TECHNOLOGY  
(Effective From )

V Semester-(Common To Computer Science and Engineering)

Curriculum						C O U R S E S	Scheme of Examination								
Periods Per Week						S U B J E C T S	Theory				Practical				Grand Total
Le	Tut	Dr	Lab	Work	Tot		Examination	Sess.	Total	Examination	Sess.	Total	Tot		
c.	ori	al	aw	Shop	al		Dur.	Marks	Marks	Marks	Dur.	Marks	Marks	al	
6	2	-	-	-	8	5.1 Industrial Management and Entrepreneurship Development	2.5	50	20	70	--	--	--	70	
6	-	-	6	-	12	5.2 Database management System	2.5	50	20	70	3	60	30	90	
8	-	-	8	-	16	5.3 Java programming	2.5	50	20	70	3	60	30	90	
6	-	-	-	-	6	5.4 E-Commerce	2.5	50	20	70	-	--	--	70	
-	-	-	4	-	4	5.5 Student Center Activity#	-	-	-	-	-	-	-	-	
26	2	-	18	-	46	T O T A L		200	80	280	-	120	60	180	
Games/NCC/Social and Cultural activities + Discipline (15+10)														25	
Total														485	

VI Semester-(Common To Computer Science and Engineering)

4	-	-	-	-	4	6.1 Environmental Education & Disaster Management	2.5	50	--	--	-	--	--	--
6	-	-	4	-	10	6.2 Information Security & IT Laws	2.5	50	20	70	3	60	30	90
6	-	-	8	-	14	6.3 Multimedia & Animation	2.5	50	20	70	3	60	30	90
-	-	-	8	-	8	6.4 Project -i. Problem	--	--	--	--	3	90	50	140
-	-	-	-	-	-	ii Exposure	--	--	--	--	-	40	20	60
-	-	-	-	-	-	iii Seminar	--	--	--	--	-	20	20	20
-	-	-	4	-	4	6.5 Student Center Activity#	-	-	-	-	-	-	-	-
16	-	-	24	-	40	T O T A L		100	40	140	-	250	150	400
Games/NCC/Social and Cultural activities + Discipline (15+10)														25
Total														565

70% Carry Over of III & IV | 1012  
100% Carry Over of V & VI | 1050

NOTE:-(1) Each period will be of 50 minutes duration. Grand Total | 2062

- (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 compulsory and sessional marks for this should be allotted to the student. (No External Exam.)

# Non credit Subject  
Student Center Activity (Annexure 3)

C O N T E N T S

Sl.No.	Particulars	Page No.
--------	-------------	----------

I.	Study and Evaluation Scheme	2-7
II.	Main Features of the Curriculum	9
III.	List of Experts	10
IV.	Need Analysis	11
I SEMESTER		
1.1	Professional Communication	12-16
1.2	Applied Mathematics-I(A)	17-18
1.3	Applied Physics-I	19-21
1.4	Applied Chemistry	22-25
1.5	Elements of Electrical Engg. and Engineering Mechanics	26-30
II SEMESTER		
2.1	Applied Mathematics-I(B)	31-32
2.2	Applied Physics-II	33-35
2.3	Fundamentals of Electronics Devices	36-40
2.4	Concept of Programming Using C	41-42
2.5	Basic Information Technology	43-44
III SEMESTER		
3.1	Applied Mathematics-II	45-47
3.2	Data Structure Using C	48-49
3.3	Web Technology-I	60
3.4	Computer Organization & Microprocessor	51-53
3.5	Office Automation Tools	54-55
IV SEMESTER		
4.1	Data Communication & Computer Network	56-58
4.2	Web Technology-II	59-60
4.3	Operating System	61-62
4.4	Employable Skills	63-64
4.5	IT Infrastructure	65-66
V SEMESTER		
5.1	Industrial Management & Entrepreneurship Development	67-69
5.2	Database Management System	70-72
5.3	Java Programming	73-75
5.4	E-Commerce	76-77
VI SEMESTER		
6.1	Environmental Education & Disaster Management	78-80
6.2	Information Security & IT Laws	81-83
6.3	Multimedia & Animation	84-86
6.4	Project -i. Problem ii. Field Exposure iii. Seminar	87
	Staff Structure	88
	Space Requirement	89-90
	List of equipment	91-102
	Annexure-1 Questionnaire	103-105
	Annexure-2 Field Exposure	106
	Annexure-3 Student Center Activity	107

#### MAIN FEATURES OF THE CURRICULUM

1. Title of the Course : Diploma In Information  
Technology
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

Workshops held on 25.07.2016 in which the suggestion, contribution and support of following experts is a matter of obligation to I.R.D.T.

1. Shri Arun Kumar HOD Computer Science Engg. GGP Jhansi
2. Shri Neeraj Kumar Lecturer IT GP Kanpur
3. Shri Sumit Babu Lecturer CS GP Kanpur
4. Miss Puja saxena Lecturer IT GP Kanpur
5. Shri Prashant Shakya Lecturer IT GP Mahoba
6. Shri Gaurav Kishor Kanaujiya Lecturer(IT)I.R.D.T.,Kanpur

#### IV. NEED ANALYSIS :

With the development of civilisation, human needs to keep on increasing their fulfilment needed simulation, analysis of lot of informations too became essential. Now the individual responsibilities 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 "Information era". So is the need for developing a course for "Information Technology" at diploma level. It is supposed that such personnel will not face any dearth of employment because of omnipresent nature of computer.

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

**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	10	-	-

& Hindi through study of text material & language exercises.

3.	Development of expression through			
	A. Letters(English & Hindi)	10	-	-
	B. Report writing (English)	10	-	-
	Note making and minutes writing			
4.	Paragraph writing, Essey writing,	10	-	-
	Proposal writing			
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 communication, formal, informal, verbal and nonverbal, spoken and written. Techniques of communication, Listening, reading, writing 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 English 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 writing 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
2. an opening sentence or phrase
3. a newspaper/magazine clipping or report
4. factual writing 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, Diphthongs).

4. Aural :

Listening to conversation/talk/reading of short passage and then writing 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

Practices : 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

B. Hindi Letters 5 Marks

Q3. Report Writing on given outlines 5 Marks

Q4. There will be a number of short answer questions to test the candidates knowledge of functional grammar, 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 expressed 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. Noun 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 abbreviation, 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.

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 Time		
		L	T	P
1.	Algebra- I	8	3	-
2.	Algebra- II	8	3	-
3.	Trigonometry	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.
- 4.2 Methods of finding derivative, - Function of a function, Logarithmic 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 Tangents, Normal, Points of Maxima/Minima, Increasing/Decreasing functions, Rate, Measure, velocity, Acceleration, Errors and approximation.

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 homogeneity of dimensions and applications of homogeneity 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 measurements, accuracy and precision, random and systematic errors, estimation of probable errors in the results of measurement (Combination of errors in addition, subtraction, multiplication and powers). Significant figures, and order of accuracy in respect to instruments,

3. Circular Motion (5 Marks)

Central forces. Uniform Circular motion (Horizontal 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, Kepler's Law, Escape and orbital velocity, Time period of satellite, Geostationary, 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, Cylinder), 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 capillary rise method, Equation of continuity ( $A_1V_1=A_2V_2$ ), 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, characteristics 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). Acoustics of building defects and remedy.

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.	Synthetic Materials	6	-	-
-----		84	-	-
-----				

DETAILED CONTENTS:

- ATOMIC STRUCTURE :(3 MARKS)  
Basic concept of atomic structure, Matter wave concept, Quantum number, Haisenberg's Uncertainty Principle, Shaples of orbitals.
- CHEMICAL BONDING :(4 MARKS)  
Covalent bond, Ionic & Co-ordinate, Hydrogen bonding, Valence bond theory, Hybridisation, VSEPR theory, Molecular orbital theory.
- CLASSIFICATION OF ELEMENTS :(3 MARKS)  
Modern classification of elements (s,p,d and f blcok elements), Periodic properties : Ionisation potential electro negativity, Electron affinity.

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, Diesel 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

formation, Corrosion, Caustic embrittlement, priming and foaming in boilers.

Disinfecting of Water By Chloramine-T, Ozone and Chlorine. Advantage and disadvantage of chlorination, 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 colloidal and its types, Different system of colloids, Dispersed phase and dispersion medium. Methods of preparation of colloidal solutions, Dialysis and electro dialysis. Properties of colloidal solution with special reference to absorption, Brownian Movement, Tyndal effect, Electro phoresis and coagulation. relative stability of hydrophilic and hydrophobic colloids. Protection and protective colloids. Emulsion, Types, preparation, properties and uses. Application of colloids chemistry in different industries.

12. LUBRICANTS :(3 MARKS)

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

13. HYDROCARBONS:(4 MARKS)

- A. Classification and IUPAC nomenclature of organic compounds homologous series (Functional Group)
- B. Preparation, properties and uses of Ethane, Ethene, Ethyne (Acetylene), Benzene and Toluene.

14. ORGANIC REACTIONS & MECHANISM:(4 MARKS)

- 1. Fundamental aspects -
  - A. Electrophiles and nucleophiles, Reaction Intermediates, Free radical, Carbocation, Carbanion
  - B. Inductive effect, Mesomeric effect, Electromeric effect.
- 2.A. Mechanism of addition reaction (Markovnikov's Rule, Cyanohydrin and Peroxide effect),
- B. Mechanism of Substitution reactions; (Nucleophilic) hydrolysis of alkyl halide, electrophilic substitution halogenation, Sulphonation, Nitration and Friedel-Craft reaction.
- C. Mechanism of Elimination reaction - Dehydration of primary alcohol, Dehydrohalogenation of primary alkyl halide.

15. POLYMERS :(3 MARKS)

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

2. Thermosetting and Thermoplastic resins -
  - 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. SYNTHETIC 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

1.5 ELEMENTS OF ELECTRICAL ENGINEERING AND ENGINEERING MECHANICS

L   T   P  
8   -   4

RATIONALE

Electrical energy is most convenient neat and clean source of energy for industrial applications. The student is supposed to possess 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.	D. C. Circuits	10	-	-
2.	Electrostatics	12	-	-
3.	Electromagnetism	12	-	-
4.	A. C. Theory	12	-	-
5.	Batteries	10	-	-
6.	Transients & Harmonics	10	-	-
7.	Introduction to engineering mechanics	8	-	
8.	Force Analysis	10	-	
9.	General condition of equilibrium	10	-	
10.	Stress & Strain	8	-	
11.	Materials & Concepts Use In Electronics	10	-	
Total		112	-	56

#### DETAILED CONTENTS

1. D.C. CIRCUITS:
  - (i) Ohm's law, resistivity, effect of temperature on resistances, heating effect of electric current, conversion of mechanical units into electrical units.
  - (ii) Kirchoff's laws, application of Kirchoff's laws to solve, simple d.c. circuits.
  - (iii) Thevenin's theorem, maximum power transfer theorem, Norton's theorem and super position theorem, simple numerical problems.
2. ELECTROSTATIC:
  - (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.
  - (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.
3. 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, Hysteresis, 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.

4. 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.

5. 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.

6. TRANSIENTS & HARMONICS:

Introduction, Types of transients, 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, General 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

7. Introduction To Engineering Mechanics:

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

8. 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 particle, conditions of equilibrium of coplaner concurrent force system.

9. 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.

10. 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.

11A. 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, Polyester, Silicon, Melamine, Polyimide), 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 Tinfoated 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.

ELEMENTS OF ELECTRICAL ENGINEERING AND ENGINEERING MECHANICS

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.  
$$R_T = R_1 + R_2 + R_3 + \dots$$
Where  $R_T$  is the total resistance and  $R_1, R_2, R_3$  etc. are the resistances connected in series.
  - (ii) The total resistance in parallel connections.  
$$1/R_T = 1/R_1 + 1/R_2 + 1/R_3 + \dots$$
Where  $R_T$  is the total resistance and  $R_1, R_2, R_3$  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 algebraic sum of the currents at a junction is zero.
  - (ii) The algebraic sum of the e.m.f. in any closed circuit is equal to the algebraic 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:-
$$C_T = (C_1 * C_2) / (C_1 + C_2)$$
and
$$C_T = C_1 + C_2$$
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.

**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  $x^2=4ay$ ,  $y^2=4ax$ ,

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)

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 Destructive), Diffraction and Polarization (Concept Only), Law of Malus 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)

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

4. Electrostatics :(4 Marks)

Coulomb's Law, Electric field, Electric potential, Potential energy, Capacitor, Energy of a charged capacitor, Effect of dielectric on capacitors.

5. D.C. Circuits (5 Marks)

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 velocity 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.

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 T<sup>2</sup> verses l and using the formula  $g=4\pi^2/\text{Slope of the graph line}$
3. Determine the force constant 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 potentiometer.
8. Determination of specific resistance by Carry Foster bridge.
9. Determination of resistivity 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.

### 2.3 FUNDAMENTALS OF ELECTRONICS DEVICES.

(Common With Three Year Diploma Course In Computer Science & Engineering)

L	T	P
4	-	3

Rationale:

Knowledge of Electronics Devices is quite essential for a student 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, Germanium: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 intrinsic semiconductors at 0 K.
- 2.3 Doping the Intrinsic semiconductors with a pentavalent/tri-valent element(i.e. doner and acceptor 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 depletion 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 rectifier<sup>9</sup> using C.T. transformer, using bridge circuits)
- 3.6 Special purpose diodes: Zener diode, Varactor diode, Photo Diode, Light emitting Diode (LED), their characteristics and uses.
4. TRANSISTOR:
  - 4.1 Growing a Crystal having two P-N Junction back to back (i.e. PNP & NPN); Junction transistor structure; action of transistor in FF, RR, FR and RF biasing; working of a transistor; relation between different currents in a transistor;
  - 4.2 Various configurations of transistor (CB, CE, CC); relation 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 stabilization in a transistor circuit; various biasing circuits( Fixed, Collector to base, emitter, and potential divider.);
  - 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 frequency response of a two stage amplifier; frequency response curve of a RC coupled amplifier; a transformer coupled amplifier; bandwidth of an amplifier.
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 offset, voltage input offset current, input bias current, common mode rejection ratio (CMRR), 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 application 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 collector current in a transistor circuit .
- 8.2 Large signal amplifier (input changing from cut-off to saturation ).
- 8.3 Remote control of a realy - operated lamp employing amplifier .
- 8.4 Requirements of a transistor - switch .

9. MULTIVIBRATORS:

- 9.1 Regeneration: relaxation oscillators;
- 9.2 Simple astable MV circuit arrangement for its self starting;
- 9.3 Study and analysis of BI - STABLE MULTIVIBRATOR;
- 9.4 Study and analysis of mono stable multivibrator;
- 9.5 Triggering requirements;
- 9.6 Schmitt 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;

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.

#### 2.4 CONCEPT OF PROGRAMMING USING C

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	8	-	
2.	Introduction to Programming in C	10	-	-
3.	Fundamentals of C Programming	10	-	
4.	Conditional Program Execution	10	-	
5.	Function	10	-	
6.	Arrays	10	-	
7.	Pointers	10	-	
8.	Programming in C++	16	-	
		84	-	84

#### DETAILED CONTENTS

##### 1. CONCEPT OF PROGRAMMING:

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

##### 2. INTRODUCITON TO PROGRAMMING IN C:

Standard I/o in C, Fundamental data types- Character types, Integer, Short, Long, Unsigned, Single and Double floating point, Storage classes - Automatic, Register, Static and External, Operators and Expression using numeric and relational operators, Mixed operands, Type of conversion, Logical operators, Bit operators, Assignment operator, Operator precedence and associatively.

##### 3. FUNDAMENTALS OF C PROGRAMMING :

Structure of C program, writing and executing the first C

program, components of C language, Standard I/O in C.

4. CONDITIONAL PROGRAM EXECUTION :

Applying if and switch statements, nesting if and else, use of break and default with switch, program loops and iterations: use of while, do while and for loops, multiple loops variables, use of break and continue statement.

5. FUNCTIONS :

Introduction, types of functions, functions with array, passing values to functions, recursive functions.

6. ARRAYS :

Array notation and representation, manipulating array elements, using multi dimensional arrays, Structure, union, enumerated data types.

7. POINTERS :

Introduction, declaration, applications, File handling, standard C preprocessors, defining and calling macros, conditional compilation, passing values to the compiler.

8. 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, Inheritance, polymorphism & Overloading.

List of Experiments  
(Using GCC/Turbo/Borland compiler techniques)

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++.

## 2.5 Basics of Information Technology

L    T    P  
4   -   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	8	-	-
2.	Component of Information technology	10	-	-
3.	Data Representation	12	-	-
4.	Emerging Trends	8	-	-
5.	Components of Computers	8	-	-
6.	Mobile Computing	10	-	-
		56	-	56

#### 1. Intoduction of Information Technology

Definition Of Information, difference betwven 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 Representation :

Binary Number System, Conversion from Decimal to Binary, Conversion from Binary to Decimal, Hexadecimal and Octa decimal No. System, Memory Addressing and its Importance, 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 Conferencing .

#### 5. Components of computer

Types of PC e.g. Desktops, Laptops, Notebooks, Palmtops, Memory System of a PC, Primary Memory, RAM(Random Access Memory, ROM(read only Memory), Secondary Memory, Types of Secondary Storage, Access Mechanism of storage Devices, PC setup and ROM-BIOS, Elementary Trouble shooting.

6. MOBILE COMPUTING :

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

**LIST OF PRACTICALS**

1. Given a PC, name its various components and list their functions
2. Identification of various parts of a computer and peripherals
3. Practice in installing a computer system by giving connection
4. DOS Commands (internal / external) e.g. TYPE, REN, DEL, CD, MD, COPY, TREE, BACKUP
5. Exercises on entering text and data (Typing Practice using any tutor)
6. Features of Windows as an operating system
  - Start
  - Shutdown and restore
  - Creating and operating on the icons
  - Opening closing and sizing the windows
  - Using elementary job commands like - creating, saving, modifying, renaming, finding and deleting a file
  - Creating and operating on a folder
  - Changing setting like, date, time color (background and fore ground)
  - Using short cuts
  - Using on line help

**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 Time		
		L	T	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 hermitian, Orthogonal, Unitary, diagonal and Triangular matrix, Determinant of a matrix.

Definition and Computation of inverse of a matrix.

1.2 Elementary 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 eigen values and eigen 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.

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  $X=e^{ax}$ ,  $\sin ax$ ,  $\cos ax$ ,  $X^n$ ,  $e^{ax}V$ ,  $XV$ ).

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.

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..

## 3.2 DATA STRUCTURE USING C

L T P  
5 - 5

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.	6	-	
2.	Stacks And Queues	10	-	
3.	Lists	12	-	
4.	Sorting & Merging	10	-	
5.	Tables	10	-	
6.	Trees	12	-	
7.	Graphs	10	-	
		70	-	70

### DETAILED CONTENTS

42

Corrected and Approved By B.T.E. On Dated 17.08.2016

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.

#### DATA STRUCTURE USING 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 .

##### LIST OF BOOKS

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

### 3.3 WEB TECHNOLOGY - I

L T P  
4 - 4

#### TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage Time		
		L	T	P
1.	Topic 1	10	-	-
2.	Topic 2	14	-	-
3.	Topic 3	14	-	-
4.	Topic 4	8	-	-
5.	Topic 5	10	-	-
		56	-	56

1. HTML :

Elements of HTML, HTML sources and Rules of nesting, Syntax conventions, HTML categories, Text tags, Formatting Web Pages by using styles, Adding pictures, Image attribute, introduction to forms, tables and models, advantages and limitations of tables, frames, link, CSS cascading style sheets, XHTML, XML, Client side scripting, Server side scripting, Managing data with SQL.

2. JAVA SCRIPTS:

What is Java scripts, adding, Java scripts to documents, embedding Java scripts, Linking Java scripts, Creating a page program with scripts, What is Java and its applets to make webpage run server scripts, active X.

3. XML :

Introduction to XML, Difference between XML and HTML, Use of

XML, XML Syntax Rules, XML Elements, XML attribute, XML name space, Displaying XML, XML validator, XML applicaiton, RSS FEED,JSON.

4. CSS :

CSS Introduction, CSS Syntex, CSS selectors : Element Selector, id Selector, Class Selector, Grouping Selectors, Implementing CSS, Jquery, Image Formate (JPG, PNG, GIF).

5. DHTML :

DHTML Introduction, DHTML - JAVA Script, DHTML - HTML DOM, DHTML - HTML Events, DHTML - CSS.

LIST OF PRACTICALS

1. Exercises on to static web sites.
2. Development of different web sites using open source tools

3.4 COMPUTER ORGANISATION AND MICROPROCESSOR

L T P  
6 - 4

RATIONAL :

The subject rovides the students with the knowledge of architecture and organization of personal computers. Computer airthematic algorithms for different arithmetic operations. The study of microprocessors in terms of architecture, software and interfacing techniques leads to the understanding of working of CPU in a microprocessor

TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage Time		
		L	T	P
1.	Topic 1	10	-	-
2.	Topic 2	16	-	-
3.	Topic 3	08	-	-
4.	Topic 4	10	-	-
5.	Topic 5	10	-	-
6.	Topic 6	10	-	-
7.	Topic 7	10	-	-
8.	Topic 8	10	-	-
		84	-	56

DETAILED CONTENTS

1. EVOLUTION AND ARCHITECTURE OF A MICROPROCESSOR :

Computer system organization adn architecture, Typical organizaiton of a microcomputer system and functions of its various block. OCncept of BUS, BUS organizaiton of 8085, Function block diagram of 8085 and function of each block, Pin details of 8085 and related signals.

2. MICRO PROGRAMMING :

Brief idea of machine and assembly languages, assembler, program loops, programmin arithmetic and logic operations, sub routines, input output programming with examples.

8085 microprocessor assembly language programming machine and Mnemonic codes, Instruction format and addressing mode. Identification of instructions as to which addressing mode they belong. Concept of instruction set. Explanation of the instructions of the following groups instruction set. Data transfer group, Arithmetic Group, Logic Group, Stack, I/O and Machine control group. Programming exercises in assembly language. (Examples can be taken from the list of experiments.

3. INSTRUCTION TIMING AND CYCLES :

Instruction cycle, machine cycle and T-states, Fetch and execute cycle.

4. INTERRUPTS :

Concept of interrupt, Maskable and non-maskable, Edge triggered and level triggered interrupts, Software interrupt, Teststart interrupts and its use.

5. DATA TRANSFER TECHNIQUES :

Concept of programmed I/O operations, input output interface, sync data transfer, async data transfer (hand shaking), Interrupt driven data transfer, DMA.

6. MICRO PROGRAMMED CONTROL :

Control memory, address sequencing, micro programs example.

7. COMPUTER PROCESSING :

Pipeline and vector processing, parallel processing, pipelining, arithmetic pipelines, RISC pipelines, Vector processing, array processors.

8. COMPUTER ARITHMETIC ALGORITHM :

Addition and subtraction algorithm, multiplication algorithms, division algorithms, floating point arithmetic operations.

LIST OF PRACTICALS

1. Familiarization of different keys of 8085 microprocessor kit and its memory map.
2. Steps to enter, modify data/program and to execute a programme on 8085 kit.
3. Writing and execution of ALP for addition of two 8 bit numbers.
4. Writing and execution of ALP for subtraction of two 8 bit numbers.
5. Writing and execution of ALP for multiplication two 8 bit numbers.
6. Writing and execution of ALP for division of two 8 bit

numbers.

7. Writing and execution of ALP for arranging of 10 bit numbers ascending order.
8. Writing and execution of ALP for arranging of 10 bit numbers descending order.

#### LIST OF BOOKS

1. Computer Architecture by Rafiquzzaman, M; Prentice Hall of India, New Delhi.
2. Fairhead 80386/80486, BPB Publication, New Delhi.
3. Hardware and Software of Personal Computers by Bosem S K; Willey Eastern Ltd.,
4. Structured Computer Organization by Tanebaum, Andrew S ; Prentice Hall of India, New Delhi.
5. Upgrading nad preparing PCs by Scoot Muller, Techmedia Publication.
6. Computer organization and Architecture by Linda Labur, Barosa Publishing House Pvt. Ltd. Darya Ganj, New Delhi  
Microprocessor Architecture, Programming and Application with 8080/8085 by Architecture, Programming and Application with 8080/8085 by Ramesh S Gaonker, Willey Estern Ltd., New Delhi.
7. Introduction to Microprocessor by Mathr, Tata McGraw Hill Education Pvt. Ltd., New Delhi.



### 3.5 OFFICE AUTOMATION TOOLS

L    T    P  
4   -   6

**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.

TOOLS : Following tools can be used for this subject  
Libre Office, Open Office, MS Office

TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage Time		
		L	T	P
1.	Word Processing	14	-	-
2.	Spreadsheets	14	-	-
3.	Presentation	14	-	-
4.	Electronic Mail	14	-	-
		56	-	84

DETAILED CONTENTS

1. 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. SPREADSHEET:

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. PRESENTATION

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 :

- 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.

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, subtraction, 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.

**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 (Simplex, 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 :

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; Quality 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. Tanenbaum - 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 establishing 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.

#### 4.2 WEB TECHNOLOGY-II

L T P  
6 - 6

##### TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage Time		
		L	T	P
1.	Topic 1	20	-	-
2.	Topic 2	15	-	-
3.	Topic 3	15	-	-
4.	Topic 4	14	-	-
5.	Topic 5	20	-	-
		84	-	84

1. JAVA SERVLET :

Introduction to Server Mangement ( Using TOM Cat)

Servlet introduction, working of servlet advantage of servlet, servlet terminology, introduction to servlet API, Servlet interface, Generics Servlet class, Http servlet class, Life cycle of a servlet.

2. JSP :

JSP introduction, JSP - Environment setup, JSP - Architecture, JSP- Life cycle, JSP-syntax, JSP-Directive,

JSP-Actions, JSP- Implicit objects, JSP - Client request,  
JSP - Server response, JSP intergration with database.

3. AJAX :

AJAX Introduction, XMLHttpRequest, Request object, server response,  
AJAX events, Validation, Intratation with API

4. CROSS BROWSER COMPATIBILITY :

Introduction, Cross Browser compatibility issue, Fixing  
cross browser compatibility issue.

5. SESSION AND COOKIES :

Introduction to session adn cookies, Session Management,  
Create and deletion of cookie with Java Script, Function to  
set a cookie, Function to get a cookie, Function to check  
and cookie.

LIST OF PRACTICALS

1. Exercises related to Java Servlet
2. Exercises related to JSP
3. Exercises related to ASP.
4. Exercises related to AJAX.
5. Exercises related to Cross Browser Compatibility.
6. Exercises related to Session and Cookies.

#### 4.3 OPERATING SYSTEM

(Common to Computer Science & Engineering)

L T P  
6 - 4

##### TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage Time		
		L	T	P
1.	Introduction	14	-	-
2.	Management of Operating System	40	-	-
3.	Case Study	30	-	-
		84	-	56

##### DETAILED CONTENTS

1. Introduction  
Evolution of Operating, Computer system overview, characteristics of operating system, GUI, CUI, Single user, Multi user operating system Time Sharing and Real Time System.
2. Management of Operating System :
  - A. Process Management - Process concept, Process schedule, Process Synchronization, Inter process communication, CPU scheduling and dead lock.
  - B. Memory Management - Main memory, Contiguous memory allocation, Segmentation, Paging, Virtual memory, Demand paging, Page replacement, Allocation, Threading.
  - C. Input Output Management - Mass storage structure, Overview, Disk scheduling and Management. +
  - D. File Management - File concepts, File system and structure,

Directory structure.

3. CASE STUDY :

Linux and Unix basic concepts, system administration  
requirement for Linux, System Administration

List Of Practicals

1. Practices on commands using Linux.
2. Practices on commands using Unix

LIST OF BOOKS

1. Milenekovie - Operating System Concept - McGraw Hill
2. Petersons - Operating System - Addison Wesley
3. Dietal - An Introduction To Operating System- Addison Wesley
4. Tannenbaum - Operating System Design and Implementation -PHI
5. Gary Nutt- Operating System, A Modern Perspective- Addison Wesley
6. Stalling, Willium - Operating System - Maxwell Macmillan
7. Silveschatza, Peterson J - Operating System Concepts - Willey
8. Crowley - Operating System - TMH
9. UNIX Concepts and Applications, 4th Edition, Sumitabha Das-Tata McGraw Hill
10. UNIX and Shell Programming, Behrouz A Forouzan and Richard F Gilberg - Thomson Course Technology.
11. Unix Shell Programming - Y Kanetkar - BPB Publication



#### 4.4 EMPLOYABLE SKILLS

L T P  
- - 4

##### Rationale:

Diploma holders are required to not only possess subject related knowledge but also soft skills to get good jobs and to rise steadily at their workplace. This subject is included to develop employability skills amongst the student.

##### TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage Time		
		L	T	P
1.	Topic 1	-	-	-
2.	Topic 2	-	-	-
3.	Topic 3	-	-	-
4.	Topic 4	-	-	-
5.	Topic 5	-	-	-
6.	Topic 6	-	-	-
7.	Topic 7	-	-	-
8.	Topic 8	-	-	-
9.	Topic 9	-	-	-
10.	Topic 10	-	-	-
		-	-	56

##### DETAILED CONTENTS

1. Industrial Scenario Engineering Education and expectations of competences from an employee by employer.
2. Personality types, characteristic and features for a successful employee.
3. Employee desirable values and ethics and their development. Relation between profession, Society and environment.
4. Managing Project - Leadership, Motivation, Time Management, Resource Management, Computer Software, Interpersonal relationship, Engineer economics and fundamentals.
5. Effective Communication - Listening, Speaking, Writing, Presentation techniques/seminar, Group discussion.
6. Preparing for Employment - Searching for jobs/jobs hunting, Resume writing. Interview techniques in personal interview, telephonic interview, panel interview, group interview, video conference.
7. Managing Self - Managers body, mind, emotion and spirit,

Stress management, Conflict resolution.

8. Continuing Professional Development - Organising learning and knowledge, Use of computer for organising knowledge resource.
9. Creativity, Innovation and Intellectual Property Right- Concept and need in present time for an engineer.
10. Basic rules, laws and norms to be adhered by engineers during their working.

#### 4.5 IT INFRASTRUCTURE

L T P

## TOPIC WISE DISTRIBUTION OF PERIODS

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

## DETAILED CONTENTS

1. IT INFRASTRUCTURE :  
Introduction to information technology and its components. Definition and components of IT infrastructures : COmputer Hardware, Operating system, Enterprise software applicaiton, Data management system, Storage system, Networking/Telecommunication System and Internet.
2. HARDWARE BASICS AND PC ASSEMBLY :  
  
Internal Hardware : Mother Board, CPU, Power Supply (SMPS), Fan, Hard Disk Drive (HDD), RAM, CD-ROM Drive, Digital Video Disk Drive (DVD), PC Case, Mointors (CRT and LCD), Key Board, Mouse, Audio Devices.  
  
Cables and Connectiors : Unshielded Twisted Pair (UTP) Cable, Shielded Twisted Pair (STP) Cables, Coaxial Cables, Fiber Optics Cables, Types of Connector.  
  
Assembly PCs with compartible components, Compatibilities of Peripheral devises and their connectivity, Printer, Scanner.  
  
Preventative Maintenance and Trouble shooting.
3. CLIENT SERVER MODEL :  
  
Concept of client and server machine. Types of client machines/PCs (Desktop, Laptops, PDAs, Thin client). Types of server machines (Web server, Mail server, Blade server). Server management. Sharing of resources.
4. INTERNET :  
  
Knowledge of the Internet, Basics of internet, WWW, Web browsing software, Search engine, Understanding URL, Domain name, Using e-governance website. Web browsers connectivity related Trouble shooting.  
  
FTP, Remote Desktop Connection, Basics of electronic mail, Creating e-mail account, Sending/receiving emails, Grouping of email, Documents collaboration, Instant messaging.
5. OPEN SOURCE SOFTWARE PLATEFORM :  
  
Emergence of Open Source Softwares. Open Source Licenses :

GNU General Public License (GPL version 2,3, GNU Lesser General Public License (LGPL). Community Building : Developing blog, Group, Forum, Social network for social purpose. Introduction to Open Source Software Apache, MySQL, PHP, JAVA and development platform.

6. IT STANDARDS :

Recommendations by the World Wide Web Consortium (W3C), Internet Standard (STD) documents published by the Internet Engineering Task Force (IETF). Request for Comments (RFC) documents published by the Internet Engineering Task Force. Standards published by the International Organization for Standardization (ISO). Name and number registries maintained by the Internet Assigned Numbers Authority (IANA).

7. USE OF IT IN EDUCATION AND INTRODUCTION TO GREEN IT TECHNOLOGY :

ICT Tools and techniques in education : Digital Library, Online Tutorials, Virtual classrooms, Video conferencing, Online repository drives. Concept of virtualization. Cloud computing : Introduction to Cloud Computing, Why we need it, Types of Cloud services: Software as a service (SaaS), Platform as a service (PaaS), Infrastructure as a service (IaaS), Development as a Service (DaaS).

LIST OF PRACTICALS

1. Assembly a desktop computer from compatible components and upgrade a computer system to meet requirements.
2. Identify the steps of the troubleshooting process and perform basic PC troubleshooting.
3. Perform an operating system installation, Formatting and making drives.
4. Identify and apply common preventive maintenance techniques for operating system.
5. Perform troubleshooting of operating system.
6. Use Open Source Software for application development.
7. Making blog, group, forum using social networking sites.
8. Install, use and share a printer.

**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.
  - 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.

## 5.2 DATABASE MANAGEMENT SYSTEM

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 preparation of different types of application software like Inventory, Financial & Accounting system etc. The student equipped with knowledge of this subject will be useful in the areas of the computer application.

### TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage Time		
		L	T	P
1.	Topic 1	10	-	-
2.	Topic 2	10	-	-
3.	Topic 3	10	-	-
4.	Topic 4	10	-	-
5.	Topic 5	14	-	-
6.	Topic 6	10	-	-
7.	Topic 7	10	-	-
8.	Topic 8	10	-	-
		84	-	84

### DETAILED CONTENTS

1. OVERVIEW OF DBMS :

62

Corrected and Approved By B.T.E. On Dated 17.08.2016

Data, Representation of Data, Record, Data item, Field name, File, Data and Information, Database (Properties), Benefits of Database approach, Database Management System (Capabilities, Advantages, Disadvantages) and Functions of DBMS. Basic DBMS terminology (Data items, Entities and Attributes, Schema and Subschema, Database users, Instance and Schemas). 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- Entity 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 :

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

4. RELATIONAL DATABASE DESIGN :

Functional dependencies (I, II & III), Normal forms, Normalization, Boyce Codd Normal Form, Multivalued dependencies and Fourth 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 Command :- DESCRIBE, SELECT, COLUMN ALIASES, CONCATENATION OPERATOR, DISTINCT CLAUSE, ORDER BY, WHERE CLAUSE, LOGICAL OPERATIONS, SQL OPERATORS, Accessing Metadata.

6. RATIONAL DATABASE :

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

7. SECURITY :

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

8. PL :



User defined function, Control of flow statement of PL/SQL, Procedures/Stored procedures, transaction, triggers, cursors, granting and revoking.

#### 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

#### DATABASE MANAGEMENT SYSTEM LAB

##### STRUCTURED QUERY LANGUAGE

1. Creating Database
  - Creating a database
  - Creating a table
  - Specifying relational data types
  - Specifying constraints
  - Creating indexes
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

### 5.3 JAVA PROGRAMMING

(Common To Post Graduate Diploma in Computer Application, Diploma In Computer Science and Engineering)

L T P  
8 - 8

#### TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage Time		
		L	T	P
1.	Topic 1	8	-	-
2.	Topic 2	10	-	-
3.	Topic 3	12	-	-
4.	Topic 4	12	-	-
5.	Topic 5	12	-	-
6.	Topic 6	12	-	-
7.	Topic 7	12	-	-
8.	Topic 8	12	-	-
9.	Topic 9	10	-	-
10.	Topic 10	12	-	-
		112	-	112

1. Introduction and feature of Object Oriented Programming

2. An Overview of JAVA:-

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

3. Data Types & Control statements:

Integer, floating point type, character, boolean, all Operators, JAVA's selection statements, iteration and jump statement.

4. Classes & Methods:

Class fundamentals, declaring objects, overloading methods & constructs, access control, nested and inner classes, exploring the string class.

5. Inheritance:

Inheritance basics, member access and inheritance. Overriding : Method overriding, super kwyword, polymorphism and virtual function.

6. Packages and Interfece :

Defining, Creating and accessing a package, Understanding CLASSPATH, Inporting packages, difference between classes and interface, defining an interface, implementing interface, applying interface, variable in interface and extending interface, Exploring Java io.

7. Exception Handling :

Concept of exception handling, benefits of exception handling, termination or resumtive models, exception hierarchy, usage of try, catch, throw, throws and finally, built in exceptions, creating won exception sub classes. string handling, exploring java.util.

8. Multithreading :

Difference between multi threading and multi tasking, thread life cycle, creating threads, thread priorities, synchronizing threds inter thread communication, thread groups, daemon threads, enumerations, autoboxing annotations, generics.

9. Event Handling :

Events, Evants sources, Event classes, Event Listeners, Delegation event model, handling mouse and key board events, Adapter classes. The AWT class hieracrchy, user interface components - labels, button, vanvas, scrollbars, text components, check box, check box groups, choice, list panels - scrollpane, dialogs, menubar, graphics, layout manager - layout manager types border, grid, flaow card and grid bag.

10. Applets :

Concept of Applets, difference between applets and application, life cycle of an applet, types of applets, creating applets, passing parameters to applets.

Swing - Introduciton, limitations of AWT, MVC architecture, components, containers, exploring swing- JApplet, JFrame and JComponent, Icons and Lables, text fields, buttion - the JButtion class, Check boxes, Radio buttons, Combo boxes, Tabbed Panes, Scroll Panes, Trees and Tables.

LIST OF PRACTICALS

1. WAP to find the average and sum of the N numbers using command line argument.
2. WAP to demonstrate type casting.
3. WAP to find the number of arguments provide at run time.
4. WAP to test the prime number.
5. WAP to calculate the simple interest and input by users.
6. WAP to create a simple class to find out the area and perimeter of rectangle and box using super and this keyword.
7. WAP to find G.C.D. of the number.

8. WAP to design a class account using the inheritance and static that show all function of bank (withdrawal, deposit).
9. WAP to find the factorial of a given number using Recursion.
10. WAP to design a class using abstract methods and classes.
11. WAP to design a string class that perform string method (equal, reverse the string, change case).
12. WAP to handle the exception using try and multiple catch block.
13. WAP that implement the Nested try statements.
14. WAP to create a package that access the member of external class as well as same package.
15. WAP that import the user defined package and access the member variable of classes that contained by package.
16. WAP that show the partial implementation of interface.
17. WAP to handle the user defined exception using throw keyword.
18. WAP to create a thread that implement the Runnable interface.
19. WAP to implement Interthread communication.
20. WAP to create a class component that show controls and event handling on that controls (math calculation).
21. WAP to draw the line, rectangle, oval, text using the graphics method.
22. WAP to create a menu using the frame.
23. WAP to create a dialogbox.
24. WAP to implement the flow layout and border layout.
25. WAP to implement the grid layout, card layout.

#### 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 Edition, Bruce Eckel Pearson Education.
4. JAVA 6 By Rogers Cadenhead, Laura Lemay, Pearson Education.

#### 5.4 E-COMMERCE

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

L T P

## TOPIC WISE DISTRIBUTION OF PERIODS

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

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

**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 Biodegradability, composting, bio remediation, Microbes .Use of biopesticides 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 quality 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, CO, CO<sub>2</sub>, NH<sub>3</sub>, 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 quality 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 benefit 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.

6.2 INFORMATION SECURITY AND IT LAWS

L T P  
6 - 4

Rationale:

Diploma holders are required to not only possess subject related knowledge but also soft skills to get good jobs and to rise steadily at their workplace. This subject is included to develop employability skills amongst the student.

TOPIC WISE DISTRIBUTION OF PERIODS

Sl.No.	Units	Coverage Time		
		L	T	P
1.	Topic 1	6	-	-
2.	Topic 2	15	-	-
3.	Topic 3	15	-	-
4.	Topic 4	12	-	-
5.	Topic 5	12	-	-
6.	Topic 6	12	-	-
7.	Topic 7	12	-	-
		84	-	56

DETAILED CONTENTS

1. INTRODUCTION AND SECURITY TRENDS :

1.1 Need for security, Security basics : Confidentiality, Integrity, Availability, Authentication, Access control.

1.2 Threats to security : Viruses and Worms, Intruders, Insiders, Criminal organization, Terrorist, Information warfare, Avenues of attack, Steps in Attack.

- 1.3 Types of attack : Active and Passive attacks, Denial of service, backdoors and trapdoors, sniffing, spoofing, man in the middle, replay, TCP/IP Hacking, Encryption attacks, Malware : Viruses, Logic bombs.
2. ORGANIZATIONAL/ OPERATIONAL SECURITY :
  - 2.1 Role of people in security : Password selection, Piggybacking, Shoulder surfing, Dumpster diving, Installing unauthorized software/hardware, Access by non employees, Security awareness, Individual users responsibilities.
  - 2.2 Physical security : Access controls Biometrics : Finger prints, hand prints, retina, patterns, voice patterns, signature and writing patterns, keystrokes and physical barriers.
  - 2.3 Network security basics, model for network security.
3. CRYPTOGRAPHY AND PUBLIC KEY INFRASTRUCTURE :
  - 3.1 Introduction : Cryptography, Cryptanalysis, Cryptology, Substitution techniques ; Caesar's cipher, monoalphabetic and polyalphabetic transposition techniques- Rail fence technique, simple columnar, steganography.
  - 3.2 Hashing - Concept
  - 3.3 Symmetric and asymmetric cryptography : Introduction symmetric encryption : DES (Data Encryption Standard) algorithm, Diffie-Hellman algorithm, Problem of key distribution, Asymmetric key cryptography : Digital signature, key escrow.
  - 3.4 Public key infrastructures : Basics, digital certificates, certificate authorities, registration authorities, steps for obtaining a digital certificate, steps for verifying authenticity and integrity of a certificate.
  - 3.5 Trust models : Hierarchical, Peer to peer, hybrid.
4. NETWORK SECURITY :
  - 4.1 Firewalls : Concept, design, principles, limitations, trusted system, keyberos- concept.
  - 4.2 Security topologies - Security zones, DMZ, Internet, Intranet, VLAN, Security implication, Tunneling.
  - 4.3 IP security : Overview, architecture, IPSec, IPSec configuration, IPSec security.
  - 4.4 Virtual Private Network.
  - 4.5 Email security : Email security standards : Working principles of SMTP, PEM, PGP, S/MIME, spam.
5. SYSTEM SECURITY :
  - 5.1 Intruders, Intrusion detection system (IDS), Host Based IDS, Network based IDS.

- 5.2 Password Management, Vulnerability of password, Password selection strategies, Components of good password.
- 5.3 Operating system security : Operating system hardening, General steps for securing windows operating system, Hardening UNIX/LINUX based operating system, Updates : Hot Fix, Patch, Service pack.
- 6. APPLICATION AND WEB SECURITY :
- 6.1 Application hardening, application patches, Web servers, Active directory.
- 6.2 Web security threats, Web traffic security approaches, Secure socket layer and transport layer security, secure electronic transaction software development : secure code techniques, buffer overflow, code injection, least privilege, good practices, requirements, testing.
- 7. IT LAWS :
- 7.1 Information Security Standards - ISO, IT Act, Copyright Act, Patent Law, IPR, Cyber Laws in India. IT Act 200 Provisions.
- 7.2 Intellectual property law : Copy Right Law, Software License, Semiconductor Law and Patent Law.

#### LIST OF PRACTICAL

- 1. Knowledge the security provided with windows operating system.
- 2. Recovery the password of window machines using password recover utility (John the ripper ) or any other utility.
- 3. Tracing of email origin using email trace pro utility.
- 4. Use of Keylogger and anti-keylogger to secure yours system.
- 5. Encrypt and decrypt the message using simple transposition - Permutation (Cryptool)
- 6. Encrypt and decrypt the message using Caesar Cipher With variable key (Cryptool)
- 7. Encrypt and decrypt the message using 3 X 3 Hill Cipher (Cryptool)
- 8. Create Digital Signature document using (Cryptool)
- 9. Send and receive secret message using steganography techniques using steghide.
- 10. Recover the data from formatted Pen Drive and Hard Disk using Power Data Recovery Utility or any other utility.

### 6.3 MULTIMEDIA AND ANIMATION

L T P  
6 - 8

Rationale :

Computers are, now a days, used in industry for designing and manufacturing purposes also. Multimedia and animation 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 equipped 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.	Section A	32	-	-
2.	Section B	52	-	-
		84	-	112

#### DETAILED CONTENTS

##### 1. SECTION A:

###### INTRODUCTION :

Multi media and its types, Introduction toHypermeial, Hyper Text, Kulti meidal system and their characterisitcs, Challenges, Desirable features, Components and application, Trends in multimedia.

###### MULTIMEDIA TECHNOLOGY :

Multi media system technology, Multimedia Hardware devices, Multi media software development tools, Multi medial authoring tools, Multi media standards for documents architecture, SGML, ODA, Multimedia standards for documents interchange, MHEG, Multi media software for different media.

###### STORAGE MEDIA :

Magnetic and optical media, RAID and its levels, compact disc and its standards, DVD and its standards.

###### AUDIO :

Basic of digital audio, Application of audio, Digitization of sound, sample rates and bit size, Nyquist's sampling theorem typical Audio formats delivering audio over a network, Introduction to MIDI (Musical Instruments Digital Interface), Basics of Audio Compression.

2. SECTION B :

BASICS OF COMPRESSION :

Classification compression algorithms, Lossless Compression Algorithms, Entropy Encoding, Runlength Encoding, Pattern Substitution, Basics of Information theory, Huffman coding, Arithmetic coding, Lempel-Ziv-Welch(LZW) algorithm

IMAGE AND GRAPHICS COMPRESSION :

Colour in images, Types of colour models, Graphics/Image file formats : TIFF, RIFF, BMP, PNG, PDF, Graphic/Image data and JPEG compression.

VIDEO COMPRESSION :

Basic of Video, Video signals, Analog video, Digital video, TV standards, H 261 compression, Intra Frame Coding, Inter-frame (P-frame) coding, basics of MPEG compression.

COMPUTER ANIMATION :

Design of animation sequence, General computer animation functions, Raster animations, Computer animation languages, Motion specification, Direct motion specification, Goal directed system, Kinematics and dynamics.

LIST OF PRACTICALS

1. Basics of 3 D - Exploring interface and customizing.
2. Modeling - Polygon Modeling, Patch Modeling, Surface and Bumps Modeling.
3. Materials - Exploring Materials and Various shaders.
4. Lights - Standard and Photometric lights and various light systems.
5. Rendering - Various techniques to achieve high quality output in less time and use of compressor.
6. Character modeling and texturing.
7. Animation techniques - Graph editors, curve editor and Dope sheet.
8. Character Animation - Using Biped and Bones.

LIST OF BOOKS

1. Ralf Steinmetz and Klara Nahrstedt Parag Havaldar : Gerard Medion : Multimedia computing communication and applications By Pearson Education Multimedia System, Cengage Learning, 2009 Reference.

2. Prabhat K Andleigh, Kran Thakkar : Multimedia System Design, PHI, Latest Version.
3. Li, Drew : Multimedia Computing, Parson Education, Latest Edition.
4. Fred Halsall Multimedia Communications, Parson Education, Latest Edition.

#### 6.4 PROJECT

L	T	P
-	-	8

Rationale:

The purpose of including project in curriculum is to develop skill and knowledge specifications of software used in computers.

77

Corrected and Approved By B.T.E. On Dated 17.08.2016

1. INFORMATION TECHNOLOGY PROJECT:

The student is expected to work on a project in consultation and acceptance with the instructor on either system software aspects related to industrial environment.

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. SOFTWARE MAINTENANCE PROJECT:

Similar as Information Technology Project (Software), related to maintenance operation and evaluation of the systems.

THREE YEAR (SIX SEMESTER) DIPLOAM IN INFORMATION TECHNOLOGY  
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 In Information Technology	6	
4.	Computer Programmer Cum Operator	3	
5.	Lecturer in Maths	1--	
6.	Lecturer in Physics	1	Common with Other discipline
7.	Lecturer in Electronics		
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

#### SPACE REQUIREMENT

##### [A] ADMINISTRATIVE BLOCK

Sl. No.	Details of Space	Floor Area Sq. metres
1.	Principal's Room	30
2.	Confidential 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 7 Lecturers	70



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	120
2.	Physics Lab		75
3.	Electrical Engg. Lab/Shop		120
4.	Digital Electronics & Microprocessor Lab		120
5.	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 Amenities

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) including kitchen & store	45	

[E] STAFF RESIDENCES

1.	Principal	1	100	100
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

Priority to be given in following order

- (1)
- Administrative Building
  - Labs
  - Over head Tank
  - Boundary Wall
  - Principal Residence
  - Forth Class Quarters (2/3)

- (2)
- Hostel
  - Students Amenities

- (3)
- Residences of employee

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 version 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-magnetic) 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	2	250	500

8.	vertical stand & rubber tubing Thermometer 0-110°C (Least count 0.1°C desirable)	4	100	400
9.	Potentiometer - 10 wires (1 meter length of each wire) with jockey, sunmoical top	4	750	3000
10.	Moving coil galvanometer 30-0-30 with moving mounting	5	300	1500
11.	Rheostat 50 ohm., 100 Ohm., 150 Ohm. 16 capacity		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.	Leclanche Cell with complete accessories	2	250	500
19.	Standard Cadmium Cell with complete accessories	2	250	500
20.	Battery Charger with complete accessories	1 set	1800	1800
21.	Battery Eliminator Multi range	2 set	750	1500
22.	Multimeter (Digital)	1 set	800	800
23.	Carey Foster Bridge (With all accessories)	2 set	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.) (Constantan/Manganin)	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	5 set	150	750
31.	Vernier Callipers L.c. 1/10 mm	5 set	100	500
32.	Appratus for determining characteristics of P-N junction diode complete with all accessories	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 horizontal plane	2 set	700	1400

	(Complete with all accessories)			
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 Alcohol 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		
-----				
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

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	1	1000

constantan coils, single dial  
10x10, 10x100, 10x1000, 10x10,000 ohms

8. Continuously variable 0 - 1000 micro  
farad, 250 V 1 1000

Sl. No.	Equipment	Qty.	Price
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 5 A/10A, 250 V, 50 Hz.	1	3000
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 microfarad, 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

Sl. No.	Equipment	Qty.	Price
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.		
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 watts 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
Sl. No.	Equipment	Qty.	Price

---

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	2	2000
	least count 0.01 Sec.		
37.	Stop watch (digital)	2	2000
	LED		

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		36,00,000=00

87

Corrected and Approved By B.T.E. On Dated 17.08.2016



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

3.	Lap Top (Latest Version) with damage Warranty & 3 Hour backup battery	04	250000.00
4.	Software (With Licence):		LS
	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		
5.	Hardware	5,00,000.00	LS
	i. Switch-32 Port	02	
	ii. Router	02	
	iii. Hub	04(8 Port)	
	iv. Ext. Modem	02	
	v. Wireless N/W Adaptor	02	
	vi. Series Access Point	02	
	vii. LAN Cable Meter	05	
	viii. LAN Cable Analyzer	05	
	ix. LAN Trainer Board	05	
	x. DATA Communication Trainer Board	05	
	ix. Crimping Tool	15	
	and all other accessories related to Networking		
6.	Scanner- Flat Bed A4/Auto Lighter (Bit depth 48)	02	20,000
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 minute battery backup along	04	8,00000

with sealed maintenance free batteries. Provision for connecting external batteries with network connectivity.(For 2 Labs)

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

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.		Micropro- cessors & Applicat- ion Lab.		Total		Total No. Recommen- ded	Rate per Piece  @ Rs.	Total Cost		
		Intake 60	Intake 75	Intake 60	Intake 75	Intake 60	Intake 75			Intake 60	Intake 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 Current.	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 resistance 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
S.No.	Name of the Equipment/ Board/Kit Etc.	Principles of Digital Eltx. Lab.		Microprocessors & Application Lab.		Total		Total No. Recommended		Rate per Piece	Total Cost	
		Intake		Intake		Intake		Intake		@ Rs.	Intake	
		60	75	60	75	60	75	60	75		60	75
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 telephone 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,Android 2.3 Operating System Supported with Colour Display TFT Screen with SD Memory Card, Battery 1300 mAH or Higher	-	-	-	-	8	8	8	8	15000	120000	120000
17.	Tablet PC-Min 7 inch Capacitive 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 demonstrating 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,	-	-	-	-	4	4	2	2	25000	50000	50000

Various Test Point Faculties												
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 60	75	Intake 60	75	Intake 60	75	Intake 60	75	@ Rs.	Intake 60	75
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	

#### 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.

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 Information Technology (Semester System).

PURPOSE: To design and develop Three Year (Six Semester) diploma curriculum in Information Technology (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.Importent functions of the \_\_\_\_\_  
department/section/shop \_\_\_\_\_

5.Number of diploma holder employees \_\_\_\_\_  
under your charge in the area of \_\_\_\_\_  
Information Technology.

6.Please give names of modern equipments/machines handled by a \_\_\_\_\_  
diploma holder in Information Technology.



15. In which types of organisations can a diploma holder in Information Technology can work or serve.
- |   |   |   |
|---|---|---|
| 1 | 2 | 3 |
| 4 | 5 | 6 |
16. Job prospects for the diploma holder in Information Technology 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 Information Technology.
- |        |           |
|--------|-----------|
| Theory | Practical |
|--------|-----------|
18. Kindly mention particulars regarding topics/areas which should be given more emphasis in the curriculum .
- |        |           |
|--------|-----------|
| Theory | Practical |
|--------|-----------|
19. Kindly state whether your organisation can contribute towards improvement of curriculum in above field. Yes/ No  
If yes : Please give names of experts in your organisation to whom contact.
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 Information Technology.

( Signature )

Kindly mail the above questionnaire duly filled to:-

Gaurav Kishor Kanaujiya  
Lecturer-IT  
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 )

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.

ANNEXURE- 3 STUDENT CENTER ACTIVITY



The purpose of this subject to enhance the skills of student in following areas

1. English proficiency
2. Level of academic knowledge
3. Presentation skills

To achieve above goals, small group of students or individual students with similar needs work independently.