Regulations & Syllabi for
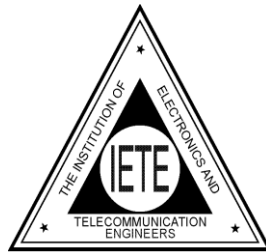# DipIETE Examination
(Computer Science & Engineering)

सह वीर्यं करवावहै

**Published under the authority of the Governing Council of
The Institution of Electronics and Telecommunication Engineers
2, Institutional Area, Lodi Road, New Delhi – 110 003 (India)
(2013 Edition)**

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             : membership@iete.org.

Prospectus
Containing
Regulations & Syllabi for
DipIETE Examination
(Computer Science & Engineering)

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INTRODUCTION

The Institution of Electronics and Telecommunication Engineers (IETE), formerly the Institution of Telecommunication Engineers (ITE) was founded in 1953 by a small group of professionals for the advancement of Telecommunication and Electronics in India. Today the Institution has grown in its status to international levels with its manifold activities for furthering the cause of development in the key sectors of national economy namely Electronics, Telecommunications, Computer Science & Engineering, Information Technology and allied disciplines. The emphasis of the current activities is on creation of a concrete base of trained manpower in these fields at various levels of competence and also to contribute gainfully towards the continued professional development needs of existing technical personnel. The IETE also provides a platform for meaningful interaction among professionals from the Industry, R&D Organisations, Educational Institutions and Government Departments.

MEMBERSHIP

1.   The IETE is a professional society devoted to the advancement of Electronics and Telecommunication, Computer Science Engineering and Information Technology. The Institution is headed by Governing Council, elected from its large base of corporate members in India and abroad. It confers professional status by way of admitting such persons, as may be qualified to various classes of membership such as Honorary Fellow, Distinguished Fellow, Fellow, Member, Associate Member, Diploma Member, Associate and Student Member. Organizational Membership is also open to Public/Private Sector Companies, Institutions, R&D Laboratories and Government Organizations.

OBJECTIVES

2.   The IETE focuses on advancing the science and technology of electronics, telecommunications, computers, information technology and related areas. The objectives of the Institution, inter-alias includes;

- Organise conferences, symposia, workshops and brainstorming sessions involving all concerned professionals, students and industry associations for the advancement of the Disciplines.
- Provide a forum for discussion on national policies and to provide suitable inputs to policy makers.
- Promote and conduct basic engineering and continuing technical education programme for human resource development.
- Bring out quality publications for all levels of readership.
- Honour outstanding professionals.

EXAMINATIONS

3.   The IETE conducts the Diploma Level (DIPIETE) Examination, in order that a student qualifies and becomes a Diploma Member. At the time of enrolment a student is enrolled as Student Diploma (SD). On successful completion of the curriculum and clearance of requisite membership fee, he is made a Diploma member of IETE. Such members are then eligible to pursue AMIETE course without paying any enrolment fee. The DIPIETE examination is recognized by the Ministry of Human Resource Development (MHRD)- **Appendix 'F'** similar recognition has also been given by several State Governments - **Appendix 'G** '.
FACILITIES FOR STUDENTS

4.   The IETE helps the students by extending library facilities, laboratory assistance, and coordination of IETE Students Forums and by providing necessary guidance at its IETE Centres. To spread its many fold technical activities in all the regions of the country, IETE has established so far 65 Centres spread all over the country including a centre at Kathmandu and examination centre at Abhu Dhabi. IETE also has mutual arrangements with similar professional bodies like the Institution of Engineers (India), CSI, IEEE (USA), IEEE Com Soc and IET (UK) for availing each other's facilities for the benefit of its members.

SOLUTIONS TO QUESTION PAPERS

5.   To help the students, IETE has printed solutions to Questions papers for DipIETE stream. List of subjects for which solutions are printed is available on the website www.iete.org

LABORATORY   MANUAL

6.   All students of DipIETE pursuing new scheme implemented from Jun 09 exams are required to procure lab-manuals and conduct their experiments and record the same in the concerned lab-manuals. The manuals of all the lab examination have been printed. Students can obtain these manuals as under:

      (a)   From Reception counter at IETE HQ on payment of Rs.225/- per manual without CD and Rs.300/- per manual with CD.
      (b)   Through post by sending a DD in favour of Secretary General, IETE payable at New Delhi towards cost of Manuals plus postal charges. The postal charge is Rs.50/- per manual.
      (c)   These manuals are also available at all IETE Centres. Students are advised to approach the nearby Centre for the same.

ASSISTANCE IN PLACEMENT

7.   IETE makes effort to assist in the placement of students with the help of a Placement Cell established at IETE HQ, New Delhi.
RECOGNITION

8.   The IETE is recognized by the Government of India as an EDUCATIONAL INSTITUTION OF NATIONAL EMINENCE. The IETE has also been recognized by the Government of India, Ministry of Science and Technology, Dept. of Scientific and Industrial Research as a SCIENTIFIC AND INDUSTRIAL RESEARCH ORGANISATION (SIRO).

STUDENT INTERACTION CELL

9.   With a view to quickly resolve student queries, a single window to address all types of queries, problems and to help students, a Student Interaction Cell has been established at IETE HQ, New Delhi. This Cell is at the ground floor of the IETE HQ building. Student can approach SIC by:-

- Tel No 011-43538853   Toll free No. 18001025488
- Email: sic@iete.org   Fax   : 011-24649429

10.   If the students' queries are not answered or resolved within a reasonable time, students may contact Secretary General, IETE through personal meeting or phone (011-43538821/22) or email (sec.gen@iete.org). **Students are not to approach any other section of the HQ as their queries/problems shall not be entertained by them.**

> **Students are advised to give their
> Mobile No. & Email ID for better and faster communication**

DIPIETE EXMINATION

REGULATIONS & SYLLABI

INTRODUCTION

11. IETE conducts DIPIETE Examination in the following two streams.
    (a) Electronics and Telecommunication Engineering (ET)
    (b) Computer Science and Engineering (CS)
    The block and outline syllabi of these streams are given in this booklet and detailed syllabi of (ET) stream is appended at appendix "E".

ELIGIBILITY

12. A candidate desirous of taking up the DIPIETE Examination should first be enrolled as

Student   (D) member as per Byelaw 17 of the Institution, which is reproduced below: -

- **Bye law 17 – Student (D) Member**
Every candidate for election to the class of Student (D) shall satisfy the Council that

he/she is not less than 14 years of age and has minimum pass in Class X conducted by a

Recognised Board of Education with General Science (Physics) and Mathematics or its

equivalent as prescribed by the Council from time to time; and

(a)   is sponsored by a Corporate Member of the Institution, and either

(b)   that he/she is or has been a student of Electronics Engineering/

Telecommunication Engineering/ Electrical Engineering/ Physics/ Computer Engineering

as applicable, from a University/ College/School approved by the Council

OR

(c)   that he/she is or has been an engineering pupil/apprentice/assistant in a

recognized firm, society or organization engaged in engineering or allied activities.

ENROLMENT

13   A candidate is required to apply for enrolment on the prescribed form (IETE-4), which is contained in this syllabus. The form also includes the conditions for eligibility.

CORPORATE MEMBER'S RECOMMENDATION AND CERTIFICATES

14.   Every application form for student member must be proposed by a corporate member of the IETE and the copies of certificates (age, educational/experience) should be attached duly attested by a corporate member/Gazetted Officer, failing which the application shall not be entertained. For this purpose, the candidate may contact the office of the local centres of IETE. The list of corporate members is available with them. However, in case of any difficulty in getting the enrolment proposed, the form may be submitted directly to the IETE HQ for further action.

ENROLMENT FEE

15.   Fees to be paid for enrolment are as given in Form IETE-4 contained in this syllabus. The enrolment fees payable by student members are as under: -

	Member in India (Rs)	Member Abroad (US $)
(a) Application Fee	200.00	40.00
(b) Admission Fee	200.00	40.00
(c) Building-cum-Lib. Fund	1300.00	260.00
(d) Composite Subscription (for five years)	2500.00	360.00
(e) Lab Infrastructure Fee	600.00	100.00
(f) Development Fee	500.00	100.00
(g) Establishment Fee	700.00	100.00
	6000.00	1000.00

16.   Enrolment fee is to be paid in one instalment at the time of enrolment. The student membership will be valid for 10 consecutive examinations from the date of enrolment. Thereafter, the student members not completing their DIPIETE Examination are to seek re-enrolment for further 10 examinations by remitting applicable amount before or immediately after the expiry of the membership period to continue their membership to enable them to appear in the remaining papers and complete DIPIETE. Any examination chance not availed by a student due to whatsoever reason will be counted within 10 examinations.

MINIMUM PERIOD OF MEMBERSHIP

17.   A Student member shall be allowed to appear in the DIP IETE Examination only after he/she has been enrolled as Student (D) member with the Institution. Only those Students (D) members enrolled on or before 28/29th February and 31st August, will be allowed to appear in the next DIPIETE Examination of the Institution, held in June and December respectively. Membership should be alive at the time of submitting the examination application form.

TIME LIMIT TO COMPLETE DIPIETE

18.   A student is required to complete DIPIETE Examination within two enrolment periods of 10 consecutive examinations each from the date of initial enrolment. The student will, therefore, be permitted to seek only one renewal of membership. Renewal is to be applied for before or immediately after the expiry of initial enrolment with continuity of enrolment maintained by the student. Any delayed re-enrolment entailing missed chances will be counted towards total number of examinations and no relaxation in this regard will be permissible. If the request for renewal is made after the stipulated period of two enrolments, admission will be treated as a fresh enrolment and no benefit in terms of exemptions in respect of subject(s) passed or exempted during the earlier enrolment will be granted. Students must renew their membership in time. Otherwise they will not be allowed to appear in the DIPIETE examination. No notice will be sent to the students for renewal of membership.

19.   **The course curriculum and outline Syllabi for both the streams are given as follows: -**

(a)	**Course Curriculum (ET)**	**(Appendix-A)**
(b)	**Outline Syllabus (ET)**	**(Appendix-B)**
(c)	**Course Curriculum (CS)**	**(Appendix-C)**
(d)	**Outline Syllabus (CS)**	**(Appendix-D)**

The detailed syllabus of the Electronics & Telecommunication stream is given at **Appendix 'E'.**

DIPIETE EXAMINATION

20.   DIPIETE examination is divided in two Sections viz. Section A & B with a total 17 theory papers (8 in Section A and 9 in Section B) and 4 labs (2 labs in Section A and 2 labs in Section B). Each Section is divided in two parts viz. Part-I and Part-II. In addition a student has to undergo a project work, seminar and a Course in Communication Skills & Technical Writing. The course on Communication Skills & Technical Writing is mandatory but would not count towards overall CGPA.

21.   Distribution of subjects is as under:

(a)   Section A
    (i)   PART-I   Four subjects & 1 Lab
    (ii)   PART-II   Four subjects & 1 Lab

(b)   Section B
    (i)   PART-I   Five subjects & 1 Lab
    (ii)   PART-II   Four subjects & 1 Lab
                 (2   compulsory & 2 from elective subjects)

(C)   Project Work

(d)   Seminar

(f)   Course in Communication Skills & Technical Writing
               (Any time during the course)

22.   The student should appear in Section A Part-I first and then in Part-II. If a student appears in a part in first attempt, he can appear in the subsequent part in next attempt even though he/she may not have passed in the subjects of the previous part.

Not withstanding above, a student will not be allowed to complete the curriculum in less than three years unless he has been exempted in some subjects.

LAB EXAMINATION

23.   Eligibility for Lab, Seminar and Project Examination -
The students are advised to look into the web site www.iete.org for the eligibility criteria for appearing in the Lab, Seminar and Project examination.

COMMUNICATION SKILLS & TECHNICAL WRITING

24.   **The course on Communication Skills & Technical Writing** is compulsory for all students. However, the course does not contribute to the overall CGPA. A minimum of 35% marks combining theory and oral test has to be obtained by the student at any time before the completion of his/her DipIETE. The student has to appear for both in one exam. (Either in June or in December)This course consists of theory and oral test. Accordingly, "PASS" or "FAIL" will be reflected in the Grade Sheet.
    (a)   **Theory :** This consists of written examination for 80 marks.

(b) **Oral Test :** consists of an Oral Test to test the Communication Skills which includes an oral presentation on any subject of the choice of students (e.g. About IETE, General knowledge topics etc). This presentation need not be on technical subjects. This test carries 20 marks.

EXEMPTIONS

25. Exemption may be granted in various papers to the students who have passed similar subjects from elsewhere or other courses. Such exemptions are granted to a candidate passing the subject and successfully completing the course/curriculum from recognized Institutions/Colleges and approved by the IETE Governing Council.

Candidates seeking exemption are required to submit the following documents along with requisite fee:

(a) Application form for exemption.
(b) Certificate of the course/curriculum completed by the student.
(c) Mark sheets duly attested.
(d) Certified copy of syllabi from which the candidate has passed the course.
(e) Fee @ Rs. 700/- per subject for which exemption is sought.

Candidates are advised to apply for exemption, if required, at the earliest opportunity. All cases of exemptions are considered by the Academic Committee of the Institution. For all subjects where exemption are granted will be communicated to the students in the Grade sheet of the first examination after the exemption is sought as it generally takes two month to process an application for exemption. Exemption will generally be granted if the major portion of the syllabi matches with IETE Syllabus. **THE DECISION OF THE ACADEMIC COMMITTEE WILL BE FINAL AND BINDING TO ALL CONCERNED. NO REPRESENTATION IN THIS RESPECT WILL BE ENTERTAINED.**

AWARD OF DIPIETE

26. Every Student member (SD) successfully completing Sections A&B subjects including lab examinations with project work and a course in Communication Skills & Technical Writing of DIPIETE Examination as per regulations prescribed by the Governing Council from time to time shall be eligible to become a member (DipIETE). On payment of requisite fee for membership, he/she will be awarded a certificate of having passed the DIPIETE examination of the Institution and shall then be eligible for transfer to the class of DipIETE. To pass DipIETE Examination, a student is required to score a minimum

grade of 'D' having a grade point of 4 for each subject and having an aggregate of 5 CGPA. However for Project and lab examination, he/she should get a minimum grade of C having a grade point of 5.

CGPA SYSTEM

27. CGPA System which is followed by IETE is given below:
(a) Subject wise grade and grade points are as given below:-

Grade	Grade Point
A+	10
A	9
B+	8
B	7
C+	6
C	5
D	4
F,F+	Fail

(b) CGPA will be calculated as under only for the subjects where a student has passed:-

$$CGPA = \frac{C_1 G_1 + C_2 G_2 \text{ ------ } + C_n G_n}{C_1 + C_2 + C_3 \text{ ------ } C_n}$$

Where $G_1 G_2$ ------denote the grade point scored.

$C_1 C_2$ ------denote the credits of subjects.

All theory Subjects & Lab Carry 4 Credits.
Project work Carries 8 Credits.

(c)   The award of division/classification will be as under :-

(i)	CGPA of 9 or more	-	Distinction
(ii)	CGPA 6.5 or more but less than 9	-	First Division
(iii)	CGPA 5 or more but less than 6.5	-	Second Division
(iv)	Less than 5	-	FAIL (No award Will be given)

(d)   CGPA is converted into percentage with a multiplier of 9.5.

EXAMINATION APPLICATION

28.   Applications to appear in any of the subjects of the DIPIETE Examination must be made on the prescribed OMR Examination Form and accompanied by the requisite examination fee. The prescribed application form is given initially free of cost along with prospectus and later on with a grade sheet where a student has appeared for an examination. OMR Examination application form can also be obtained by the students on payment of Rs. 20/- from any IETE Centre or HQ IETE. No action will be taken on an incomplete application. Students are advised to ensure that they have filled all the columns and have enclosed relevant documents. For exemptions, separate form is to be used. Generally, after the acceptance of examination form of the students, change of examination centre is not encouraged. However in exceptional cases, change of exam Centre will be allowed with an additional charge of Rs. 500/-. For any correction in the examination form after processing an additional amount of Rs 500/- will be charged as reprocessing fee.

Change of streams will be allowed with an additional charge of Rs. 600/-.

EXAMINATION FEE

29.   Students are to submit their Examination Application form along with the fee as given below. The fee may get revised from time to time and the students are required to submit their application form along with the latest fee structure in force.

The present fee structure is given below:

		In India (Rs)	Abroad (US $)	Remarks
(a)	Theory papers/per subject	700.00	80.00	To be deposited along with
(b)	Exemption/per subject	700.00	80.00	exam application form.
(c)	Written Test on Communication Skills & Technical Writing	700.00	80.00	
(d)	Project work	1200.00	220.00	
(e)	Each Lab Examination	500.00	80.00	To be deposited at
(f)	Oral Test on Communication Skills &	500.00	80.00	respective IETE Centre

Technical Writing

Note: (a)   Fees will be charged per subject irrespective of whether it is for improvement OR re-appearance OR remaining paper OR additional paper OR exemption.

(b)   Examination/Exemption fee once paid are neither refundable nor transferable to a subsequent examination.

(c)   Enrolment Form, Examination Form and Exemption Form are to be sent separately with requisite fee along with each form.

LAST DATE FOR RECEIPT OF EXAMINATION APPLICATION

30.   The last date for receipt of examination form duly filled in at the IETE HQ office for June/Dec examination respectively are as under:-
• Without late fee   25 Apr/25 Oct
• With late fee (of Rs.1500/-)   10 May/10 Nov.
 Application received after these dates will not be considered.

DATE SHEET

31.   The examinations are held twice a year from 15th June and 15th December and are conducted on all days including holidays and Sundays.   These dates are firm and changes if any, will be notified to students along with admit cards and through our website **www.iete.org** and at the Local centre.

ADMIT CARD

32.   Admit Cards will be sent to all the students to reach them by about 05th of June/December. Admit Cards of eligible students will also be available on our Websites www.iete.org and can be downloaded. Students will be allowed to appear for examination with these downloaded admit card along with their identity card. In the case of non-receipt of Admit-Card by above dates or the admit card not available on the website, the student must approach the concerned Examination Centre or IETE HQ and obtain permission to appear in the examination. No complaint in respect of non-receipt of Admit Card will be entertained once the Examination is over. A student is required to carry his IETE Identity Card and Admit Card issued by IETE for appearing in examination.

EXAMINATION CENTRES

33   Students should appear for all theory papers and practicals in the same Examination Centre. The Examination Centres for exams will be changed by IETE HQ only in special cases after getting the proof of documents. The Exam Centres marked as * are closed. For latest list of examination Centres students are requested to refer to our Website **www.iete.org**

CENTRES	CENTRE CODE	CENTRES	CENTRE CODE
Abu-Dhabi	17	Kochi	32
Ahmedabad	01	Kolkata	04
Allahabad	25	Kozhikode	52
Aligarh*	24	Mumbai	03
Amravati	53	Mysore	33
Aurangabad*	43	Nagpur	37
Bangalore	02	Nashik	39
Bhubaneswar	27	Noida	38
Bhopal	36	Palakkad	41

Chandigarh	05	Patna	46
Chennai	12	Pilani	30
Coimbatore*	47	Pune	14
Dharwad	49	Raipur*	51
Dehradun	26	Rajkot	44
Delhi	06	Ranchi	48
Guwahati	07	Shimla	45
Gwalior*	50	Thiruvananthapuram	16
Hyderabad	08	Vadodara	42
Imphal	31	Varanasi	13
Jabalpur	23	Vijayawada	15
Jaipur	09	Visakhapatnam	34
Jammu*	35		
Kanpur	10		
Kathmandu	19		

USE OF UNFAIR MEANS

34.   If a student is found to have resorted to or made attempt to use **Unfair Means**, the Board of Examination may on receipt of report to that effect either from the Exam Superintendent or from invigilator or from the Evaluator/expert, take such action in respect of the student concerned as it thinks fit. The Examination Superintendent of the examination has absolute powers to expel the candidate from the examination hall, if in his opinion the student has adopted unfair means. The disciplinary action against the candidate may consist of punishment(s) extending from cancellation of the paper(s) to debarring from future examinations.

RESULTS

35.   Results of the examinations will be announced on or before 10th February and 10h August for December & June examinations respectively and communicated to the candidates through Result Sheets separately. Results will be available on IETE Website **www.iete.org**

RECOUNTING

36.   It may be noted that there is **no provision of re-evaluation** of answer books. Therefore request for re-evaluation are out rightly rejected.
        Recounting of scores, if requested, can be done by paying Rs.200/- (US$40) per subject. Requests for recounting of scores must be received at IETE HQ within 15 days from the date of announcement of results on **a separate application**.

IMPROVEMENT OF GRADES

37.   A student who has passed in a subject may appear for improvement. He may take any number of chances irrespective of Grades previously obtained. If the student secures lower Grade than already secured, the original grade will hold good. Fee for improvement is Rs 500/- (US$80) per paper. However, no improvement is permitted in Lab examination and Project work. Improvement is also allowed after completion of the examinations. After completion, students are required to give an Undertaking that they want/do not want to appear in any subject for improvement. Provisional Certificate/Certificate/final Grade Sheet will be issued only after receipt of undertaking that no improvements are required and the payment of Diploma Membership fee.

AWARDS FOR ACADEMIC EXCELLENCE

38.   Six awards have been instituted to give incentive to student members for high level of performance in the DIPIETE Examinations.

LEGAL MATTERS

39.   Adjudication in respect of legal cases concerning IETE HQ will be as per Bye-law 95 of the Institution which is reproduced below: -

"All Legal cases concerning IETE HQ shall lie within the jurisdiction of Delhi courts only"

For more information kindly visit http://www.iete.org.

AFFILIATION/ACCREDITATION

40.   The Institution of Electronics and Telecommunication Engineers (IETE) neither recognises nor accepts affiliations of any private coaching Institute. Students in the past have reported that some private institutions claim that they run classes/coaching on behalf of IETE. It is reiterated that IETE does not authorise any private institution to run classes on behalf of IETE. Therefore IETE is not responsible for false/spurious Private Coaching Institutes.

CORRESPONDENCE WITH IETE HQ

41.   Important announcements concerning students and examinations will be available on the website www.iete.org and are also published in IETE Journal of Education which is issued twice a year) to the DIPIETE Student members who have paid their subscriptions to date. For other facilities like participation in technical lectures, symposia etc. nearest IETE Centre/Sub-Centre may be contacted. All correspondence must be addressed to the Secretary General of the Institution (by designation and not by name). Remittances shall be made by way of crossed Bank Draft only. Facilities for making payments on-line will also be available shortly. Bank drafts should be drawn in favour of Secretary General, IETE, New Delhi payable at New Delhi .Cash is accepted by hand at Accounts Section at IETE HQ only .Whenever depositing fee by cash, students must obtain receipt and attach photocopy of the same along with application. MONEY ORDER WILL NOT BE ACCEPTED.

CHANGE OF ADDRESS

42.   Students are advised to intimate their change of address to IETE HQ immediately, quoting their Membership Number, complete address with Pin Code.

Students are advised to provide their e-mail ID, telephone no and mobile no with their latest address in all correspondence.

43.   **MISCELLANEOUS INFORMATION**

- Acknowledgement for receipt of enrollment forms and declaration of exam results are given through SMS and Web.

- **All students' related information is displayed on web site www.iete.org. and**

- Students are advised to visit our web site regularly.

- **All payment of fees can also be made on-line. For details refer our website www.iete.org.**

Scheme and Structure for the Programme of DIPIETE in Electronics & Telecommunication

<table>
<tr><td colspan="11" align="center">SECTION A</td></tr>
<tr><td colspan="5" align="center">Part - I</td><td colspan="6" align="center">Part - II</td></tr>
<tr><td rowspan="2">Sl No</td><td rowspan="2">Sub Code</td><td rowspan="2">Title</td><td colspan="2" align="center">Examination Credits</td><td rowspan="2">Sl No</td><td rowspan="2">Sub Code</td><td rowspan="2">Title</td><td colspan="2" align="center">Examination Credits</td></tr>
<tr><td>Theory</td><td>Practicals</td><td>Theory</td><td>Practicals</td></tr>
<tr><td>1</td><td>DE 101</td><td>Engineering Mathematics - I *</td><td>4</td><td>-</td><td>1</td><td>DE 105</td><td>Engineering Mathematics – II *</td><td>4</td><td>-</td></tr>
<tr><td>2</td><td>DE 102</td><td>Fundamentals of Electrical & Electronics *</td><td>4</td><td>-</td><td>2</td><td>DE 106</td><td>Analog Electronics</td><td>4</td><td>-</td></tr>
<tr><td>3</td><td>DE 103</td><td>Computer Fundamentals & C Programming *</td><td>4</td><td>-</td><td>3</td><td>DE 107</td><td>Networks & Transmission Lines</td><td>4</td><td>-</td></tr>
<tr><td>4</td><td>DE 104</td><td>Electronic Engineering Materials</td><td>4</td><td>-</td><td>4</td><td>DE 108</td><td>Logic Design *</td><td>4</td><td>-</td></tr>
<tr><td>5</td><td>DE 141</td><td>C Programming Lab</td><td>-</td><td>4</td><td>5</td><td>DE 142</td><td>Analog Electronics Lab</td><td>-</td><td>4</td></tr>
<tr><td colspan="3" align="right">Total Credits</td><td>16</td><td>4</td><td colspan="3" align="right">Total Credits</td><td>16</td><td>4</td></tr>
</table>

All the students have to pass a course in "Communication Skills & Technical Writing" which will not be counted for the overall percentage

<table>
<tr><td>DE 137</td><td>Communication Skills & Technical Writing(Oral)*</td><td>20</td><td rowspan="2">Marks</td></tr>
<tr><td>DE 138</td><td>Communication Skills & Technical Writing(Written)*</td><td>80</td></tr>
</table>

SECTION B										

Part - I and **Part - II**

SI No	Sub Code	Title	Theory	Practicals	SI No	Sub Code	Title	Theory	Practicals
			Examination Credits					Examination Credits	
1	DE 109	Electronic Instrumentation & Measurements	4	-	1	DE 114	Digital Communications	4	-
2	DE 110	Power Electronics	4	-		DE 115	Embedded Systems	4	-
3	DE 111	Microprocessors & Microcontrollers*	4	-	2		Elective – I (from Group A)	4	-
4	DE 112	Analog Communications	4	-	3		Elective – II (from Group B)	4	-
5	DE 113	Telecommunication Switching Systems	4	-	4	DE 144	Analog & Digital Communications Lab	-	4
6	DE 143	Logic Design Lab	-	4	5	DE 135	Project Work	-	8
					6	DE 136	Seminar	-	4
		Total Credits	20	4			**Total Credits**	16	16

GROUP A Students can chose any one of the following elective subjects		
Students can choose any one of the following as an Elective I subject		
SI No	Sub Code	Title
1	DE 116	Wireless & Mobile Systems
2	DE 117	Television Engineering and Broadcasting
3	DE	Data Communication & Networks **

GROUP B Students can chose any one of the following elective subjects		
Students can choose any one of the following as an Elective II subject		
SI No	Sub Code	Title
1	DE 120	Control Engineering
2	DE 121	Verilog HDL and VLSI Design
3	DE	Object Oriented Programming with C++ **

	118	
4	DE 119	Advanced Communication Systems

	122	
4	DE 123	Java and Web Programming **

Note:

* Common to ET / CS Streams

** Syllabus same as that of core subject for DIPIETE - CS

OUTLINE SYLLABUS
Appendix 'B'
DIPIETE (ELECTRONICS & TELECOMMUNICATION

DE 101   ENGINEERING MATHEMATICS – I
- Differential Calculus
- Integral Calculus
- Linear Algebra
- Differential Equations
- Algebra
- Trigonometry
- Coordinate Geometry

DE 102   FUNDAMENTALS OF ELECTRICAL AND ELECTRONICS
- Electromagnetism
- DC Circuits and AC Circuits
- DC Motor
- Transformer and Induction Motor
- Basic Semiconductor and PN Junctions
- Semiconductor Diodes
- Diode Applications
- Bipolar Junction Transistor
- BJT Biasing
- Amplifiers and Oscillators

DE 103   COMPUTER FUNDAMENTALS & C PROGRAMMING
- Computer Basics
- Data Representation
- Input / Output Units
- Computer Languages
- Operating Systems
- Microcomputers
- Computer Networks
- Constants, Variables and Data Types
- Operators and Expressions
- Managing Input and Output Operations
- Decision Making and Branching
- Decision Making and Looping

- Arrays
- User – Defined Functions
- Pointers
- File Management

DE 104   ELECTRONIC ENGINEERING MATERIALS
- Conducting Materials
- Dielectric Properties of Materials in Static Fields
- Dielectric Materials in Alternating Fields
- Magnetic Materials
- Semi conducting Materials
- Semi conducting Devices
- Materials for Electronic Components
- Fabrication of Semiconductors

DE 104   C PROGRAMMING LAB

DE 105   ENGINEERING MATHEMATICS – II
- Differential Calculus
- Integral Calculus
- Complex Numbers
- Vector Algebra
- Linear Differential Equations of Higher order
- Infinite Series
- Laplace Transforms

DE 106   ANALOG ELECTRONICS
- Integrated Circuit Fabrication
- AC Analysis of BJT Circuits
- Field Effect Transistors
- Power Amplifiers
- Optoelectronic Devices
- Operational Amplifier
- Operational Amplifier Characteristics

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- Operational Amplifier Applications
- Comparators and Waveform Generators
- 555 Timer Applications
- Voltage Regulators
- DAC and ADC

DE 107   NETWORKS AND TRANSMISSION LINES
- Laplace Transformation
- Network Theorems
- Network Parameters
- Resonance Circuits and Selectivity
- Transmission Lines
- Open and Short-Circuited Lines
- Line with any Termination
- Ultra High Frequency Lines
- Filters and Attenuators

DE 108   LOGIC DESIGN
- Introductory Concepts
- Number Systems and Codes
- Describing Logic Circuits
- Combinational Logic Circuits
- Flip-Flops and Applications
- Digital Arithmetic Operations and Circuits
- MSI Logic Circuits
- Flip-Flops and Applications
- Counters and Registers
- Synchronous Counter Design
- Memory Devices

DE 142   ANALOG ELECTRONICS LAB

DE109   ELECTRONIC INSTRUMENTATION AND MEASUREMENTS
- Measurement Fundamentals
- Measurement of Resistance, Inductance and capacitance

- Instruments to measure Current and Voltages
- Digital measuring Instruments
- Signal Generators and Oscilloscope
- Signal Analysis Instruments and R.F Power measurement Techniques
- Recorders
- Transducers and Data Acquisition System

DE 110   POWER ELECTRONICS
- Power Electronics
- Power Diodes
- Power Transistors
- Thyristor Devices
- Single-Phase Controlled Rectifiers
- Three-Phase Controlled Rectifiers
- DC Choppers
- Inverters
- AC Voltage Controller
- Static Switches

DE 111   MICORPROCESSORS & MICROCONTROLLERS
- Introduction to Microprocessors
- Assembly Language Programs
- Interrupts in 8085
- Programs Using Interface Modules
- Intel 8259A- Programmable Interrupt Controller
- Intel 8253 – Programmable Interval Timer
- 8051 Microcontroller

DE 112   ANALOG COMMUNICATIONS
- Introduction to Communication Systems
- Noise
- Amplitude Modulation

- Single-Sideband Techniques
- Frequency Modulation
- Radio Receivers
- Radiation and Propagation of Waves
- Waveguides, Resonators and Components
- Antennas
- Pulse Communications
- Broadband Communications Systems

DE 111 TELECOMMUNICATION SWITCHING SYSTEMS

- Switching Systems
- Telecommunications Traffic
- Switching Networks
- Time Division Switching
- Control of Switching Systems
- Signaling
- Packet Switching
- Networks

DE 143 LOGIC DESIGN LAB

DE 114 DIGITAL COMMUNICATIONS

- Introduction
- Fundamental Limits on Performance
- Sampling Process
- Waveform Coding Techniques
- Base-Band Shaping for Data Transmission
- Digital Modulation Techniques
- Detection and Estimation
- Spread Spectrum Modulation
- Applications

DE115 EMBEDDED SYSTEMS

- Introduction to Embedded Systems
- Custom Single Purpose Processors: Hardware
- General Purpose Processors: Software
- Standard Single-Purpose Processors: Peripherals
- Memory
- Interfacing
- Introduction to Real Time Operating Systems
- Case Studies of Programming with RTOS

ELECTIVE - I
ELECTIVE - II

DE 144 ANALOG & DIGITAL COMMUNICATIONS LAB

DE 135 PROJECT WORK:

DE 136 SEMINAR

DE116 WIRELESS & MOBILE SYSTEMS

- Introduction
- Channel Coding and Error Control
- Mobile Radio Propagation
- Cellular Concept
- Multiple Radio Access
- Multiple Division Techniques for traffic Channels
- Traffic Channel Allocation
- Mobile Communication Systems
- Existing Wireless Systems
- Satellite Systems
- Ad Hoc Networks
- Sensor Networks
- Recent Advances
- Wireless LANs, MANs and PANs

DE 117   TELEVISION ENGINEERING & BROADCASTING

- Elements of Television System, Analysis, Synthesis of Television Pictures and Composite Video Signal
- Signal Transmission and Channel Bandwidth
- Television Picture Tubes and Camera Tubes
- Basic Television Broadcasting and Reception
- Video Section
- Sound Section
- Vertical and Horizontal Deflection Circuits
- Colour Television
- Television Applications

DE 118   DATA COMMUNICATION & NETWORKS

- Data Communications, Data Networking, and the Internet
- Data Transmission
- Transmission Media
- Protocol Architecture, TCP/IP, and Internet-Based Applications
- Signal Encoding Techniques
- Digital Data Communication Techniques
- Data Link Control Protocols
- Multiplexing
- Circuit Switching and Packet Switching
- Routing in Switched Networks
- Congestion Control in Data Networks
- Local Area Network Overview
- High-Speed LANs
- Wireless LANs
- Internetwork Protocols
- Internetwork Operation
- Transport Protocols

DE 119   ADVANCED COMMUN ICATION SYSTEMS

- Optical Fiber Transmission Media
- Cellular Telephone Concepts
- Cellular Telephone Systems
- Introduction to Data Communications and Networking
- Fundamental Concepts of Data Communications
- Data-Link Protocols and Data Communication Networks
- Satellite Communications
- Satellite Multiple Accessing Arrangements

DE 120   CONTROL ENGINEERING

- Modeling of Systems
- Block Diagrams and Signal Flow Graphs
- Feedback Characteristics of Control Systems
- Control Systems and Components
- Time Response Analysis
- Concepts of Stability
- Root Locus Technique
- Frequency Domain Analysis
- Stability in Frequency Domain
- Nyquist Analysis
- Compensation

DE 121   VERILOG HDL AND VLSI DESIGN

- Overview of Digital Design with Verilog HDL
- Gate Level and Dataflow Modeling
- Behavioral Modeling
- Tasks and Functions
- A Review of Microelectronics and an Introduction to MOS Technology
- Basic Electrical Properties of MOSA Circuits
- MOS Circuit Design Processes

- Practical Aspects and Testability

DE 122   OBJECT ORIENTED PROGRAMMING WITH C++

- Object-oriented Programming Concepts
- Language Constructs
- Advanced Constructs
- Classes in C++
- Member Functions
- Operator Overloading
- Constructors and Destructors
- Inheritance
- Multiple Inheritance
- Polymorphism
- Handling Exceptions
- Templates
- C++ I/O

DE 123   JAVA & WEB PROGRAMMING

- Java Evolution
- Overview of Java Language
- Constants, Variables, and Data Types
- Operators and Expressions
- Decision Making and Branching
- Decision Making and Looping
- Classes, Objects and Methods
- Arrays, Strings and Vectors
- Interfaces: Multiple Inheritance
- Packages: Putting Classes Together
- Multithreaded Programming
- Managing Errors and Exceptions
- Managing Input/Output Files in Java
- Web Basics and Overview
- Creating Web Pages: XHTML
- Advanced XHTML
- Design Basics
- Information Architecture and Page Layout
- CSS, Forms and form Processing

- Client –Side Scripting: JavaScript

DE 137 (ORAL) COMMUNICATION SKILLS AND DE 138 (WRITTEN) TECHNICAL WRITING

- Communication: Its Types and Significance
- Grammar
- Syntax
- Reading Skills
- Writing Skills
- Listening Skills
- Speaking Skills
- Technical Report and Scientific Report
- Campus Recruitment, Interview and Group Discussion
- Meeting Negotiations, Phone and Mobile Phone Skills

Scheme and Structure for the Programme of DIPIETE in Computer Science & Engineering

SECTION A										
Part - I					**Part - II**					
SI No	Sub Code	Title	Examination Credits		SI No	Sub Code	Title	Examination Credits		
			Theory	Practicals				Theory	Practicals	
1	DC 101	Engineering Mathematics – I *	4	-	1	DC 105	Engineering Mathematics – II *	4	-	
2	DC 102	Fundamentals of Electrical & Electronics *	4	-	2	DC 106	Object Oriented Programming with C++	4	-	
3	DC 103	Computer Fundamentals & C Programming *	4	-	3	DC 107	Computer Organization	4	-	
4	DC 104	Data Structures	4	-	4	DC 108	Logic Design *	4	-	
5	DC 141	C & Data Structures Lab	-	4	5	DC 142	OOPS Lab	-	4	
		Total Credits	16	4			**Total Credits**	16	4	

All the students have to pass a course in "Communication Skills & Technical Writing" which will not be counted for the overall percentage

DC 137	Communication Skills & Technical Writing(Oral)*	20	Marks
DC 138	Communication Skills & Technical Writing(Written)*	80	Marks

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SECTION B									
Part - I					**Part - II**				
SI N o	Sub Code	Title	Examination Credits		SI N o	Sub Code	Title	Examination Credits	
			Theor y	Practical s				Theor y	Practical s
1	DC 109	Analysis & Design of Information Systems	4	-	1	DC 114	Data Communication & Networks	4	-
2	DC 110	Operating Systems & Systems Software	4	-	2	DC 115	Software Engineering	4	-
3	DC 111	Microprocessors & Microcontrollers *	4	-	3		Elective – I(from Group A)	4	-
4	DC 112	Database Management Systems	4	-	4		Elective – II(from Group B)	4	-
5	DC 113	Java & Web Programming	4	-	5	DC 144	DBMS Lab	-	4
6	DC 143	Java & Web Programming Lab	-	4	6	DC 135	Project Work	-	8
					7	DC 136	Seminar	-	4

Total Credits	20	4	**Total Credits**	16	16

GROUP A Students can chose any one of the following elective subjects		
Students can choose any one of the following as an Elective I subject		
Sl No	**Sub Code**	**Title**
1	DC 116	Computer Graphics & Visualization
2	DC 117	C# & .Net
3	DC 118	Internet Applications
4	DC 119	Cloud Computing

GROUP B Students can chose any one of the following elective subjects		
Students can choose any one of the following as an Elective II subject		
Sl No	**Sub Code**	**Title**
1	DC 120	Software Testing
2	DC 121	Embedded Systems **
3	DC 122	Mobile Applications Development
4	DC 123	Network Management

Note:

* Common to ET / CS Streams

** Syllabus same as that of core subject for DIPIETE - ET

OUTLINE SYLLABUS
Appendix 'D'
DIPIETE (COMUTER SCIENCE & ENGINEERING)

DC 101   ENGINEERING MATHEMATICS – I
- Differential Calculus
- Integral Calculus
- Linear Algebra
- Differential Equations
- Algebra
- Trigonometry
- Coordinate Geometry

DC 102   FUNDAMENTALS OF ELECTRICAL AND ELECTRONICS
- Electromagnetism
- DC Circuits and AC Circuits
- DC Motor
- Transformer and Induction Motor
- Basic Semiconductor and PN Junctions
- Semiconductor Diodes
- Diode Applications
- Bipolar Junction Transistor
- BJT Biasing
- Amplifiers and Oscillators

DC 103   COMPUTER FUNDAMENTALS & C PROGRAMMING
- Computer Basics
- Data Representation
- Input / Output Units
- Computer Languages
- Operating Systems
- Microcomputers
- Computer Networks
- Constants, Variables and Data Types
- Operators and Expressions
- Managing Input and Output Operations
- Decision Making and Branching
- Decision Making and Looping

- Arrays
- User – Defined Functions
- Pointers
- File Management

DC 104   DATA STRUCTURES
- Advanced C Concepts
- Recursion
- Structures, Union and Files
- Arrays, Searching and Sorting
- Stacks and Queues
- Liked Lists
- Trees
- Graphs

DC 141   C& DATA STRUCTURES LAB

DC 105   ENGINEERING MATHEMATICS – II
- Differential Calculus
- Integral Calculus
- Complex Numbers
- Vector Algebra
- Linear Differential Equations of Higher order
- Infinite Series
- Laplace Transforms

DC 106   OBJECT ORIENTED PROGRAMMING WITH C++
- Object-Oriented Programming Concepts
- Language Constructs
- Advanced Constructs
- Classes in C++
- Member Functions
- Operator Overloading
- Constructors and Destructors
- Inheritance

- Multiple Inheritance
- Polymorphism
- Handling Exceptions
- Templates
- C++ I/O

DC 107   COMPUTER ORGANIZATION
- Basic Structure of Computers
- Machine Instructions and Programs
- Input/Output Organization
- Memory System
- Arithmetic
- Basic Processing Unit

DC 108   LOGIC DESIGN
- Introductory Concepts
- Number Systems and Codes
- Describing Logic Circuits
- Combinational Logic Circuits
- Flip-Flops and Applications
- Digital Arithmetic Operations and Circuits
- MSI Logic Circuits
- Flip-Flops and Applications
- Counters and Registers
- Synchronous Counter Design
- Memory Devices

DC 142   OOPS LAB

DC 109   ANALYSIS & DESIGN OF INFORMATION SYSTEMS
- The Context of Systems Analysis & Design Methods
- Information System Building Blocks
- Information Systems Development
- Systems Analysis
- Modeling System Requirements with Use Cases
- Data Modeling and Analysis

- Object-Oriented Analysis and Modeling Using the UML
- Systems Design
- User-Interface Design
- Object-Oriented Design and Modeling Using the UML
- Systems Construction and Implementation
- Systems Operations and Support

DC 110   OPERATING SYSTEMS & SYSTEMS SOFTWARE
- Evolution of OS Functions
- Processes
- Scheduling
- Deadlocks
- Process Synchronization
- File Systems
- Memory Management
- Language Processors
- Data Structures for Language Processing
- Scanning and Parsing
- Macros and Macro Processors
- Linkers
- Assemblers
- Compilers and Interpreters

DC 111   MICORPROCESSORS & MICROCONTROLLERS
- Introduction to Microprocessors
- Assembly Language Programs
- Interrupts in 8085
- Programs Using Interface Modules
- Intel 8259A- Programmable Interrupt Controller
- Intel 8253 – Programmable Interval Timer
- 8051 Microcontroller

DC 112   DATABASE MANAGEMENT SYSTEMS
- Databases and Database Users

- Database System - Concepts and Architecture
- Data Modeling Using the Entity-Relationship Model
- The Enhanced Entity-Relationship (EER) Model
- The Relational Data Model and Relational Database Constraints
- The Relational Algebra and Relational Calculus
- Relational Database Design By ER - to - Relational Mapping
- SQL-99: Schema Definition, Constraints, Queries and Views
- Relational Database Design
- Transaction Processing Concepts

DC 113   JAVA & WEB PROGRAMMING
- Java Evolution
- Overview of Java Language
- Constants, Variables, and Data Types
- Operators and Expressions
- Decision Making and Branching
- Decision Making and Looping
- Classes, Objects and Methods
- Arrays, Strings and Vectors
- Interfaces: Multiple Inheritance
- Packages: Putting Classes Together
- Multithreaded Programming
- Managing Errors and Exceptions
- Managing Input/Output Files in Java
- Web Basics and Overview
- Creating Web Pages: XHTML
- Advanced XHTML
- Design Basics
- Information Architecture and Page Layout
- CSS, Forms and Form Processing
- Client-Side Scripting: Javascript

DC 143   JAVA & WEB PROGRAMMING LAB

DC 114   DATA COMMUNICATION & NETWORKS
- Data Communications, Data Networking, and the Internet
- Data Transmission
- Transmission Media
- Protocol Architecture, TCP/IP, and Internet-Based Applications
- Signal Encoding Techniques
- Digital Data Communication Techniques
- Data Link Control Protocols
- Multiplexing
- Circuit Switching and Packet Switching
- Routing in Switched Networks
- Congestion Control in Data Networks
- Local Area Network Overview
- High-Speed LANs
- Wireless LANs
- Internetwork Protocols
- Internetwork Operation
- Transport Protocols

DC 115   SOFTWARE ENGINEERING
- Socio-Technical Systems
- Software Processes
- Project Management
- Software Requirements
- Requirements Engineering Processes
- System Models
- Rapid Software Development
- Formal Specification
- Architectural Design
- Distributed Systems Architectures
- Objected-Oriented Design

- Software Reuse
- Component-Based Software Engineering
- User Interface Design
- Verification and Validation
- Software Testing
- Quality Management
- Configuration Management

ELECTIVE - I

ELECTIVE - II

DC 144   DBMS LAB

DC 135   PROJECT WORK:

DC 136   SEMINAR

DC 116   COMPUTER GRAPHICS & VISUALIZATION
- A Survey of Computer Graphics
- Overview of Graphics Systems
- Graphics Output Primitives
- Attributes of Graphics Primitives
- Geometric Transformations
- Viewing
- Visible-Surface Detection Methods
- Illumination Models and Surface-Rendering Methods
- Interactive Input Methods and Graphical User Interfaces
- Computer Animation

DC 117   C# & .NET
- Introducing C# and the .Net Platform
- The Philosophy of .Net
- Building C# Applications
- Core C# Programming Constructs
- Defining Encapsulated Class Types
- Understanding Inheritance and Polymorphism

- Understanding Structured Exception Handling
- Understanding Object Lifetime
- Working with Interfaces

DC 118   INTERNET APPLICATIONS
- Hypertext Markup Language
- More HTML
- Cascading Stylesheets
- An Introduction to Javascript
- Objects in Javascript
- Dynamic HTML with Javascript
- Programming in PERL 5
- CGI Scripting
- Building Web Applications with PERL
- An Introduction to PHP
- Building Web Applications with PHP
- XML: Defining Data for Web Applications

DC 119   CLOUD COMPUTING
- Cloud Computing Basics
- Your Organization and Cloud Computing
- The Business Case for Going to the Cloud
- Cloud Computing Technology
- Cloud Computing at Work
- Migrating to the Cloud
- Best Practices and the Future of Cloud Computing

DC 120   SOFTWARE TESTING
- Introduction
- Testing and Levels
- Transaction Flow Testing
- Data Flow Testing
- Domain Testing
- Paths, Path Products
- Logic Based Testing
- Testing of Object-Oriented Systems

DC 121   EMBEDDED SYSTEMS
- Introduction to Embedded Systems
- Custom Single Purpose Processors: Hardware
- General Purpose Processors: Software
- Standard Single-Purpose Processors: Peripherals
- Memory
- Interfacing
- Introduction to Real Time Operating Systems
- Case Studies of Programming with RTOS

DC 122   MOBILE APPLICATION DEVELOPMENT
- Introduction to Android
- Activities and Intents
- Introducing Android User Inferface
- Designing User Interface Using Views
- Displaying Pictures and Menus with Views
- Data Persistence
- Content Providers
- Messaging and Networking
- Location Based Services
- Android Services
- Hardware Sensors

DC 123   NETWORK MANAGEMENT
- Data Communications and Network Management Overview
- SNMP and Network Management Basic Foundations: Standards, Models and Language

- SNMPv1 Network Management: Organization and Information Models

- SNMPv1 Network Management: Communication and Functional Models
- SNMP Management: RMON
- Network Management Tools, System and Engineering
- Network Management Applications
- Broadband Network Management

DC 137 (ORAL) DC 138 (WRITTEN) COMMUNICATION SKILLS AND TECHNICAL WRITING
- Communication: Its Types and Significance
- Grammar
- Syntax
- Reading Skills
- Writing Skills
- Listening Skills
- Speaking Skills
- Technical Report and Scientific Report
- Campus Recruitment, Interview and Group Discussion
- Meeting Negotiations, Phone and Mobile Phone Skills

DETAILED SYLLABUS

Introduction

Most of the Student Members of the IETE are working engineers/ technicians/science graduates and under graduates. Thus, due to occupational reasons and other factors these students are deprived of a formal education and therefore have to learn the subjects through self-study only.

Review of Syllabus

2.   IETE periodically reviews the syllabi of DIPIETE and the aim of these reviews is not only to renovate and modernize the contents but also to make them contemporary. The syllabi for both Electronics & Telecommunications (ET) and Computer Science & Engineering (CS) streams have been reviewed recently.

3.   Keeping the above aspects in view and based on feed backs/suggestions received from the students, this syllabus has been formulated to meet the following criteria:-
  • The Syllabus should cater to the technological advancements.
  • The textbooks should be available and affordable to the students.
  • In the absence of a formal coaching to the students, there should be a reasonable correlation between the topics in a subject and the textbooks.

Salient Features

4.   Some salient features of the syllabus are:-
  • Each subject has a code preceding it (Viz DE101 and DC101 are codes for Mathematics I in ET & CS streams respectively).
  • In order to guide the student and to enable him/her to prepare well for an examination, each subject is divided into 8 units and each unit has the course contents to be covered in 7 or 8 hours.
  • The textbooks have been numbered in Roman Numerical (viz I, II, III)
  • The chapters and sections are mentioned inside the bracket e.g. I (2.1) would indicates chapter 2 and section 1 of textbook I.

Scheme of the Examination

5.   For all theory subjects the Question Paper contains
  • 10 objective questions for 20 marks covering the complete syllabus
  • 8 questions are from each unit and each question carries 16 marks.

6.   Regular feed back from the students, academicians, corporate members and professionals is requested to keep this syllabus updated, so that our students keep abreast of latest technological changes. Though every effort has been made to identify standard and best textbooks for each subject, we welcome suggestions on availability of better and cheaper textbooks.

DC 101   **ENGINEERING MATHEMATICS – I**

UNIT I
DIFFERENTIAL CALCULUS   **08 hrs**
Limits; Left hand and Right hand Limits; Continuity of functions; Evaluation of simple limits; Differentiability of a Function; Geometrical Meaning of derivative; Standard Results; Logarithmic Differentiation; Differentiation of Implicit function; Parametric Equations; Successive differentiation; Calculation of nth derivative of standard functions; Leibnitz theorem for the nth derivative of the product of two functions; Applications of differentiation –Increasing and Decreasing functions; Maxima and Minima.
I (1.6, 1.8, 1.9, 1.10, 2.3, 2.25, 2.26, 2.27, 2.30, 2.31, 2.37, 4.1, 4.2)

UNIT II
INTEGRAL CALCULUS   **07 hrs**
Introduction; Definitions; Hyperbolic functions; Standard results – Indefinite Integrals; Integration by the Method of Substitution; Standard formula; Integration by parts; Integration by Partial Fraction Method; Integration of Irrational Functions; Integration of Trignometric functions; Definite Integrals - Introduction; Theorems on Definite Integrals.
I (21.1, 21.2, 21.4, 21.5, 22.1, 22.2, 23.1, 24.1, to 24.7, 25. 1 to 25.6, 26.1 to 26.3, 28.1, 28.2)

UNIT III
MATRICES   **08 hrs**
Definition of Matrices; various types of Matrices, Addition of Matrices; Properties of Matrix addition; subtraction of Matrices, sclar Multiple of a Matrix; Multiplication of Matrices; Adjoint of square Matrix; Inverse of a Matrix; Elementary Transformations; To compute the inverse of a Matrix using Gauss Jordan Method; Normal form, Rank of a Matrix, Types of Linear equations; Consistency of system of Linear equations; Linear Dependence and Independence of Vectors
I (19.1 TO 19.23)

UNIT IV
DIFFERENTIAL EQUATIONS   **07 hrs**
Definition of Differential Equation; Order and Degree of a Differential Equation; Formation of Differential Equation; Solution of First order and First Degree Differential Equation; Solution by the Method of Variable Separable; Homogeneous Differential Equation; Reducible to Homogeneous Differential Equation; Linear Differential Equation of 1st Order; Equations Reducible to Linear Form; Linear Differential Equation in x; Exact Differential Equation; Equations Reducible to Exact Equations, Application of Differential equation
I (36.1 TO 36.13)

UNIT V
ALGEBRA   **07 hrs**
Principles of Mathematical Induction; Permutation and Combinations; Binomial Theorem (for positive integral index); Arithmetic Progressions; Geometric Progressions.
II (Unit II Chapters 14, 18, 19, 20, 21, 22)

UNIT VI
TRIGONOMETRY   **07 hrs**
Introduction; Measurement of Angles; Trigonometric ratios; Trigonometric functions; Trigonometric functions of Sum and Difference of two angles; Transformation Formulae; Trigonometric functions of Multiple and sub-multiple angles; Conditional Identities and Equations; Graphs of Trignometric Functions; Trignometric Equations; Relations between the Sides and the Trignometric Ratios of the Angles of a Triangle.

II (Unit I Chapters 4, 5, 6, 7, 8, 9, 10, 11, 12)

UNIT VII

CO-ORDINATE GEOMETRY   **08 hrs**
Introduction, Distance formula, Area of a Triangle, Condition for collinearity of three points, Section formulae, Centroid of a triangle, Incentre of a triangle, Straight lines, Parallel and Perpenidcular lines, Angle between two lines, Condition for lines to be Parallel and Perpenidcular, Intersection of lines.
II (Chapter 24 &25; 24.1 to 24.7, 25.1 to 25.9, 25.17 to 25.20)

UNIT VIII

CO-ORDINATE GEOMETRY (CONTINUED)   **08 hrs**
Conic sections: Introduction, Circles, Concetric Circles, Parabola, Equation of a Parabola in the general form, Ellipse, Equation of an Ellipse in the general and standard form, Hyperbola, Equation of Hyperbola in its general and standard form.
II (Chapter 26;26.1 to 26.5,26.7,26.9,26.10 to 26.13,26.15 to 26.17,26.22 to 26.24)

Text Books:
 I. Engineering Mathematics, H. K. Dass, S, Chand and Company Ltd, New Delhi, 2010.
 II. A Text book of Comprehensive Mathematics Class XI, Parmanand Gupta, Laxmi Publications (P) Ltd, New Delhi.

Reference Book:
1. Higher Engineering Mathematics, B. S. Grewal, 41st Edition, Khanna Publishers, Delhi.

Note: Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 16 marks.

DC 102   FUNDAMENTALS OF ELECTRICAL AND ELECTRONICS

PART A
FUNDAMETALS OF ELECTRICAL ENGINEERING
UNIT I

ELECTROMAGNETISM   **07 hrs**
Coulomb's Law of Electrostatics; Capacitor Charging and Discharging; Magnetic Field; Force on Current Carrying Conductor in a Magnetic Field; MMF; Magnetic Field Strength; Reluctance; Laws of Magnetic Circuits; Calculation of Ampere-Turns; Magnetization Curve; Comparison of Electric and Magnetic Circuits; Faraday's Law; Statically Induced EMF.
I (2.3, 2.8, 2.9, 3.2, 3.9, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 5.2, 5.6)

UNIT II

DC CIRCUITS AND AC CIRCUITS   **08 hrs**
Ohm's Law; Kirchoff's Laws; Superposition Theorem; Thevenin's Theorem; Norton's Theorem; Production of AC Voltage; RMS Value; Phasor Representation; Steady State Analysis of R, L, C, RL, RC, RLC circuits; Power in AC Circuits; Generation of Three Phase EMF; Phase Sequence; Star and Delta Connection; Relationship Between Line and Phase Quantities; Power in Three Phase System.
I (1.5, 1.6, 1.8, 1.9, 1.10, 6.2, 6.4, 6.9, 6.12, 6.13, 6.14, 7.2, 7.3, 7.4, 7.5, 9.2, 9.3, 9.5, 9.6, 9.7, 9.8, 9.9)

UNIT III

DC MOTOR   **08 hrs**
Principle of Operation; Construction; EMF Equation; Types of DC Motor (Shunt and Series Motor);
Torque Equation; Motor Characteristic Curves; Necessity of Starter; Speed Control of Shunt Motor-
Armature Control and Field Control.
I (17.3, 17.4, 17.6, 17.9, 19.2, 19.4, 19.5, 19.6)

UNIT IV

TRANSFORMER AND INDUCTION MOTOR   **07 hrs**
Transformer: Principle of Operation; EMF Equation of Transformer; Three Phase Induction Motor:
Construction; Rotating Magnetic Field; Principle of Operation; Slip.
I (14.3, 14.6, 23.2, 23.3, 23.4, 23.8)

PART B: FUNDAMETALS OF ELECTRONICS

UNIT V

BASIC SEMICONDUCTOR AND PN JUNCTION THEORY   **04 hrs**
Introduction; Atomic Theory; Conduction in Solids; Conductors, Semiconductors and Insulators; n-
type and p-type Semiconductors; The p-n Junction; Biased Junctions.
II (1.1, 1.2, 1.3, 1.4, 1.5, 1.6)
SEMICONDUCTOR DIODES   **04 hrs**
Introduction; p-n Junction Diode; Characteristics and Parameters; Diode Approximations; DC Load
Line Analysis; Temperature Effects; AC Equivalent Circuits; Zener Diodes.
II (2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.9)

UNIT VI

DIODE APPLICATIONS   **07 hrs**
Introduction; Half Wave Rectification; Full Wave Rectification; Half Wave Rectifier DC Power Supply;
Full Wave Rectifier DC Power Supply; Power Supply Performance; Zener Diode Voltage Regulators;
Series Clipping Circuits; Shunt Clipping Circuits; Clamping Circuits; DC Voltage Multiplexers.
II (3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 3.10)

UNIT VII

BIPOLAR JUNCTION TRANSISTORS   **04 hrs**
Transistor Operation; Transistor Voltages and Currents; Amplification; Common Base Characteristics;
Common Emitter and Common Collector Characteristics.
II (4.1, 4.2, 4.3, 4.4, 4.5, 4.6)
BJT BIASING   **04 hrs**
DC Load Line and Bias Point Base Bias; Collector to Base Bias; Voltage Divider Bias; Comparison of
Basic Bias Circuits; Bias Circuit Design; Thermal Stability of Bias Circuits (Qualitative Discussions
Only).
II (5.1, 5.2, 5.3, 5.4, 5.5, 5.7, 5.9)

UNIT VIII

AMPLIFIERS AND OSCILLATORS   **07 hrs**
Decibels and Half Power Points; Single Stage CE Amplifier; Capacitor Coupled Two Stage CE
Amplifier (Qualitative Discussions Only); Series Voltage Negative Feedback (Qualitative
Discussions); Additional Effects of Negative Feedback (Qualitative); The BJT Phase Shift Oscillators;
BJT Colpitts and Hartley Oscillator (Qualitative).
II (8.2, 12.1, 12.3, 13.1, 13.7, 16.1, 16.2, 16.3)

Text Books:

I. V.N. Mittle and Arvind Mittal, 'Basic Electrical Engineering', Tata McGraw-Hill Publishing Company Limited, 2nd edition, 2006.
II. Electronic Devices and Circuits, Fourth Edition, David A Bell, PHI (2006).

Reference Books:
1. D.P. Kothari and I.J. Nagrath, 'Basic Electrical Engineering', Tata McGraw-Hill Publishing Company Limited, 2nd edition, 2002.
2. I.J. Nagrath and D.P. Kothari, 'Electric Machines', Tata McGraw-Hill Publishing Company Limited.
3. Electronic Devices and Circuits, I.J. Nagrath, PHI, 2007.

Note: Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 16 marks, selecting atleast **TWO** questions from each part.

DC 103　　　　　**COMPUTER FUNDAMENTALS & C PROGRAMMING**

PART A: COMPUTER FUNDAMENTALS
1　**UNIT I**
　　1.1　COMPUTER BASICS　　　　　　　　　　　　　　　**07 hrs**
Algorithms, A Simple Model of a Computer, Characteristics of Computers, Problem Solving Using Computers
1.2　DATA REPRESENTATION
Representation of Characters in Computers, Representation of Integers, Representation of Fractions, Hexadecimal Representation of Numbers, Decimal to Binary Conversion, Error Detecting Codes
I (1, 2)
2　**UNIT II**
　　2.1　INPUT / OUTPUT UNITS　　　　　　　　　　　　　　**08 hrs**
Description of Computer Input Units, Other Input Methods, Computer Output Units
2.2　COMPUTER LANGUAGES
Why Programming Language? Assembly Language, Higher Level Programming Languages, Compiling High Level Language Program, Some High Level Languages
2.3　OPERATING SYSTEMS
Why Do We Need an Operating System? Personal Computer Operating System, The Unix Operating System
2.4　I (3, 9, 10.1, 10.5, 10.6)
3　**UNIT III**
　　3.1　MICROCOMPUTERS　　　　　　　　　　　　　　　**07 hrs**
An Ideal Microcomputer, An Actual Microcomputer, Memory Systems for Microcomputers, A Minimum Microcomputer Configuration, Evolution of Microcomputers
3.2　COMPUTER NETWORKS
Need for Computer Communication Networks, Internet and the World Wide Web, Local Area Networks
I (11.1to 11.4, 14.1, 14.2, 14.4)
4　**PART B: C PROGRAMMING**
5　**UNIT IV**
　　5.1　CONSTANTS, VARIABLES AND DATA TYPES　　　　　　　**08 hrs**
Introduction, Characters set, C tokens, Keywords and Identifiers, Constants, Variables, Data types, Declaration of variables

5.2 OPERATORS AND EXPRESSIONS

Arithmetic operators, Relational operators, Logical operators, Assignment operators, Increment and Decrement operators, Conditional operator, Bit wise operators, Special operators, Arithmetic expressions, Evaluation of expressions, Precedence of Arithmetic operators, Type conversions in expressions, Operator precedence and associativity

5.3 MANAGING INPUT AND OUTPUT OPERATIONS

Introduction, Reading a character, Writing a character, Formatted Input, Formatted Output
II (2.1 to 2.8, 3.2 to 3.12, 3.14, 3.15, 4)
6   **UNIT V**

6.1 DECISION MAKING AND BRANCHING   07 hrs

Introduction, Decision making with *if* statement, Simple *if* statement, The *if… else* statement, Nesting of *if…. else* statements, The *else….if* ladder, The *switch* statement, The?: operator, The *Goto* statement

6.2 DECISION MAKING AND LOOPING

Introduction, The *while* statement, The *do* statement, The *for* statement, Jumps in Loops.
II (5, 6)
7   **UNIT VI**

7.1 ARRAYS   08 hrs

Introduction, One – dimensional Arrays, Declaration of one – dimensional Arrays, Initialization of one – dimensional Arrays, Two – dimensional Arrays, Initializing two – dimensional Arrays.

7.2 CHARACTER ARRAYS AND STRINGS

Introduction, Declaring and Initializing String Variables, Reading Strings from Terminal, Writing
Strings to Screen, Putting Strings together, Comparison of Two Strings, String-handling Functions
II (7.1 to 7.6, 8.1 to 8.4, 8.6, 8.7, 8.8)
8   **UNIT VII**

8.1 USER – DEFINED FUNCTIONS   07 hrs

Introduction, Need for User – defined Functions, A multi – function program, Elements of User defined Functions, Definition of Functions, Return Values and their Types, Function Calls, Function Declaration, Category of Functions, No Arguments and no Return Values, Arguments but no Return Values, Arguments with Return Values, No Argument but Returns a Value, Functions that Return Multiple Values.
II (9.1 to 9.14)

UNIT VIII

8.2 POINTERS   08 hrs

8.3   Introduction, Understanding Pointers, Accessing the Address of a Variable, Declaring Pointer Variables, Initialization of Pointer Variables, Accessing a Variable through its Pointer, Chain of Pointers, Pointer Expressions, Pointer Increments and Scale Factor, Pointer and Arrays, Pointers and Character Strings, Array of Pointers.

8.4   FILE MANAGEMENT
8.5   Introduction, Defining and Opening a File, Closing a File, Input/Output Operations on Files
8.6   II (11.1 to 11.12, 12.1 to 12.4)

Text Books:
I.   Fundamentals of Computers, V. Rajaraman, Fifth Edition, PHI, 2011
II. Programming in ANSI C, E. Balagurusamy, 5th Edition, Tata McGraw Hill, 2011

Reference Book:
1. Computer Science – A Structured Programming Approach Using C, Behrouz A. Forouzan, Richard F. Gilberg, 3rd Edition, CENGAGE Learning, 2007
    .

Note: Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 16 marks, selecting **TWO** questions from Part A and **THREE** from Part B.

DC 104   DATA STRUCTURES

UNIT I

ADVANCED C CONCEPTS   08 hrs
Storage of Variables – Storage, External References, Register Variables, Scope of Variables, Further Scope of Variables, Memory Allocation – Dynamic Memory Allocations.
RECURSION
Recursion, Stack Overheads in Recursion, Writing a Recursive Function.
I (11, 12, 13)

UNIT II

STRUCTURES, UNION, AND FILES   07 hrs
Structures, Complex Structure Definitions, Memory Allocation to Structure, Programming with Structures, Structure Pointers, Union, The Concept of Files, Direct Access Files.
I (15, 16, 17)

UNIT III

ARRAYS, SEARCHING AND SORTING   07 hrs
Arrays, Application of arrays, Manipulations on the list implemented using an array, Transpose of a matrix, Bubble sort, Binary search, Merge sort, Implementation of heaps, Heap sort, Quick sort.
I (18 (Selected topics))

UNIT IV

STACKS AND QUEUES   08 hrs
The concept of stack and queues, Stacks, Applications of stacks, Queues, Implementation of queues, Circular queues, Applications of queues.
I (19 (Selected topics))

UNIT V

LINKED LISTS   08 hrs
The concept of linked lists, Inserting a node using recursive programs, Deleting the specified node in a singly linked list, Inserting a node after the specified node in a singly linked list, Sorting and reversing a linked list, Merging two sorted lists, Polynomial representation.
I (20 (Selected topics))

UNIT VI

LINKED LISTS (Continued)   07 hrs
Circular linked lists, Merging of two circular lists, Doubly linked lists, Insertion of a node in a doubly linked list, Deleting a node from a doubly linked list.
I (20 (Selected topics))

UNIT VII

TREES   07 hrs
The concept of tree, Binary tree and its representation, Binary tree traversal, Binary search tree, Counting the number of nodes in a binary search tree, Searching for a target key in a binary search tree, deletion of a node from a binary search tree.
I (21(Selected topics))

UNIT VIII

GRAPHS   **08 hrs**

Graphs, Representations of graphs, Computing in-degree and out-degree of a node of a graph using adjacency matrix representation, Depth first traversal, Breadth first traversal, Connected component of a graph, Depth first spanning tree, Breadth first spanning tree, Minimum cost spanning tree, Directed acyclic graph (DAG).
I (22)

Text Book:
I. C & Data Structures, P.S. Deshpande and O.G. Kakde, Dreamtech Press, 2007

Reference Book:
1. Data Structures – A Pseudocode approach with C, 2nd Edition, Richard F. Gilberg and Behrouz A. Forouzan, Thomson Course Technology, 2005.

Note: Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 16 marks.

DC 141   **C & DATA STRUCTURES LAB**

List of Experiments
1. Write a C program to find and output the roots of a given quadratic equation with non-zero coefficients.
2. Write a C program to print the mathematical table of a given integer N.
3. Write a C program to generate and print the first *N* Fibonacci numbers.
4. Write a C program to find the GCD and LCM of two given integers, and output the results.
5. Write a C program to read a four digit integer and print its reverse and also the sum of its individual digits.
6. Write a C program to input *N* real numbers in ascending order into a single dimension array, conduct binary search for a given key number, and report success or failure.
7. Write a C program to sort a given set of *N* student names in alphabetical order.
8. Write a C program that fills a 5 x 5 matrix as follows:
    *   Upper left triangle with +1s
    *   Lower right triangle with -1s
    *   Right to left diagonal with zeros
    Display the contents of the matrix using not more than two printf statements.
9.   Write a C program to read two matrices A (M x N) and B (P x Q), and compute the product of A.B after checking compatibility for multiplication.
10. Write C user defined functions
     a. to input N integer numbers into single dimension array
     b. to sort the integer numbers in ascending order using bubble sort technique
     c. to print the single dimension array elements
    Using these functions, write a C program to input N integers numbers into a single-dimension array, sort them in ascending order, and print both the given array and the sorted array.

11.   Write an interactive C program to create a linear linked list of customer names and their telephone numbers. The program should be menu-driven and include features for adding a new customer, deleting an existing customer and for displaying the list of all customers.

12.   Write a C program to create a circular linked list so that the input order of data items is maintained. Add the following functions to carry out the following operations on circular linked lists.
   a. Count the number of nodes.
   b. Write out the contents.
   c. Locate and write the contents of a given node.

13.   Write a C program that will remove a specified node from a given doubly linked list and insert it at the end of the list. Also write a function to display the contents of the list.

14.   Write a C program to implement a queue in which insertions, deletions and display can be performed.

15.   Write a C program to construct a binary tree and do in order, preorder and postorder traversals, printing the sequence of vertices visited in each case.

Note:
• All the C programs to be executed using Turbo C or similar environment.

DC 105   ENGINEERING MATHEMATICS – II

UNIT I
DIFFERENTIAL CALCULUS   **07 hrs**
Mean value theorems and expansion of functions,Taylor's and Maclaurin's expansion of functions,Indeterminate forms.
I (2.2 to 2.6)

UNIT II
INTEGRAL CALCULUS   **07 hrs**

Reduction formulae for $\int_0^{\pi/2}\sin^n(x)dx$, $\int_0^{\pi/2}\cos^n(x)dx$, $\int_0^{\pi/2}\sin^m(x)\cos^n(x)dx$,
Problems, Application of Integration –Volume and Surface area of the solid of revolution.
I (7.1, 7.2, 8.1 to 8.6)

UNIT III
COMPLEX NUMBERS   **08 hrs**
Introduction; Geometric representation of complex number (Argand diagram); Modulus and Argument of Complex number; conjugate of a Complex number; Addition; Subtraction of Complex numbers; Multiplication and Division of Complex numbers; Exponential and Circular functions of Complex variables; DeMovire's Theorem; Phasor; R and A.C Circuits; L and A.C Circuits; C and A.C. Circuits; R-C and A-C circuits Impedance; R-L in Parallel Circuit.
II (Chapter 28: 28.1 to 28.16)

UNIT IV
VECTOR ALGEBRA   **07 hrs**
Introduction to Vectors; Addition and Subtraction of Vectors; Properties of Addition of vectors; Rectangular resolution of a Vector; Position Vector of a point; Ratio formula; Product of two Vectors; Scalar or Dot product of two Vectors; Geometrical interpretation; Work done as a scalar product; Vector product or cross product; Geometrical interpretation; Moment of a force; Angular velocity; Scalar triple product; Geometrical interpretation; Vector triple product.
II (20.1to20.9,20.8,21.1,21.2,21.3,21.5,21.6,22.1,22.8,22.9,22.10,23.1,23.2,23.3)

UNIT V

LINEAR DIFFERENTIAL EQUATION OF HIGHER ORDER   **07 hrs**

Introduction; General form; complete solution as C.F+P.I; Method of finding complimentary function, Inverse operator $\dfrac{1}{f(D)}$, Method of finding particular integral for the functions e^{ax}; $\sin(x+b)$ $\cos(x+b)$ x^m,

Application of Linear Differential equation Electrical Circuits

II (45.1 to 45.8, 46.1)

UNIT VI

INFINITE SERIES   **08 hrs**

Introduction to Sequences,Series,Tests for Convergence,Comparsion test,D'Alembert's Ratio test,Rabee's test,Cachy's root test,Alternating series,Absolute convergence

I (1.1, 1.8 to1.12, 1.19, 1.20)

UNIT VII

LAPLACE TRANSFORMS   **08 hrs**

Definition, Examples of Laplace Transforms, Properties of Laplace Transforms, Limiting theorems.

I (20.1, 20.2, 20.3)

UNIT VIII

INVERSE LAPLACE TRANSFORMS   **08 hrs**

Definition; Standard results; Properties of Inverse Laplace transforms, Problems, Convolution Theorem (only statements and problems); Application of Laplace transform to solve Linear differential problems.

I (21.1,21.2,21.3,21.6,22.1,22.2)

Text Books:
  I. Engineering Mathematics – Babu Ram, Pearson Education Limited, 2012
  II. Applied Mathematics for Polytechnic, H.K.Dass, 10th Edition, 2012, CBS Publishers & Distributors, New Delhi

Reference Book:
1. A Text book of engineering Mathematics – N.P. Bali and Manish Goyal , 8th Edition 2011, Laxmi Publication(P) Ltd.

Note*:* Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 16 marks.

DC 106   **OBJECT ORIENTED PROGRAMMING WITH C++**

UNIT I

OBJECT-ORIENTED PROGRAMMING CONCEPTS   **08 hrs**

Software Evolution, Procedure-oriented Programming, Object-oriented Programming, Object-oriented Languages

LANGUAGE CONSTRUCTS

Introduction, Hello World Program, C++ Program Structure, Accepting User Input, Identifiers, Literals, Keywords, Data Types, Operators in C++, Program Statements
I (1, 2)

UNIT II
ADVANCED CONSTRUCTS   **07 hrs**
Arrays, Multidimensional Arrays, Pointers, Structures
I (3)

UNIT III
CLASSES IN C++   **08 hrs**
Introduction, Data Type – Class, Declaring and Using Classes, Dynamic Objects, Defining Member Functions, Static Data Members and Functions
MEMBER FUNCTIONS
Passing Parameters, Constant Parameters, Default Parameters, Friend Functions
I (4, 5)

UNIT IV
OPERATOR OVERLOADING   **07 hrs**
Adding 'Meaning' to Operators, Syntax for Operator Overloading, Overloading Arithmetic Operators, Overloading Complex Operators, What cannot be Overloaded?
CONSTRUCTORS AND DESTRUCTORS
Defining Constructor, Multiple Constructors, Using Parameterized Constructors in Dynamic Objects, Constructors with Default Arguments, Default Constructor, Copy Constructor, Class Destructor
I (6, 7)

UNIT V
INHERITANCE   **08 hrs**
What is Inheritance, Single Inheritance, Access Modifiers, Multiple Level Inheritance, Public / Non-public Derivations, Types of Inheritance, Calling Sequence for Constructors and Destructors.
MULTIPLE INHERITANCE
Multiple Inheritance – An Illustration, Constructor Calling Sequence, Destructor Calling Sequence, Parameter Passing to Base Class Constructors, Access Modifiers, Protected Inheritance, Virtual Classes
I (8, 9)

UNIT VI
POLYMORPHISM   **08 hrs**
The Meaning of Polymorphism, Types of Polymorphism, Static Polymorphism, Dynamic Polymorphism, Virtual Functions
HANDLING EXCEPTIONS
Exceptional conditions, The Try/Catch/Throw Constructs, Throwing Exceptions, Rethrowing Exceptions
I (10) (Mentioned topics in 11)

UNIT VII
TEMPLATES   **07 hrs**
Need for Templates, Types of Templates, Function Templates, Class Templates, User-defined Data Types as Parameters
I (12)

UNIT VIII
C++ I/O   **07 hrs**
The C++ I/O Systems, Streams, File I/O, Random Access Files
I (13)

Text Book:

I.   Object-oriented Programming with C++, Poornachandra Sarang, PHI, 2004

Reference Book:

1. Big C++, Cay Horstmann, Timothy A. Budd, Wiley India, 2005

Note*:* Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 16 marks.

DC 107   **COMPUTER ORGANIZATION**

UNIT I

BASIC STRUCTURE OF COMPUTERS   **07 hrs**
Computer Types, Functional Units, Basic Operational Concepts, Bus Structures, Performance – Processor Clock, Basic Performance Equation, Clock Rate, Performance Measurement
I (1.1 to 1.4, 1.6.1, 1.6.2, 1.6.4, 1.6.7)
MACHINE INSTRUCTIONS AND PROGRAMS
Numbers, Arithmetic Operations and Characters, Memory Location and Addresses, Memory Operations, Instructions and Instruction Sequencing
I (2.1 to 2.4)

UNIT II

MACHINE INSTRUCTIONS AND PROGRAMS (**CONTINUED**)   **08 hrs**
Addressing Modes, Assembly Language, Basic Input and Output Operations, Stacks and Queues, Subroutines - Subroutine nesting and the processor stack, Additional Instructions, Encoding of Machine Instructions
I (2.5 to 2.8, 2.9.1, 2.12)

UNIT III

INPUT/OUTPUT ORGANIZATION   **08 hrs**
Accessing I/O Devices, Interrupts – Interrupt Hardware, Enabling and Disabling Interrupts, Direct Memory Access, Buses
I (4.1, 4.2.1, 4.2.2, 4.4, 4.5)

UNIT IV

INPUT/OUTPUT ORGANIZATION (CONTINUED)   **07 hrs**
Interface Circuits - Serial Port, Standard I/O Interfaces
I (4.6.2, 4.7)

UNIT V

MEMORY SYSTEM   **07 hrs**
Basic Concepts, Semiconductor RAM Memories – Internal Organization of Memory chips, Static Memories, Asynchronous DRAMs, Synchronous DRAMs, Structure of Larger Memories, Read Only Memories, Speed, Size, and Cost, Cache Memories – Mapping Functions
I (5.1, 5.2.1 to 5.2.5, 5.3, 5.4, 5.5.1)

UNIT VI

MEMORY SYSTEM (CONTINUED)   **08 hrs**
Virtual Memories, Secondary Storage – Magnetic Hard Disks, Optical Disks
Arithmetic: Addition and Subtraction of Signed Numbers, Design of Fast Adders
I (5.7, 5.9.1, 5.9.2, 6.1, 6.2)

UNIT VII

ARITHMETIC (CONTINUED)   **08 hrs**
Multiplication of Positive Numbers, Signed Operand Multiplication, Integer Division, Floating-point
Numbers and Operations – IEEE Standard for floating point numbers
I (6.3, 6.4, 6.6, 6.7.1)

UNIT VIII

BASIC PROCESSING UNIT   **07 hrs**
Some Fundamental Concepts, Execution of a Complete Instruction, Hard-wired Control,
Microprogrammed Control - Microinstructions
I (7.1, 7.2, 7.4, 7.5.1)

Text Book:
I. Computer Organization, Carl Hamacher, Zvonko Vranesic, Safwat Zaky, 5th Edition, TMH, 2002

Reference Books:
1. Computer Organization & Architecture, William Stallings, 8th Edition, PHI, 2010
2. Computer Systems Design and Architecture, Vincent P. Heuring, Harry F. Jordan & T. G. Venkatesh, 2nd Edition, Pearson Education, 2008

Note: Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 16 marks.

DC 108   **LOGIC DESIGN**

UNIT I

INTRODUCTORY CONCEPTS   **03 hrs**
Numerical Representations; Digital and Analog Systems; Digital Number Systems; Representing
Binary Quantities; Digital Circuits / Logic Circuits; Parallel and Serial Transmission; Memory, Digital
Computers.
I (1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8)
NUMBER SYSTEMS AND CODES   **04 hrs**
Introduction; Binary to Decimal Conversions; Decimal to Binary Conversions; Octal Number System;
Hexadecimal Number System; BCD Code,Gray Code; Putting it all together; The Byte; Nibble and
Word; Alphanumeric Codes;
I (2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9)

UNIT II

DESCRIBING LOGIC CIRCUITS   **04 hrs**
Introduction; Boolean Constants and Variables; Truth Tables: OR, AND, NOT Operations; Describing
Logic Circuits Algebraically; Evaluating Logic Circuit Outputs; Implementing Circuits from Boolean
Expressions; NOR and NAND Gates; Boolean Theorems; De-Morgan's Theorems; Universality of
NAND and NOR Gates.

I (3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 3.10, 3.11, 3.12)

COMBINATIONAL LOGIC CIRCUITS   **04 hrs**

Sum of Product Form; Simplifying Logic Circuits; Algebraic Simplification; Designing Combinational Logic Circuits; Karnaugh Map Method (3 and 4 Variables); Exclusive OR and Exclusive NOR Circuits; Parity Generator and Checker;.

I (4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7)

UNIT III

DIGITAL ARITHMETIC OPERATIONS AND CIRCUITS   **08 hrs**

Introduction; Binary Addition; Representing Signed Numbers; Addition in 2's Complement System; Subtraction in 2's Complement System; Multiplication and Division of Binary Numbers; BCD Addition; Hexadecimal Arithmetic; Arithmetic Circuits; Parallel Binary Adder; Design of a Full Adder; Complete Parallel Adder with Registers; Carry Propagation; Integrated Circuit Parallel Adder; 2's Complement System; BCD Adder; ALU Integrated Circuits.

I (6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11, 6.12, 6.13, 6.14, 6.15, 6.16, 6.17)

UNIT IV

MSI LOGIC CIRCUITS   **07 hrs**

Introduction; Decoders; BCD to 7-Segment Decoder / Drivers; Liquid Crystal Displays; Encoders; Multiplexers; Multiplexer Applications; De-Multiplexers; Magnitude Comparator; Code Converters.

I (9.1, 9.2, 9.3, 9.4, 9.5, 9.6, 9.7, 9.8, 9.9)

UNIT V

FLIP-FLOPS AND APPLICATIONS   **08 hrs**

Introduction; NAND Gate Latch; NOR Gate Latch; Clocked Signals and Clocked Flip-Flops; Clocked SR Flip-Flop; Clocked JK Flip-Flop; Clocked D Flip-Flop; D Latch; Asynchronous Inputs; IEEE / ANSI Symbols; Flip-Flop Timing Considerations; Potential Timing Problem in Flip-Flop Circuits; Master Slave Flip-Flops; Flip-Flop Applications; Flip-Flop Synchronization; Data Storage and Transfer; Serial Data Transfer: Shift Registers; Frequency Division and Counting; Schmitt Trigger Devices; Analyzing Sequential Circuits.

I (5.1, 5.2, 5.3, 5.4, 5.5, 5.6, 5.7, 5.8, 5.9, 5.10, 5.11, 5.12, 5.13, 5.14, 5.16, 5.17, 5.18, 5.19, 5.20, 5.21)

UNIT VI

COUNTERS AND REGISTERS   **08 hrs**

Introduction; Asynchronous (Ripple) Counters; Counters with Mod Numbers $< 2^N$; IC Asynchronous Counters; Asynchronous Down Counters; Propagation Delay in Ripple Counters; Synchronous (Parallel) Counters; Synchronous Down and Up / Down Counters; Presettable Counter; Decoding a Counter; Decoding Glitches; Cascading BCD Counters,Analyzing synchronous counter.

I (7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 7.8, 7.11, 7.12, 7.13)

UNIT VII

SYNCHRONOUS COUNTER DESIGN   **07 hrs**

Synchronous Counter Design;State machines, Integrated Circuit Registers; Parallel In / Parallel Out Register; Serial In / Serial Out Register; Parallel In / Serial Out Register; Serial In / Parallel Out Register; Shift Register Counters.

I (7.14, 7.15, 7.16, 7.17, 7.18, 7.19, 7.21)

UNIT VIII

MEMORY DEVICES   **07 hrs**

Memory Terminology; General Memory Operation; CPU Memory Connections; Read Only Memories; ROM Architecture; ROM Timing; Types of ROM's; Flash Memory; ROM Applications; Semiconductor RAM; RAM Architecture; SRAM; DRAM; DRAM Structure and Operation.

I (11.1, 11.2, 11.3, 11.4, 11.5, 11.6, 11.7, 11.8, 11.9, 11.10, 11.11, 11.12, 11.13, 11.14)

Text Book:
I. Digital Systems – Principles and Applications, Ronald J Tocci, Neal S. Wildmer, Gregory L. Moss, Tenth Edition, Pearson Education, Copyright 2009.

Reference Books:
1. Digital Fundamentals, Thomas L. Floyd and R. P. Jain, Eighth Edition, Pearson Education Publisher, 2005
2. Digital Electronics and Microprocessors – Problems and Solutions, R. P. Jain, 2007, Tata-McGraw Hill

Note: Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 16 marks.

DC 142   OOPS LAB
List of Experiments
1. Given that an EMPLOYEE class contains following members:
    Data members: Employee_Number, Employee_Name, Basic, DA, IT, Net_Sal
    Member functions: to read the data, to calculate Net_Sal and to print data members.
    Write a C++ program to read the data of N employees and compute Net_Sal of each employee (DA=79% of Basic and Income Tax (IT) = 30% of the gross salary).
2. Define a STUDENT class with Roll Number, Name and Marks in 3 tests of a subject. Declare an array of 10 STUDENT objects. Using appropriate functions, find the average of two better marks for each student. Print the Roll Number, Name and the average marks of all the students.
3. Write a C++ program to create a class called COMPLEX and implement the following overloading functions ADD that return a COMPLEX number.
    i.   ADD (a, s2) – where 'a' is an integer (real part) and s2 is a complex number.
    ii. ADD (s1, s2) – where s1 and s2 are complex numbers.
4. Write a C++ program to create a class called LIST (linked list) with member functions to insert an element at the front as well as to delete an element from the front of the list. Demonstrate all the functions after creating a list object.
5. Write a C++ program to create a template function for Quick sort and demonstrate sorting of integers and doubles.
6. Write a C++ program to create a class called STACK using an array of integers. Implement the following operations by overloading the operators + and -.
    i.   s1=s1 + element; where s1 is an object of the class STACK and element is an integer to be pushed on the top of the stack.
    ii. s1=s1 - ; where s1 is an object of the class STACK – operator pops the element.
    Handle the STACK empty and STACK full conditions. Also display the contents of the stack after each operation, by overloading the operator <<.
7. Write a C++ program to create a class called DATE. Accept two valid dates in the form dd/mm/yy. Implement the following operations by overloading the operators + and -. After every operation display the results by overloading the operator <<.

 i. no_of_days = d1 – d2; where d1 and d2 are DATE objects, d1 >=d2 and no_of_days is an integer.
 ii. d2 = d1 + no_of_days; where d1 is a DATE object and no_of_days is an integer.

8. Write a C++ program to create a class called MATRIX using a two-dimensional array of integers. Implement the following operations by overloading the operator == which checks the compatibility of two matrices to be added and subtracted. Perform the addition and subtraction by overloading the operators + and – respectively. Display the results by overloading the operator <<.

 if (m1 ==m2)
  {
  m3 = m1 + m2;
  m4 = m1 – m2;
  }
 else
  display error

9. Write a C++ program to create a class called OCTAL which has the characteristics of an octal number. Implement the following operations by writing an appropriate constructor and an overloaded operator +.
 i. OCTAL h = x; where x is an integer
 ii. int y = h + k; where h is an OCTAL object and k is an integer.
 Display the OCTAL result by overloading the operator <<. Also display the values of h and y.

10. Write a C++ program to create a class called QUEUE with member functions to add an element and to delete an element from the queue. Using these member functions, implement a queue of integer and double. Demonstrate the operations by displaying the content of the queue after every operation.

11. Write a C++ program to create a class called DLIST (Doubly Linked List) with member functions to insert a node at a specified position and delete a node from a specified position of the list. Demonstrate the operation by displaying the content of the list after every operation.

12. Write a C++ program to create a class called STUDENT with data members roll number, Name and Age. Using inheritance, create the classes UGSTUDENT and PGSTUDENT having fields as Semester, Fees and Stipend. Enter the data for at least 5 students. Find the semester wise average age for all UG and PG students separately.

13. Write a C++ program to create two complex numbers, displays them, and adds the two complex numbers using the overloaded + operator and displays the result.

14. Write a C++ program to create a class called BIN_TREE (Binary tree) with member functions to perform inorder, preorder and postorder traversals. Create a BIN_TREE object and demonstrate the traversals.

15. Write a C++ program to read two numbers *a* and *b*, find *a/b* and output the result (Use *try/throw/catch* construct). Assume that the division program is capable of handling only 32 bit numbers. If the input number is larger than 0xFFFF, the program should flag an error, prompt the user with an appropriate message and quit gracefully. The program should also flag error when there is divide by zero.

Note:
- All the C++ programs have to be executed in Turbo C++ / Visual C++ or similar environment

DC 109   **ANALYSIS & DESIGN OF INFORMATION SYSTEMS**

UNIT I
THE CONTEXT OF SYSTEMS ANALYSIS & DESIGN METHODS   **08 hrs**

Introduction, A Framework for System Analysis & Design, The Players – System Stakeholders, Business Drivers for Today's Information Systems, Technology Drivers for Today's Information Systems

INFORMATION SYSTEM BUILDING BLOCKS

Introduction, The Product – Information Systems, Framework for Information Systems, Network Technologies and the IS Building Blocks

I (1 (Selected topics), 2)

UNIT II

INFORMATION SYSTEMS DEVELOPMENT   **07 hrs**

Introduction, The Process of Systems Development, A System's Development Process, Alternative Routes and Strategies, Automated Tools and Technology

I (3)

UNIT III

SYSTEMS ANALYSIS   **07 hrs**

Introduction, What is Systems Analysis? Systems Analysis Approaches, The Scope Definition Phase, The Problem Analysis Phase, The Requirements Analysis Phase, The Logical Design Phase, The Decision Analysis Phase

I (5)

UNIT IV

MODELING SYSTEM REQUIREMENTS WITH USE CASES   **08 hrs**

Introduction, An Introduction to Use-Case Modeling, System Concepts for Use-Case Modeling, The Process of Requirements Use-Case Modeling, Use-Cases and Project Management

DATA MODELING AND ANALYSIS

Introduction, What is Data Modeling?, System Concepts for Data Modeling, The Process of Logical Data Modeling, How to Construct Data Models, Analyzing the Data Model, Mapping Data Requirements to Locations

I (7, 8)

UNIT V

OBJECT-ORIENTED ANALYSIS AND MODELING USING THE UML   **08 hrs**

An Introduction to Object-Oriented Modeling, History of Object Modeling, System Concepts for Object Modeling, The UML Diagrams, The Process of Object Modeling

SYSTEMS DESIGN

Introduction, What is Systems Design?, Systems Design Approaches, Systems Design for In-house Development – The "Build" Solution, Systems Design for Integrating Commercial Software – The "Buy" Solution

I (10, 12)

UNIT VI

USER-INTERFACE DESIGN   **07 hrs**

Introduction, User-Interface Design Concepts and Guidelines, User-Interface Technology, Graphical User-Interface Styles and Considerations, How to Design and Prototype an User-Interface

I (17)

UNIT VII

OBJECT-ORIENTED DESIGN AND MODELING USING THE UML   **07 hrs**

Introduction, The Design of an Object-Oriented System, The Process of Object-Oriented Design, Object Reusability and Design Patterns, Design Patterns

I (18 (Selected topics))

UNIT VIII

43

SYSTEMS CONSTRUCTION AND IMPLEMENTATION   **08 hrs**
Introduction, What is Systems Construction and Implementation?, The Construction Phase, The Implementation Phase

SYSTEMS OPERATIONS AND SUPPORT
Introduction, The Context Systems Operations and Support, Systems Maintenance, System Recovery, Technical Support, System Enhancement, System Obsolescence
I (19, 20)

Text Book:
 I. Systems Analysis and Design Methods, Jeffrey L Whitten, Lonnie D Bentley, Seventh Edition, TMH, 2007

Note: Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 16 marks.

DC 110   **OPERATING SYSTEMS & SYSTEMS SOFTWARE**

PART A: OPERATING SYSTEMS
UNIT I

EVOLUTION OF OS FUNCTIONS   **07 hrs**
OS Functions, Evolution of OS Functions, Batch Processing Systems, Multiprogramming Systems, Time Sharing Systems, Real Time Operating Systems, OS Structure

PROCESSES
Process Definition, Process Control, Interacting Processes, Implementation of Interacting Processes, Threads
I (9, 10)

UNIT II

SCHEDULING   **08 hrs**
Scheduling Policies, Job Scheduling, Process Scheduling

DEADLOCKS
Definitions, Resource Status Modeling, Handling Deadlocks, Deadlock Detection and Resolution
I (11.1 to 11.3, 12.1 to 12.4)

UNIT III

PROCESS SYNCHRONIZATION   **08 hrs**
Implementing Control Synchronization, Critical Sections, Classical Process Synchronization Problems, Semaphores

FILE SYSTEMS
Directory Structures, File Protection, Allocation of Disk Space, Implementing File Access, File Sharing
I (13.1 to 13.3, 13.5, 17.1 to 17.5)

UNIT IV

MEMORY MANAGEMENT   **07 hrs**

Memory Allocation Preliminaries, Contiguous Memory Allocation, Noncontiguous Memory Allocation, Virtual Memory Using Paging – Pages, Page Blocks and Address Translation, Demand Paging, Page Replacement, Controlling a Memory Allocation to a Program
I (15.1 to 15.3, 15.4.1, 15.4.2, 15.4.5, 15.4.6)

PART B: SYSTEM SOFTWARE
UNIT V
LANGUAGE PROCESSORS   **08 hrs**
Introduction, Language Processing Activities, Fundamentals of Language Processing, Fundamentals of Language Specification, Language Processor Development Tools
DATA STRUCTURES FOR LANGUAGE PROCESSING
Search Data Structures, Allocation Data Structures
I (1, 2)

UNIT VI
SCANNING AND PARSING   **07 hrs**
Scanning, Parsing
MACROS AND MACRO PROCESSORS
Macro Definition Call, Macro Expansion
LINKERS
Relocation and Linking Concepts, Self-Relocating Programs
I (3, 5.1, 5.2, 7.1, 7.3)

UNIT VII
ASSEMBLERS   **07 hrs**
Elements of Assembly Language Programming, A Simple Assembly Scheme, Pass Structure of Assemblers, Design of A Two Pass Assembler
I (4.1 to 4.4)

UNIT VIII
COMPILERS AND INTERPRETERS   **08 hrs**
Aspects of Compilation, Memory Allocation – Static and Dynamic Memory Allocation, Array Allocation and Access, Compilation of Expressions – A Toy Code Generator for Expressions, Compilation of Control Structures, Interpreters
I (6.1, 6.2.1, 6.2.3, 6.3.1, 6.4, 6.6)

Text Book:
I. Systems Programming and Operating Systems, D. M. Dhamdhere, Tata McGraw-Hill, Second Revised Edition, 2005.

Note*: Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 16 marks, selecting atleast **TWO** questions from each part.

DC 111   **MICROPROCESSORS & MICROCONTROLLERS**

8.7   UNIT I
INTRODUCTION TO MICROPROCESSORS   **08 hrs**

Evolution of Microprocessors, Fundamentals of a Computer, Number Representation – Unsigned binary integers, Signed binary integers; Fundamentals of Microprocessor – description of 8085 pins, Programmer's view of 8085, Registers A, B, C, D, E, H and L
First Assembly Language Program; Instruction set of 8085 – Data transfer group, Arithmetic group, Logical group, NOP and Stack group of instructions
I (1, 2, 3.1, 3.2, 4.2, 4.3, 4.4, 4.5, 5, 6, 7, 8, 9)

8.8   UNIT - II

INTRODUCTION TO MICROPROCESSORS (CONTD)   **08 hrs**
Instruction set of 8085 continued – Branch group, Chip select logic, Addressing of I/O ports, Architecture of 8085 – Details of 8085 architecture
I (10, 11, 12, 13.1)

8.9   UNIT III

ASSEMBLY LANGUAGE PROGRAMS   **07 hrs**
Exchange 10 bytes, Add 2 multibyte numbers, Add 2 multibyte BCD numbers, Block movement without overlap, Monitor routines, Multiply two numbers
Linear search, Find the smallest number
I (14.1 to 14.4, 14.6.1, 16.1, 16.2)

8.10   UNIT IV

INTERRUPTS IN 8085   **07 hrs**
Data transfer schemes, 8085 interrupts, EI and DI instructions, INTR and INTA* pins, RST 5.5, RST 6.5, RST 7.5, and TRAP pins, SIM and RIM instructions
I (18.1 to 18.7, 18.9)

8.11   UNIT V

PROGRAMS USING INTERFACE MODULES   **07 hrs**
8255 Programmable peripheral interface chip, Description of 8255, Operational modes, Control port of 8255, Logic controller interface, Evaluation of Boolean expression, Decimal counter, Intel 8279 Keyboard and display controller.
I (20.1, 20.2, 20.3, 21.1 – 21.1.1, 21.1.3, 22.6.1)

8.12   UNIT VI

8.12.1 INTEL 8259A- PROGRAMMABLE INTERRUPT CONTROLLER   **08 hrs**
Need for interrupt controller, Overview of 8259, Pins of 8259, Registers of 8259
Intel 8257 – Programmable DMA controller, Concept of DMA, Need for DMA, Description of 8257, Pins of 8257.
I (23.1 to 23.4, 24.1, 24.2, 24.3, 24.5)

8.13   UNIT VII

INTEL 8253 – PROGRAMMABLE INTERVAL TIMER   **08 hrs**
Need for programmable interval timer, Description of 8253, Programming the 8253, Mode 0 operation, Intel 8251A – Universal synchronous asynchronous receiver transmitter, Need for USART, Asynchronous transmission, Asynchronous reception, Synchronous transmission, Synchronous reception, Pin description of 8251.
I (25.1 to 25.4, 26.1 to 26.6)

8.14   UNIT VIII

8051 MICROCONTROLLER   **07 hrs**
Main features, Functional blocks, Program memory structure, Data memory structure, Programmer's view, Addressing modes, Instruction set, Programming examples.
I (29)

Text Book:

I. The 8085 Microprocessor; Architecture, Programming and Interfacing, K. Udaya Kumar and B. S. Umashankar, Pearson Education, 2008

Reference Books:
1. Microprocessor Architecture, Programming and Applications with the 8085, Fifth Edition, R. S. Gaonkar, Penram International Publishing (India), 2011
2. The 8051 Microcontroller and Embedded Systems, Muhammad Ali Mazidi, Janice Gillispie Mazidi, Rolin D. McKinlay, Second Edition, Pearson Education, 2009

Note: Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 16 marks.

DC 112   **DATABASE MANAGEMENT SYSTEMS**

UNIT I
DATABASES AND DATABASE USERS   **08 hrs**
Introduction, An Example, Characteristics of Database Approach, Actors on the Scene, Workers behind the Scene, Advantages of using the DBMS Approach.
DATABASE SYSTEM - CONCEPTS AND ARCHITECTURE
Data models, Schemas, and Instances, Three-schema architecture and data independence, Database language and interfaces, The Database system environment, Centralized and Client/server Architectures for DBMS's, Classification of database management system.
I (1.1 to 1.6, 2)

UNIT II
DATA MODELING USING THE ENTITY-RELATIONSHIP MODEL   **07 hrs**
Using High-level Conceptual data models for database design, An Example database application, Entity types, Entity Sets, Attributes, and Keys, Relationship types, Relationship sets, Roles, and Structural Constraints, Weak entity types, Refining the ER design for the company database, E/R diagram, Naming Conventions, and Design Issues.
THE ENHANCED ENTITY-RELATIONSHIP (EER) MODEL
Subclasses, Superclasses, and Inheritance, Specialization and generalization
I (3.1 to 3.7, 4.1, 4.2)

UNIT III
THE RELATIONAL DATA MODEL AND
RELATIONAL DATABASE CONSTRAINTS   **07 hrs**
Relational Model Concepts, Relational Model Constraints and Relational Database Schemas, Update Operations, Transactions and Dealing with the Constraint violations.
I (5)

UNIT IV
THE RELATIONAL ALGEBRA AND RELATIONAL CALCULUS   **08 hrs**
Unary relational operations: SELECT and PROJECT, Relational Algebra Operations from Set theory, Binary relational operations: JOIN and DIVISION, Additional relational operations, Examples of queries in relational algebra, The Tuple Relational Calculus
RELATIONAL DATABASE DESIGN BY ER - TO - RELATIONAL MAPPING
Relational database design using ER – to - Relational Mapping
I (6.1 to 6.6, 7.1)

UNIT V
SQL-99: SCHEMA DEFINITION, CONSTRAINTS, QUERIES AND VIEWS   **08 hrs**

SQL Data Definition and Data Types, Specifying Basic Constraints in SQL, Schema Change Statements in SQL, Basic Queries in SQL, More Complex SQL queries, Insert, Delete and Update Statements in SQL, Specifying Constraints as Assertions and Triggers, Views (Virtual tables) in SQL
I (8.1 to 8.8)

UNIT VI

RELATIONAL DATABASE DESIGN   **07 hrs**

Informal design Guidelines for Relation Schemas, Functional Dependencies, Normal Forms based on Primary keys, General Definitions of Second and Third Normal Form, Boyce-Codd Normal Form
I (10)

UNIT VII

RELATIONAL DATABASE DESIGN (CONTINUED)   **08 hrs**

Properties of Relational Decompositions, Algorithms for Relational Database Schema Design, Multivalued Dependencies and Fourth Normal Forms, Join Dependencies and Fifth Normal Forms.
I (11.1 to 11.4)

UNIT VIII

TRANSACTION PROCESSING CONCEPTS   **08 hrs**

Introduction to Transaction Processing, Transaction and System Concepts - Desirable Properties of Transactions, Characterizing Schedules based on recoverability, Characterizing Schedules based on serializability.
I (17)

Text Book:
I. Fundamentals of Database Systems, Ramez Elmasri, Shamkant B. Navathe, 5th Edition, Pearson Education, 2008
Reference Books:
1. Database System Concepts, Silberschatz, Abraham Korth, Sudarshan S., Fourth Edition, Mc-Graw Hill, 2006
2. Database Management Systems, Raghu Ramakrishnan, Johannes Gehrke, Third Edition, Mc-Graw Hill, 2003

Note*:* Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 16 marks.
DC 113   **JAVA & WEB PROGRAMMING**

PART A: JAVA
UNIT I

JAVA EVOLUTION   **07 hrs**

Java History, Java Features, How Java Differs from C and C++, Java and Internet, Java and World Wide Web, Web Browsers, Hardware and Software Requirements, Java Support Systems, Java Environment
OVERVIEW OF JAVA LANGUAGE
Introduction, Simple Java Program, More of Java, An Application with Two Classes, Java Program Structure, Java Tokens, Java Statements, Implementing a Java Program, Java Virtual Machine, Command Line Arguments, Programming Style.
I (2, 3)

UNIT II

CONSTANTS, VARIABLES, AND DATA TYPES   **08 hrs**

Introduction, Constants, Variables, Data Types, Declaration of Variables, Giving Values to Variables, Scope of Variables, Symbolic Constants, Type Casting, Getting Values of Variables, Standard Default Values.

OPERATORS AND EXPRESSIONS

Introduction, Arithmetic Operators, Relational Operators, Logical Operators, Assignment Operators, Increment and Decrement Operators, Conditional Operator, Bitwise Operators, Special Operators, Arithmetic Expressions, Evaluation of Expressions, Precedence of Arithmetic Operators, Type Conversion in Expressions, Operator Precedence and Associativity, Mathematical Functions.

DECISION MAKING AND BRANCHING

Introduction, Decision Making with If Statement, Simple If Statement, The If…Else Statement, Nesting of If…Else Statements, The Else If Ladder, The Switch Statement, The ?: Operator.

DECISION MAKING AND LOOPING

Introduction, The While Statement, The do Statement, The for Statement, Jumps in Loops, Labeled Loops

I (4, 5, 6, 7)

UNIT III

CLASSES, OBJECTS AND METHODS   07 hrs

Introduction, Defining a Class, Fields Declaration, Methods Declaration, Creating Objects, Accessing Class Members, Constructors, Methods Overloading, Static Members, Nesting of Methods, Inheritance: Extending a Class, Overriding Methods, Final Variables and Methods, Final Classes, Finalizer Methods, Abstract Methods and Classes, Methods with Varargs, Visibility Control.

ARRAYS, STRINGS AND VECTORS

Introduction, One-dimensional Arrays, Creating an Array, Two-dimensional Arrays, Strings, Vectors, Wrapper Classes, Enumerated Types, Annotations.

I (8, 9)

UNIT IV

INTERFACES: MULTIPLE INHERITANCE   08 hrs

Introduction, Defining Interfaces, Extending Interfaces, Implementing Interfaces, Accessing Interface Variables.

PACKAGES: PUTTING CLASSES TOGETHER

Introduction, Java API Packages, Using System Packages, Naming Conventions, Creating Packages, Accessing a Package, Using a Package, Adding a Class to a Package, Hiding Classes, Static Import

MULTITHREADED PROGRAMMING

Introduction, Creating Threads, Extending the Thread Class, Stopping and Blocking a Thread, Life Cycle of a Thread, Using Thread Methods, Thread Exceptions, Thread Priority, Synchronization, Implementing the 'Runnable' Interface

I (10, 11, 12)

UNIT V

MANAGING ERRORS AND EXCEPTIONS   07 hrs

Introduction, Types of Errors, Exceptions, Syntax of Exception Handling Code, Multiple Catch Statements, Using Finally Statement, Throwing Our Own Exceptions, Using Exceptions for Debugging.

MANAGING INPUT/OUTPUT FILES IN JAVA

Introduction, Concept of Streams, Stream Classes, Byte Stream Classes, Character Stream Classes, Using Streams, Other Useful I/O Classes, Using the File Class, Input/Output Exceptions, Creation of Files, Reading/Writing Characters, Reading/Writing Bytes, Handling Primitive Data Types.

I (13, 16.1 to 16.13)

PART B: WEB PROGRAMMING
UNIT VI

WEB BASICS AND OVERVIEW   **08 hrs**
The Web, Content Types, Putting Information on the Web, What is HTML?, Web Hosting, Domain Registration, What are Name Servers, Looking up Host Information, The Web Development Process, Dynamic Generation of Web Pages, HTTP Briefly.

CREATING WEB PAGES: XHTML
HTML Basics, Creating Your First Web Page, Elements & Entities, A Brief History of HTML, XHTML Syntax, Core Attributes, Heading and Paragraphs, White Spaces and Line Wrapping, Inline Elements, Controlling Presentation Styles, Length Units, Colours, Text Fonts, Lists, List Styles, Hyperlinks, Images, Positioning Inline Images, Image Maps, Editing HTML.
II (1.4 to 1.14, 2)

UNIT VII

ADVANCED XHTML   **08 hrs**
Character Encoding, Special Symbols and HTML Entities, Tables, Cell Content Alignment, Displaying Tables, Formatting Tables, Positioning Tables, Table Width and Height, Grouping Rows and Columns, Forwarding Pages, Frames, Server-side Includes, Internationalization, Common Page errors, Page Checking and Validation.

DESIGN BASICS
What is Design?, Design and Perception, Elements of Design, Unity and Variety, Emphasis, Focal Point, and Hierarchy, Contrast, Visual Balance.

INFORMATION ARCHITECTURE AND PAGE LAYOUT
Layout Overview, Web Site Architectures, Information Architecture, Client Identity, Organizational Framework, Layout Grids, Web Page Layout Grids, Designing Layout Grid Systems.
II (3.1 to 3.9, 3.15, 3.18 to 3.22, 4.1, 4.2, 4.4 to 4.8, 5.1, 5.2, 5.3, 5.5, 5.6, 5.12, 5.13, 5.14)

UNIT VIII

CSS, FORMS AND FORM PROCESSING   **07 hrs**
What is CSS?, Overall Styling of a Page, What is a Form?, Form Basics, Text Input, User Selections, Submit Buttons, File Uploading, Other Input Elements, HTTP Basics, HTTP Message Format, CGI Overview, Outline of a CGI Program, Getting Started with CGI Programming, Deploying CGI Programs.

CLIENT-SIDE SCRIPTING: JAVASCRIPT
Getting Started, Embedding JavaScript in a Web Page, JavaScript Objects, Windows, Form Checking, Events and Event Objects, Testing and Debugging.
II (6.1, 6.2, 8.1, 8.3 to 8.8, 8.11 to 8.16, 9.1, 9.2, 9.11, 9.12, 9.15, 9.17, 9.19)

Text Books:
 I. Programming with Java – A Primer, E. Balagurusamy, Fourth Edition, TMH, 2011.
 II. An Introduction to Web Design + Programming, Paul S. Wang and Sanda S. Katila, Thomson Course Technology, India Edition, 2008.

Note: Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 16 marks, selecting **THREE** questions from Part A and **TWO** from Part B.

DC 143   JAVA & WEB PROGRAMMING LAB
List of Experiments
1. Write a Java program to find the area & volume of a room. Use a class named *Room* with the following members.
    Data members
    - length
    - breadth
    - height
    Methods
    - to assign initial values
    - to find the area
    - to find the volume
2. Write a class that has three overloaded methods for calculating the area of the following geometric shapes
    - Circles: area = $\pi\, r^2$
    - Rectangles: area   = width * length
    - Cylinders: area = $\pi\, r^2\, h$
    Demonstrate the class in a complete Java program
3. Write a Java program to create a class called Complex that defines the attributes (real and imaginary) and behavior (add, mul, sub, comparision) of complex numbers.

4. Write a Java program to find the area and volume of a room. Use a base class rectangle with a constructor and a method for finding the area. Use its subclass room with a constructor that gets the value of length and breadth from the base class and has a method to find the volume. Create an object of the class room and obtain the area and volume.
5. Write a Java program to read data from keyboard up to N names, sort in alphabetical order using Bubble sort.
6. Write a Java program to count the number of tokens, given a string and a separator.
7. Write a Java program to find the average of n numbers. Use the input through the keyboard during runtime. The program must read the value of n first. If the input happens to be zero or negative a suitable user defined exceptions should be thrown. If it is not possible to convert the input into an integer, then NumberFormatException must be thrown. Use suitable try-catch blocks. After reading n value successfully, we must read the integer values of the array a[]. Each input string must be converted into integer. So use NumberFormatException appropriately.
8. Write a Java program to perform a file copy operation using the file streams of Java.
9. Write a Java program to find the number of characters, words, lines in a given input file.
10. Write a Java program to find the distance between two points whose coordinates are given. The coordinates can be 2-dimensional or 3-dimensional. (For computing the distance between a 2D and a 3D point, the 3D x and y components must be divided by z). Demonstrate method overriding in this program.
11. Create a basic web page in the following set pattern:
    Your page should have the following elements:
    - Your name as a level one header
    - "About me" as a level two header
    - A short paragraph describing something interesting about yourself
    - A level two heading saying something like "My Favorite things on the Internet"
    - A paragraph describing the things you like to do on the Internet

- Try to write professionally. Use an online dictionary if necessary to check your spelling
- Use notepad or another basic text editor to create your page. Pages written in a GUI browser (like FrontPage or DreamWeaver) will not be accepted.
12. Write a CGI program that collects the name and email address of a person from an XHTML form and responds with a "Hello' message.
13. Write a CGI program to display the information in the environmental variables, hostname, date. Use a here document
14. Create a JavaScript – enriched XHTML form with the following fields: First name, Last name, email, phone and check whether the user has filled in text fields before the form is submitted and prints out the values the user filled in. Make sure that, for fields the entry conforms to the following rules:
    - Telephone number should include area code
    - Email should include two strings separated by "@"

Note:
- To develop and run Java programs on windows platform, use the NetBeans/Eclipse IDE (latest version) and latest java development kit.
- Develop and execute CGI Program on Linux platform having apache web server &perl interpreter.

DC 114   DATA COMMUNICATION & NETWORKS
UNIT I
DATA COMMUNICATIONS, DATA NETWORKING, AND THE INTERNET   **04 hrs**
Data Communications and Networking for Today's Enterprise; A Communications Model; Data Communications; Networks; The Internet.
I (1.1, 1.2, 1.3, 1.4, 1.5)
DATA TRANSMISSION   **04 hrs**
Concepts and Terminology; Analog and Digital Data Transmission; Channel Capacity.
I (3.1, 3.2, 3.4)
UNIT II
TRANSMISSION MEDIA   **03 hrs**
Guided Transmission Media; Wireless Transmission.
I (4.1, 4.2)
PROTOCOL ARCHITECTURE, TCP/IP, AND INTERNET-BASED APPLICATIONS   **04 hrs**
The Need for a Protocol Architecture; The TCP/IP Protocol Architecture; The OSI Model; Standardization within a Protocol Architecture.
I (2.1, 2.2, 2.3, 2.4)

UNIT III
SIGNAL ENCODING TECHNIQUES   **05 hrs**
Digital Data, Digital Signals; Digital Data, Analog Signals; Analog Data, Digital Signals; Analog Data, Analog Signals.
I (5.1, 5.2, 5.3, 5.4)
DIGITAL DATA COMMUNICATION TECHNIQUES   **03 hrs**
Types of Errors; Error Detection; Line Configurations.
I (6.2, 6.3, 6.5)
UNIT IV
DATA LINK CONTROL PROTOCOLS   **03 hrs**
Flow Control; Error Control; High-Level Data Link Control (HDLC).

I (7.1, 7.2, 7.3)

MULTIPLEXING   **04 hrs**

Frequency-Division Multiplexing; Synchronous Time-Division Multiplexing; Statistical Time-Division Multiplexing.

I (8.1, 8.2, 8.3)

UNIT V

CIRCUIT SWITCHING AND PACKET SWITCHING   **02 hrs**

Switched Communications Networks; Circuit Switching Networks; Packet-Switching Principles.

I (10.1, 10.2, 10.5)

ROUTING IN SWITCHED NETWORKS   **03 hrs**

Routing in Packet-Switching Networks; Least-Cost Algorithms.

I (12.1, 12.3)

CONGESTION CONTROL IN DATA NETWORKS   **02 hrs**

Effects of Congestion; Congestion Controls.

I (13.1, 13.2)

UNIT VI

LOCAL AREA NETWORK OVERVIEW   **04 hrs**

Background; Topologies and Transmission Media; LAN Protocol Architecture; Bridges.

I (15.1, 15.2, 15.3, 15.4)

HIGH-SPEED LANs   **02 hrs**

The Emergence of High-Speed LANs; Ethernet.

I (16.1, 16.2)

WIRELESS LANs   **02 hrs**

Overview; Wireless LAN Technology.

I (17.1, 17.2)

UNIT VII

INTERNETWORK PROTOCOLS   **08 hrs**

Basic Protocol Functions; Principles of Internetworking; Internet Protocol Operation; Internet Protocol; IPv6.

I (18.1, 18.2, 18.3, 18.4, 18.5)

UNIT VIII

TRANSPORT PROTOCOLS   **03hrs**

TCP; UDP

I (20.2, 20.4)

INTERNET APPLICATIONS   **04 hrs**

Electronic Mail: SMTP and MIME; Network Management: SNMP; Internet Directory Service: DNS.

I (22.1, 22.2, 23.1)

Text Book:

I. Data and Computer Communications, Eight Edition, William Stallings, Pearson Education Low Price Edition.

Reference Book:

1. Data Communications and Computer Networks (2012), C.Murali, Reed Elsevier India Private limited (Fillip Learning, Bangalore).

Note: Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 16 marks.

DC 115   **SOFTWARE ENGINEERING**

UNIT I
SOCIO-TECHNICAL SYSTEMS   **08 hrs**
Emergent System Properties, Systems Engineering, Organizations, People and Computer Systems, Legacy Systems
SOFTWARE PROCESSES
Software Process Models, Process Iteration, Process Activities, The Rational Unified Process, Computer-Aided Software Engineering
PROJECT MANAGEMENT
Management activities, Project planning, Project scheduling, Risk management
I (2, 4, 5)

UNIT II
SOFTWARE REQUIREMENTS   **08 hrs**
Functional and nonfunctional Requirements, User Requirements, System Requirements, Interface Specification, The Software Requirements Document
REQUIREMENTS ENGINEERING PROCESSES
Feasibility studies, Requirement elicitation and analysis, Requirements validation, Requirements management
SYSTEM MODELS
Context models, Behavioral models, Data models, Object models, Structured Methods
I (6, 7, 8)

UNIT III
RAPID SOFTWARE DEVELOPMENT   **08 hrs**
Agile Methods, Extreme Programming, Rapid Application Development, Software Prototyping
FORMAL SPECIFICATION
Formal Specification in the Software Process, Sub-system Interface Specification, Behavioral specification
I (17, 10)

UNIT IV
ARCHITECTURAL DESIGN   **07 hrs**
Architectural Design Decisions, System Organization, Modular Decomposition Styles, Control Styles
DISTRIBUTED SYSTEMS ARCHITECTURES
Multiprocessor architectures, Client-Server architectures, Distributed Object architectures
I (11.1 to 11.4, 12.1 to 12.3)

UNIT V
OBJECTED-ORIENTED DESIGN   **08 hrs**
Objects and Object Classes, An Object-Oriented Design Process, Design Evolution
SOFTWARE REUSE
The Reuse Landscape, Design Patterns, Generator-based Reuse, Application Frameworks, Application System Reuse
I (14, 18)

UNIT VI
COMPONENT-BASED SOFTWARE ENGINEERING   **07 hrs**
Components and Component Models, The CBSE Process, Component Composition

USER INTERFACE DESIGN
Design Issues, The UI Design Process, User Analysis, User Interface Prototyping, Interface Evaluation
I (19, 16)

UNIT VII

VERIFICATION AND VALIDATION **07 hrs**
Planning Verification and Validation, Software Inspections, Automated static analysis, Verification and Formal Methods
SOFTWARE TESTING
System Testing, Component Testing, Test Case Design Test Automation
I (22, 23)

UNIT VIII

QUALITY MANAGEMENT **07 hrs**
Process and Product Quality, Quality Assurance and Standards, Quality Planning, Quality Control, Software Measurement and Metrics
CONFIGURATION MANAGEMENT
Configuration Management Planning, Change Management, Version and Release Management, System Building, CASE Tools for Configuration Management
I (27, 29)

Text Book:
I. Software Engineering, Ian Sommerville, 8th edition, Pearson Education, 2007

Reference Book:
1. An Integrated Approach to Software Engineering, Pankaj Jalote, Narosa Publishing House, 3rd edition, 2007

Note: Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 16 marks.

DC 144 **DBMS LAB**

List of Experiments
1. Draw an ER diagram to capture the requirements as stated below:

A database is needed to capture information pertaining to the running of various clubs by the recreation cell of an institution.
*   Details such as name, date of birth, gender are needed for each member.
*   Club details are needed such as the activity type (oratorical, music, dance, instrumental music etc) and contact phone number.
*   Team details required to include team name and the days on which the team practices.
*   Tutor details such as tutor name, address and telephone number are also needed, along with details of the skill each tutor is qualified in.
*   Rules governing the involvement of members and tutors in the teams and clubs are as follows:
    o Members may head only one team and every team has to have a head. Tutors teach at least one team and every team has at least one tutor.
    o Every member must belong to at least one team and each team has a number of members.

- o Every team must belong to a club and clubs must have at least one team.
- o Every club has a member who is the president but a member may only be president of one club.

Draw the ER Diagram for the above requirement. Map the ER diagram to the Relational Model.
Create tables identified and insert five tuples in each of the tables created. The students are required to carefully take care of the constraints on each of the table.

2. Draw an ER diagram for the registrar's office. to capture the requirements as stated below:
A university registrar's office maintains data about the following entities:
- (a) Courses, including number, title, syllabus and prerequisites;
- (b) Branch, including branch code, year of enrollment, semester, section
- (c) Students, including student –id, name, and program;
- (d) Instructors, including identification no, name, department, subjects.

Draw the ER Diagram for the above requirement. Map the ER diagram to the Relational Model.
Create tables identified and insert five appropriate tuples in each of the tables created. The students are required to carefully take care of the constraints on each of the table.

3. Consider the following three tables – SAILORS, RESERVES and BOATS having the following attributes
SAILORS (Salid, Salname, Rating, Age)
RESERVES (Sailid, Boatid, Day)
BOATS (Boatid, Boat-name, Color)
Use the above schema and solve the queries using SQL
 (a) Find the name of sailors who reserved green boat.
 (b) Find the colors of boats reserved by "Ramesh"
 (c) Find the names of sailors who have reserved a red or green boat.
 (d) Find the Sailid's of sailors with age over 20 who have not registered a red boat.

4. Consider the following three tables MEMBERS, BOOKS, RESERVES having the following attributes

MEMBERS(Member-id, Member-name, Designation, Age, Qualification)
BOOKS(Book-id, Title, Author, Price, Publication)
RESERVES(Member-id, Book-id, Date)
Use the above schema and solve the following queries using SQL
 (a) Find names of members who are Professors and over 45 years age.
 (b) List the titles of books reserved by Assistant Professors.
 (c) Find ids of members who have not reserved books costing more than Rs. 600 .
 (d) Find the author and title of books reserved on 19-dec-2011.
 (e) Find the names of members who have reserved all books.

5. Consider the following relational database schema:
STUDENT (Student_id, Sname, Major, GPA)
FACULTY (Faculty_id, fname, dept, designation, salary)
COURSE (Course_id, Cname, Faculty_id)
ENROL (Course_id, Student_id, grade)
 Use the above schema and solve the queries using SQL
 i. List the names of all students enrolled for the courses "CS-53"

ii. List the names of students enrolled for the courses "CS-53" and have received "A" grade.
iii. List all the departments having an average salary of above Rs20,000.
iv. Give a 15% raise to salary of all faculty.
v. List the names of all faculty members beginning with "R" and ending with letter "U".

6. Write the SQL commands to create a database schema for the following relational schema:

CUSTOMER (CUST_ID, CUST_NAME, ANNUAL_REVENUE, CUST_TYPE)
CUST_ID must be between 100 and 10,000
ANNUAL_REVENUE defaults to $20,000
CUST_TYPE must be manufacturer, wholesaler, or retailer
SHIPMENT (SHIPMENT_#, CUST_ID, WEIGHT, TRUCK_#,
DESTINATION, SHIP_DATE)
Foreign Key: CUST_ID REFERENCES CUSTOMER, on deletion cascade
Foreign Key: TRUCK_# REFERENCES TRUCK, on deletion set to null
Foreign Key: DESTINATION REFERENCES CITY, on deletion set to null
WEIGHT must be under 1000 and defaults to 10
TRUCK (TRUCK_#, DRIVER_NAME)
CITY (CITY_NAME, POPULATION)

Perform the following queries:

a) What are the names of customers who have sent packages (shipments) to Sioux City?
b) What are the names and populations of cities that have received shipments weighing over 100 pounds?
c) List the cities that have received shipments from customers having over $15 million in annual revenue.

7. Consider the following schema for the COMPANY relational database
   Schema.
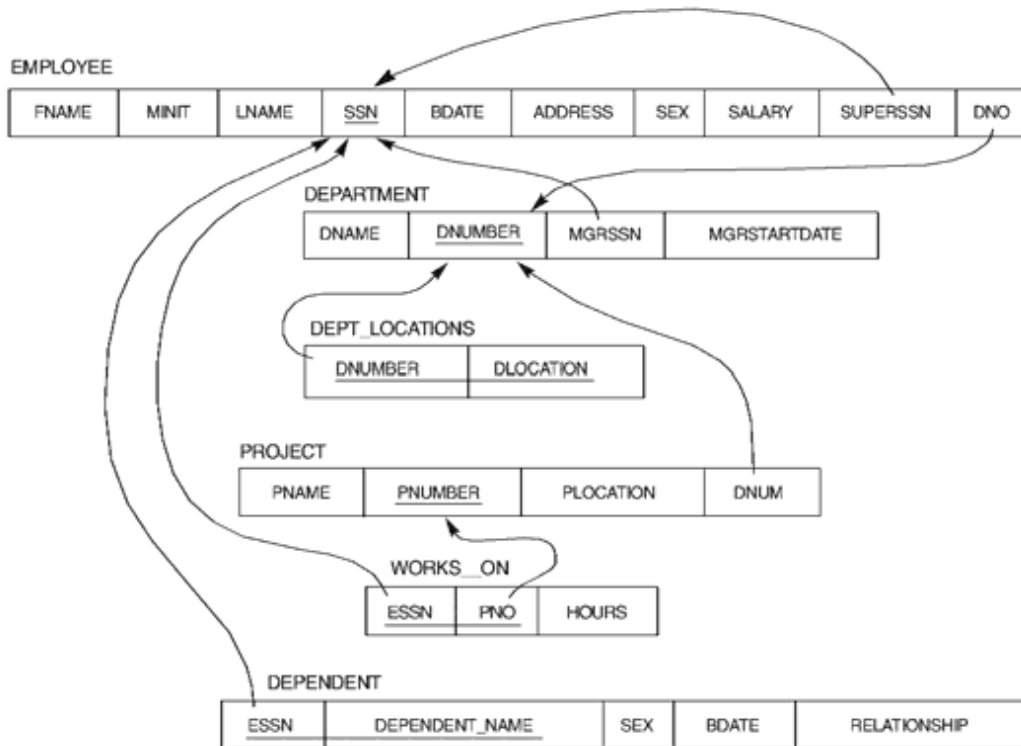
Perform the following (any five) queries:

a) For every project located in 'Stafford', list the project number, the controlling department number, and the department manager's last name, address, and birthdate.

b) For each employee, retrieve the employee's name, and the name of his or her immediate supervisor.

c) Make a list of all project numbers for projects that involve an employee whose last name is 'Smith' as a worker or as a manager of the department that controls the project.

d) Retrieve all employees in department '3' whose salary is between 10,000 and 20,000

8. Consider the Insurance database given below. The primary keys are underlined and the datatypes are specified.

PERSON (driver – id #: String, name: string, address: strong)
CAR (Regno: string, model: string, year: int)
ACCIDENT (report-number: int, date: date, location: string)
OWNS (driver-id #:string, Regno:string)
PARTICIPATED (driver-id: string, Regno:string, report-number:int, damage amount:int)

a) Create the above tables by properly specifying the primary keys and the foreign keys.

b) Enter atleast five tuples for each relation.

c) Demonstrate how you

I. Update the damage amount for the car with a specific Regno in the accident with report number 12 to 25000.

II. Add a new accident to the database.

    d) Generation of suitable reports.

9. Consider the following relations for an order processing database application in a company.

CUSTOMER (cust #: int, cname: string, city: string)
ORDER (order #: int, odate: date, cust #: int, ord-Amt: int)
ORDER – ITEM (order #: int, *Item #*: int, qty: int)
ITEM (item #: int, unit price: int)
SHIPMENT (order #: int, warehouse#: int, ship-date: date)
WAREHOUSE (warehouse #: int, city: string)

    a) Create the above tables by properly specifying the primary keys and the foreign keys.
    b) Enter atleast five tuples for each relation.
    c) Produce a listing: CUSTNAME, #oforders, AVG_ORDER_AMT, where the middle column is the total number of orders by the customer and the last column is the average order amount for that customer.
    d) List the order# for orders that were shipped from all the warehouses that the company has in specific city.
    e) Generation of suitable reports.

10. Consider the following database of student enrollment in courses and books adopted for each course:

STUDENT (regno: string, name: string, major: string, bdate:date)
COURSE (course #:int, cname:string, dept:string)
ENROLL (regno:string, course#:int, sem:int, marks:int)
BOOK_ADOPTION (course# :int, sem:int, book-ISBN:int)
TEXT (book-ISBN:int, book-title:string, publisher:string, author:string)

    a) Create the above tables by properly specifying the primary keys and the foreign keys.
    b) Enter atleast five tuples for each relation.
    c) Produce a list of text books (include Course #, Book-ISBN, Book-title) in the alphabetical order for course offered by the 'CS' department that use more than two books.
    d) List any department that has all its adopted books published by a specific publisher.
    e) Generation of suitable reports.

11. The following tables are maintained by a book dealer:

AUTHOR (author-id:int, name:string, city:string, country:string)
PUBLISHER (publisher-id:int, name:string, city:string, country:string)
CATALOG(book-id:int, title:string, author-id:int, publisher-id:int,
category-id:int, year:int, price:int)
ORDER-DETAILS (order-no:int, book-id:int, quantity:int)

    a) Create the above tables by properly specifying the primary keys and the foreign keys.
    b) Enter atleast five tuples for each relation.
    c) Demonstrate how you increase the price of books published by a specific publisher by 10%.
    d) Generation of suitable reports.

12. Consider the following database for a banking enterprise:

BRANCH(<u>branch-name</u>:string, branch-city:string, assets:real)
ACCOUNT(<u>accno</u>:int, branch-name:string, balance:real)
DEPOSITOR(<u>customer-name</u>:string, accno:int)
COUSTOMER(<u>customer-name</u>:string, customer-street:string, customer-city:string)
LOAN(<u>loan-number</u>:int, branch-name:string, amount:real)
BORROWER(<u>customer-name</u>:string, <u>loan-number</u>:int)

a) Create the above tables by properly specifying the primary keys and the foreign keys.
b) Enter atleast five tuples for each relation
c) Find all the customers who have atleast two accounts at the Main branch.
d) Find all the customers who have an account at all the branches located in a specific city.
e) Generation of suitable reports.

Note:
- Insert appropriate tuples for all questions.
- The exercises are to be executed in Oracle, MySQL or similar RDBMS environment.

DC 116   COMPUTER GRAPHICS & VISUALIZATION

UNIT I
A SURVEY OF COMPUTER GRAPHICS   08 hrs
Graphs and Charts, Computer-Aided Design, Virtual-Reality Environments, Data Visualizations, Education and Training, Computer Art, Entertainment, Image Processing, Graphical User Interfaces
OVERVIEW OF GRAPHICS SYSTEMS
Video Display Devices, Raster-Scan Systems, Graphics Workstations and Viewing Systems, Graphics Software, Introduction to OpenGL
I (1, 2.1 to 2.3, 2.8, 2.9)

UNIT II
GRAPHICS OUTPUT PRIMITIVES   07 hrs
Coordinate Reference Frames, Specifying a Two-Dimensional World-Coordinate Reference Frame in OpenGL, OpenGL Point Functions, OpenGL Line Functions, Line-Drawing Algorithms, Setting Frame-Buffer Values, OpenGL Curve Functions, Pixel Addressing and Object Geometry, Fill-Area Primitives, Polygon Fill Areas, OpenGL Polygon Fill-Area Functions
I (3.1 to 3.5, 3.7, 3.8, 3.14 to 3.16)

UNIT III
ATTRIBUTES OF GRAPHICS PRIMITIVES   07 hrs
OpenGL State Variables, Color and Gray Scale, OpenGL Color Functions, Point Attributes, Line Attributes, Curve Attributes, OpenGL Point-Attribute Functions, OpenGL Line Attribute Functions, Fill-Area Attributes
I (4.1 to 4.9)

UNIT IV
GEOMETRIC TRANSFORMATIONS   08 hrs

Basic Two-Dimensional Geometric Transformations, Matrix Representations and Homogeneous Coordinates, Inverse Transformations, Two-Dimensional Composite Transformations, OpenGL Raster Transformation, Geometric Transformations in Three-Dimensional Space, Three-Dimensional Translation, OpenGL Geometric Transformation Functions
I (5.1 to 5.4, 5.7, 5.9, 5.10, 5.17)

UNIT V

VIEWING   **08 hrs**
Two-Dimensional Viewing: The Two-Dimensional Viewing Pipeline, The Clipping Window, Normalization and Viewport Transformations, OpenGL Two-Dimensional viewing Functions, Clipping Algorithms, Two-Dimensional Point Clipping, Two-Dimensional Line Clipping – Cohen-Sutherland Line Clipping **I (6.1 to 6.6, listed topic from 6.7)**

UNIT VI

VISIBLE-SURFACE DETECTION METHODS   **07 hrs**
Classification of Visible-Surface Detection Algorithms, Back-Face Detection, Depth-Buffer Method
ILLUMINATION MODELS AND SURFACE-RENDERING METHODS
Light Sources, Surface Lighting Effects, OpenGL Illumination and Surface-Rendering Functions
I (9.1 to 9.3, 10.1, 10.2, 10.20)

UNIT VII

INTERACTIVE INPUT METHODS AND GRAPHICAL USER INTERFACES   **08 hrs**
Graphical Input Data, Logical Classification of Input Devices, Input Functions for Graphical Data, Interactive Picture-Construction Techniques, OpenGL Interactive Input-Device Functions, OpenGL Menu Functions
I (11.1 to 11.4, 11.6, 11.7)

UNIT VIII

COMPUTER ANIMATION   **07 hrs**
Raster Methods for Computer Animation, Design of Animation Sequences, Traditional Animation Techniques, General Computer-Animation Functions, Computer-Animation Languages, Key-Frame Systems, Motion Specifications, Articulated Figure Animation, Periodic Motions, OpenGL Animation Procedures
I (13)

Text Book:
I. Computer Graphics with OpenGL, 3rd Edition, Donad Hearn, M. Pauline Baker, Pearson Education, 2009

Reference Book:
1. Computer Graphics Using OpenGL, F. S. Hill, Jr., Stephen M. Kelley, 3rd edition, PHI, 2007

Note: Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 16 marks.

DC 117   **C# & .NET**

UNIT I

INTRODUCING C# AND THE .NET PLATFORM   **07 hrs**
THE PHILOSOPHY OF .NET
Understanding the previous state of affairs, The .NET solution, Introducing the building blocks of the .NET platform (the CLR, CTS, and CLS), Additional .NET-Aware programming languages, An

overview of .NET assemblies, Understanding the common type system, Understanding the common language specification, Understanding the common language runtime, The assembly/namespace/type distinction, Exploring an assembly using ildasm.exe, Exploring an assembly using reflector, Deploying the .NET runtime, The platform-independent nature of .NET

I (1)

UNIT II

BUILDING C# APPLICATIONS   **08 hrs**

The role of the .NET framework 4.0 SDK, Building C# applications using csc.exe, Building .NET applications using Visual C#2010 Express

CORE C# PROGRAMMING CONSTRUCTS

The anatomy of a simple C# program, An interesting aside: Some additional members of the System. Environment class, The System. Console class, System data types and C# shorthand notation, Working with string data, Narrowing and widening data type conversions, Understanding implicitly typed local variables, C# iteration constructs, Decision constructs and the relational/equality operators

I (2 (listed topics), 3)

UNIT III

CORE C# PROGRAMMING CONSTRUCTS (CONTINUED)   **07 hrs**

Methods and parameter modifiers, Understanding C# arrays, Understanding the Enum type, Understanding the Structure type, Understanding value types and reference types, Understanding C# nullable types

I (4)

UNIT IV

DEFINING ENCAPSULATED CLASS TYPES   **08 hrs**

Introducing the C# class type, Understanding constructors, The role of the this keyword, Understanding the static keyword, Defining the pillars of OOP, C# access modifiers, The first pillar: C#'s encapsulation services, Understanding automatic properties, Understanding object initializer syntax, Working with constant field data, Understanding partial types

I (5)

UNIT V

UNDERSTANDING INHERITANCE AND POLYMORPHISM   **08 hrs**

The basic mechanics of inheritance, Revising Visual Studio class diagrams, The second pillar of OOP: The details of inheritance, Programming for containment/delegation, The third pillar of OOP: C#'s polymorphic support, Understanding base class/derived class casting rules, The master parent class: System. Object

I (6)

UNIT VI

UNDERSTANDING STRUCTURED EXCEPTION HANDLING   **07 hrs**

Ode to errors, bugs, and exceptions, The role of .NET exception handling, The simplest possible example, Configuring the state of an exception, System-level exceptions (System.SystemException), Application-level exceptions (System.ApplicationException), Processing multiple exceptions, Who is throwing what?, The result of unhandled exceptions

I (7(listed topics))

UNIT VII

UNDERSTANDING OBJECT LIFETIME   **08 hrs**

Classes, objects, and references, The basics of object lifetime, The role of application roots, Understanding object generations, Concurrent garbage collection under .NET 1.0 – 3.5, Background

Garbage collection under .NET 4.0, The System. GC type, Building finalizable objects, Building disposable objects, Building finalizable and disposable types, Understanding lazy object instantiation
I (8)

UNIT VIII
WORKING WITH INTERFACES   **07 hrs**

Understanding interface types, Defining custom interfaces, Implementing an interface, Invoking interface members at the object level, Interfaces as parameters, Interfaces as return values, Arrays of interface types, Implementing interfaces using Visual Studio 2010, Resolving name clashes via explicit interface implementation, Designing interface hierarchies
I (9 (listed topics))

Note: Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 16 marks.

Text Book:
I. Pro C# 2010 and the .NET 4 Platform, 5th Edition, Andrew Troelsen, Wiley India, 2010

Reference Book:
1. C# 4.0 The Complete Reference, Herbert Schildt, Tata McGraw Hill Edition, 2010

Note: Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 16 marks.

DC 118   **INTERNET APPLICATIONS**

UNIT I
HYPERTEXT MARKUP LANGUAGE   **08 hrs**

Basic HTML, The Document Body, Text, Hyperlinks, Adding More Formatting, Lists, Using Colour and Images, Images
MORE HTML
Tables, Multimedia Objects, Frames, Forms – Toward Interactivity, The HTML Document Head in Detail, XHTML – An Evolutionary Markup
I (2, 3)

UNIT II
CASCADING STYLESHEETS   **07 hrs**

Introduction, Using Styles: Simple Examples, Defining Your Own Styles, Properties and Values in Styles, Style Sheets – Worked Example, Formatting Blocks of Information, Layers
I (4)

UNIT III
AN INTRODUCTION TO JAVASCRIPT   **08 hrs**

What is Dynamic HTML?, JavaScript, JavaScript – The Basics, Variables, String Manipulation, Mathematical Functions, Statement, Operators, Arrays, Functions
OBJECTS IN JAVASCRIPT
Data and Objects in JavaScript, Regular Expressions, Exception Handling, Built-in Objects, Cookies, Events
I (6, 7)

UNIT IV

DYNAMIC HTML WITH JAVASCRIPT   **07 hrs**

Data Validation, Opening a New Window, Messages and Confirmations, The Status Bar, Rollover Buttons, Moving Images

I (8.1 to 8.4, 8.6, 8.7)

UNIT V

PROGRAMMING IN PERL 5   **07 hrs**

Why Perl, Online Documentation, The Basic Perl Program, Scalars, Arrays, Hashes, Control Structures, Processing Text, Regular Expressions

I (9.1 to 9.9)

UNIT VI

CGI SCRIPTING   **08 hrs**

What is CGI?, Developing CGI Applications, Processing CGI, Introduction to CGI.pm, CGI.pm Methods, Creating HTML pages Dynamically, Using CGI.pm – An Example, Adding Robustness, Carp, Cookies

BUILDING WEB APPLICATIONS WITH PERL

Uploading Files, Tracking Users with Hidden Data, Using Relational Databases, Using lib www.

I (10, 11.1 to 11.4)

UNIT VII

AN INTRODUCTION TO PHP   **08 hrs**

PHP, Introducing PHP, Including PHP in a Page, Data Types, Program Control, Arrays, User-defined Functions, Built-in Functions, Regular Expression

BUILDING WEB APPLICATIONS WITH PHP

Tracking Users, Using Databases, Handling XML

I (12.1 to 12.9, 13)

UNIT VIII

XML: DEFINING DATA FOR WEB APPLICATIONS   **07 hrs**

Basic XML, Document Type Definition, XML Schema, Document Object Model, Presenting XML, Handling XML with Perl

I (14.1 to 14.6)

Textbook:

I. Web Programming – Building Internet Applications, Chris Bates, Third Edition, Wiley Student Edition, 2006.

Note: Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 16 marks.

DC 119   CLOUD COMPUTING

UNIT I

CLOUD COMPUTING BASICS   **08 hrs**

Cloud Computing Overview, Applications, Intranets and the Cloud, First Movers in the Cloud

YOUR ORGANIZATION AND CLOUD COMPUTING

When you can use Cloud Computing, Benefits, Limitations, Security Concerns, Regulatory Issues

I (1, 2)

UNIT II

THE BUSINESS CASE FOR GOING TO THE CLOUD   **07 hrs**

Cloud Computing Services, How those Applications help your Business, Deleting your Datacenter. Examples: Salesforce.com, Thomson Reuters
I (4)

UNIT III
CLOUD COMPUTING TECHNOLOGY   **07 hrs**
Hardware and Infrastructure: Clients, Security, Network, Services
Accessing the Cloud: Platforms
I (5, 6 (listed topics))

UNIT IV
CLOUD COMPUTING TECHNOLOGY (CONTINUED)   **08 hrs**
Cloud Storage: Overview, Cloud Storage Providers
Standards: Application, Client, Infrastructure, Service
I (7, 8)

UNIT V
CLOUD COMPUTING AT WORK   **07 hrs**
Software as a Service: Overview, Driving Forces, Company Offerings, Industries
I (9)

UNIT VI
CLOUD COMPUTING AT WORK (CONTINUED)   **07 hrs**
Developing Applications: Google, Microsoft, Development, Troubleshooting, Application Management
Local Clouds and Thin Clients: Virtualization in your organization, Server Solutions, Thin Clients
I (Selected topics from 11 and 12)

UNIT VII
MIGRATING TO THE CLOUD   **08 hrs**
Cloud Services for Individuals, Cloud Services aimed at Mid-market, Enterprise-class Cloud Offerings, Migration
I (13)

UNIT VIII
BEST PRACTICES AND THE FUTURE OF CLOUD COMPUTING   **07 hrs**
Analyze your service, Best Practices, How Cloud Computing might Evolve
I (14)

Text Book:
I. Cloud Computing – A Practical Approach, Anthony T. Velte, Toby J. Velte, Robert Elsenpeter, Tata McGraw- Hill, 2010
Reference Book:
1. Cloud Computing Bible, Barrie Sosinsky, Wiley India, 2011

Note: Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 16 marks.

DC 120   SOFTWARE TESTING

UNIT I
INTRODUCTION   **08 hrs**
Software structure and software testing, Purpose of testing, Dichotomies, A model for testing.
I (1.1 to 1.4)

UNIT II
TESTING AND LEVELS   **07 hrs**

Testing levels, Unit testing, Component testing, Integration testing, System testing.
I (2.1 to 2.5)

UNIT III

TESTING AND LEVELS (CONTINUED)   **07 hrs**
Interoperability testing, Performance testing, Regression testing, Acceptance testing, Pilot or field testing, Installation or Production testing.
I (2.6 to 2.11)

UNIT IV

TRANSACTION FLOW TESTING   **08 hrs**
Control flow chart and structure, data, and transaction testing, Software functionality and transactions, Transaction flow structure, Transaction-flow techniques.
DATA FLOW TESTING
Basics of data flow testing, Data flowgraphs and their representation, Data object state and usage, Data flow anomalies, States of data objects and data flow anomalous state graph, Static versus dynamic anomaly detection, Data flowgraph testing techniques, Strategies for data flow testing, Test strategies, Application of data flow testing.
I (5.1 to 5.4, 6.1 to 6.10)

UNIT V

DOMAIN TESTING   **07 hrs**
Domains and paths, Concept of domain, open and closed domains, Nice domains and ugly domains, Domain testing, Domains and interface testing, Domains and testability.
I (7.1 to 7.6)

UNIT VI

PATHS, PATH PRODUCTS   **08 hrs**
Concepts of path and path expressions, A path reduction procedure, Applications.
I (8.1 to 8.3)

UNIT VII

LOGIC BASED TESTING   **07 hrs**
Decision tables, Decision tables in functional testing, Decision tables in structural testing, Predicates and relational operators.
I (9.1 to 9.4)

UNIT VIII

TESTING OF OBJECT-ORIENTED SYSTEMS   **08 hrs**
Introduction, Differences in OO Testing: Unit testing a set of classes, Putting classes to work together – Integration testing, System testing and interoperability of OO systems, Regression testing of OO systems, Tools for testing of OO systems.
1 (11.1 & 11.3)

Text Book:
I.   Software Testing: Techniques and Applications, Arun Kumar Khannur, Pearson Education, 2011

Reference Books:
1. Software Testing: Principles and Practices, Srinivasan D and Gopalswamy R, Pearson Education, 2006
2. Foundations of Software Testing, Aditya P. Mathur, Pearson Education, 2008

Note*:* Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 16 marks.

DC 121   EMBEDDED SYSTEMS

UNIT I
INTRODUCTION TO EMBEDDED SYSTEMS   07 hrs
Embedded Systems Overview; Design Challenge-Optimizing Design Metrics: Common Design Matrics, The time to Market Design Matric, The NRE and Unit Cost Design Metrics, The performance Design Metric; Processor Technology: GPPs, SPPs, ASIPs; IC Technology: Full Custom, Semicustom, PLD; Design Technology: Compilation, Libraries, Test; Trade-Offs: Design Productivity Gap.
I (1.1, 1.2, 1.3, 1.4, 1.5, 1.6)

UNIT II
CUSTOM SINGLE PURPOSE PROCESSORS: HARDWARE   07 hrs
Introduction; Combinational Logic: Transistors and Logic Gates, Basic Combinational Logic Design, RT Level Combinational Components; Sequential Logic: Flip-Flops, RT Level Sequential Components, Sequential Logic design; Custom Single Purpose Processor Design; RT-Level Custom Single Purpose Processor Design; Optimizing Custom Single Purpose Processors: Optimizing the Original Program, FSMD, Datapath, FSM.
I (2.1, 2.2, 2.3, 2.4, 2.5, 2.6)

UNIT III
GENERAL PURPOSE PROCESSORS: SOFTWARE   08 hrs
Introduction; Basic Architecture: Datapath, Control Unit, Memory; Operation: Instruction Execution, Pipelining, Superscalar and VLIW Architectures; Programmer's View; Development Environment: Design Flow and Tools, Example(ISS for a simple processor), Testing and Debugging; ASIPs: Microcontrollers, DSPs ; Selecting a Microprocessor; General Purpose Processor Design
I (3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8)

UNIT IV
STANDARD SINGLE-PURPOSE PROCESSORS: PERIPHERALS   08 hrs
Introduction; Timers, Counters and Watchdog Timers: Examples of Reaction Timer and ATM Timeout Using a WDT; UART; Pulse Width Modulators: Overview, Controlling a DC Motor Using a PWM; LCD Controllers; Keypad Controllers; Stepper Motor Controllers: Overview, Examples; Analog to Digital Converters: Successive Approximation; Real Time Clocks.
I (4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9)

UNIT V
MEMORY   08hrs
Introduction; Memory Write Ability and Storage Permanence: Trade-offs; Common Memory Types: ROMs, RAMs; Composing Memory; Memory Hierarchy and Cache: Cache Mapping Techniques, Replacement Policy, Write Techniques, Impact on System Performance; Advanced RAM: The Basic DRAM, FPM DRAM, EDO DRAM, ES DRAM, RDRAM, MMU.
I (5.1, 5.2, 5.3, 5.4, 5.5, 5.6)

UNIT VI
INTERFACING   08 hrs
Introduction; Communication Basics; Microprocessor Interfacing: I/O Addressing; Microprocessor Interfacing: Interrupts; Microprocessor Interfacing: Direct Memory Access; Arbitration; Multilevel Bus Architecture; Advance Communication Principles; Serial Protocols; Parallel Protocols; Wireless Protocols.
I (6.1, 6.2, 6.3, 6.4, 6.5, 6.6, 6.7, 6.8, 6.9, 6.10, 6.11)

UNIT VII

INTRODUCTION TO REAL TIME OPERATING SYSTEMS 07hrs

Tasks and Task States: The Scheduler, A Simple Example ; Tasks and Data: Shared-Data Problems, Reentrancy ; Semaphores and Shared Data: RTOS Semaphores, Initializing Semaphores, Reentrancy and Semaphores, Multiple Semaphores, Semaphores as a Signaling Device, Semaphore Problems, Ways to Protect Shared Data .
II (6.1, 6.2, 6.3)

UNIT VIII

CASE STUDIES OF PROGRAMMING WITH RTOS 07hrs

Case Study of Coding for An Automatic Chocolate Vending Machine; Case Study of Coding for Sending Application Layer Byte Streams on TCP/IP Network; Case Study of An Embedded System for An Adaptive Cruise Control System in a Car.
III (11.1, 11.3, 12.3)

Text Books:
  I. Embedded System Design, A Unified Hardware/Software Introduction, Frank Vahid / Tony Givargis, 2009 reprint, John Wiley Student Edition.
 II. An Embedded Software Primer, David E. Simon, Tenth Impression 2011, Pearson Education.
III. Embedded Systems, Raj Kamal, Ninth reprint 2011, Tata-McGrawHill Publications.

Reference Book:
 1. Embedded Microcomputer Systems, Jonathan W. Valvano, Fourth Indian reprint 2009, 2nd Edition, Thomson or Cengage Learning.

Note*:* Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 16 marks.

DC 122 **MOBILE APPLICATION DEVELOPMENT**

UNIT I

INTRODUCTION TO ANDROID 08 hrs

What Is Android? Android Versions, Features of Android, Architecture of Android, Android Devices in the Market.
ACTIVITIES AND INTENTS

Understanding Activities: Applying Styles and Themes to Activity, Hiding the Activity Title, Displaying a Dialog Window, Displaying a Progress Dialog, Linking Activities Using Intents: Resolving Intent Filter Collision, Returning Results from an Intent, Passing Data Using an Intent Object, Calling Built-In Applications Using Intents: Understanding the Intent Object, Using Intent Filters, Adding Categories , Displaying Notifications.
I (1, 2)

UNIT II

INTRODUCING ANDROID USER INFERFACE 07 hrs

Understanding the Components of a Screen: Views and ViewGroups, LinearLayout, AbsoluteLayout, TableLayout, RelativeLayout, FrameLayout, ScrollView, Adapting to Display Orientation: Anchoring Views, Resizing and Repositioning, Managing Changes to Screen Orientation, Persisting State Information during Changes in Configuration, Detecting Orientation Changes, Controlling the Orientation of the Activity: Creating the User Interface Programmatically: Listening for UI Notifications : Overriding Methods Defined in an Activity, Registering Events for Views**.**
I (3)

UNIT III

DESIGNING USER INTERFACE USING VIEWS   **08 hrs**

Basic Views: TextView View, Button, ImageButton, EditText, CheckBox, ToggleButton, RadioButton, and RadioGroup Views, ProgressBar View, AutoCompleteTextView View, Picker Views, TimePicker View, Displaying the TimePicker in a Dialog Window, DatePicker View, Displaying the DatePicker View in a Dialog Window, List Views: ListView View, Customizing the ListView, Using the Spinner View.

DISPLAYING PICTURES AND MENUS WITH VIEWS

Using Image Views to Display Pictures: Gallery and ImageView Views, ImageSwitcher, GridView, Using Menus with Views: Creating the Helper Methods, Options Menu, Context Menu, Some Additional Views: AnalogClock and DigitalClock Views, WebView.

I (4, 5)

UNIT IV

DATA PERSISTENCE   **07 hrs**

Saving and Loading User Preferences: Using getSharedPreferences(), Using getPreferences(), Persisting Data to Files: Saving to Internal Storage, Saving to External Storage (SD Card), Choosing the Best Storage Option, Using Static Resources, Creating and Using Databases: Creating the DBAdapter Helper Class, Using the Database Programmatically: Adding Contacts, Retrieving All the Contacts, Retrieving a Single Contact, Updating a Contact, Deleting a Contact, Upgrading the Database, Pre-Creating the Database, Bundling the Database with an Application.

I (6)

UNIT V

CONTENT PROVIDERS   **08 hrs**

Sharing Data in Android: Using a Content Provider, Predefined Query String Constants, Projections, Filtering, Sorting, Creating Your Own Content Providers, Using the Content Provider

MESSAGING AND NETWORKING

SMS Messaging: Sending SMS Messages Programmatically, Getting Feedback After Sending the Message Sending SMS Messages Using Intent, Receiving SMS Messages, Updating an Activity from a Broadcast Receiver, Invoking an Activity from a Broadcast Receiver, Caveats and Warnings, Sending E-Mail: Networking: Downloading Binary Data, Downloading Text Files, Accessing Web Services, Performing Asynchronous Calls.

I (7, 8)

UNIT VI

LOCATION BASED SERVICES   **07 hrs**

Displaying Maps: Creating the Project, Obtaining the Maps API Key, Displaying the Map, Displaying the Zoom Control, Changing Views, Navigating to a Specific Location, Adding Markers, Getting the Location That Was Touched, Geocoding and Reverse Geocoding, Getting Location Data: Monitoring a Location.

I (9)

UNIT VII

ANDROID SERVICES   **07 hrs**

Creating Your Own Services: Performing Long-Running Tasks in a Service, Performing Repeated Tasks in a Service, Executing Asynchronous Tasks on Separate Threads Using Intent Service Communicating between a Service and an Activity: Binding Activities to Services.

I (10)

UNIT VIII

HARDWARE SENSORS   **08 hrs**

Using Sensors and the Sensor Manager: Supported Android Sensors, Introducing Virtual Sensors, Finding Sensors, Monitoring Sensors, Interpreting Sensor Values, Monitoring a Device's Movement and Orientation, Determining the Natural Orientation of a Device, Introducing Accelerometers, Detecting Acceleration Changes, Creating a Gravitational Force Meter, Determining a Device's Orientation, Understanding the Standard Reference Frame, Calculating Orientation Using the Accelerometer and Magnetic Field Sensors, Remapping the Orientation Reference Frame, Determining Orientation Using the Deprecated Orientation Sensor, Creating a Compass and Artificial Horizon, Introducing the Gyroscope Sensor, Introducing the Environmental Sensors: Using the Barometer Sensor, Creating a Weather Station.
I (12)

Text Book:
I. Beginning Android Application Development, Wei-Meng Lee, Wiley India, 2011

Reference Books:
1. Professional Android 4 Application Development, Reto Meier, Wiley India, 2012
2. Hello, Android, Ed Burnette, Pragmatic Programmers Publications, 2010

Note*:* Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 16 marks.

DC 123   NETWORK MANAGEMENT

UNIT I
DATA COMMUNICATIONS AND NETWORK MANAGEMENT OVERVIEW   08 hrs
Analogy of Telephone Network Management, Data (Computer) and Telecommunication Network, Distributed Computing Environments, TCP/IP-Based Networks: The Internet and Intranets, Communications Protocols and Standards, Networks, Systems, and Services, Case Histories on Network, System, and Service Management, Challenges of IT Managers, Network Management : Goals, Organization, and Functions, Network Management Architecture and Organization, Network Management Perspectives, NMS Platform, Current Status and Future of Network Management
I (1)

UNIT II
SNMP AND NETWORK MANAGEMENT
BASIC FOUNDATIONS: STANDARDS, MODELS, AND LANGUAGE   07 hrs
Network Management Standards, Network Management Models, Organization Model, Information Model, Communication Model, Abstract Syntax Notation One: ASN.1, Encoding Structure, Macros, Functional Model
I (3)

UNIT III
SNMPv1 NETWORK MANAGEMENT:
ORGANIZATION AND INFORMATION MODELS   07 hrs
Managed Network: Case Histories and Examples, The History of SNMP Management, Internet Organizations and Standards, The SNMP Model, The Organization Model, System Overview, The Information Model
I (4)

UNIT IV
SNMP v1 NETWORK MANAGEMENT:
COMMUNICATION AND FUNCTIONAL MODELS   08 hrs

The SNMP Communication Model, Functional Model
SNMP MANAGEMENT: RMON
What is Remote Monitoring? RMON SMI and MIB, RMON1, RMON2, ATM Remote Monitoring
I (5, 8.1 to 8.5)

UNIT V
NETWORK MANAGEMENT TOOLS, SYSTEM, AND ENGINEERING   **08 hrs**
System Utilities for Management, Network Statistics Measurement Systems, MIB Engineering, Network Management Systems
I (9)

UNIT VI
NETWORK MANAGEMENT APPLICATIONS   **07 hrs**
Configuration Management, Fault Management, Performance Management, Event Correlation Techniques
I (11.1 to 11.4)

UNIT VII
NETWORK MANAGEMENT APPLICATIONS (CONTINUED)   **07 hrs**
Security Management, Accounting Management, Report Management, Policy-Based Management, Service Level Management
I (11.5 to 11.9)

UNIT VIII
BROADBAND NETWORK MANAGEMENT   **08 hrs**
Broadband Network and Services, ATM Technology, ATM Network Management, MPLS Network Technology, MPLS OAM Management
I (12.1 to 12.5)

Text Book:
I. Network Management Principles and Practices, 2nd Edition, Mani Subramanian, Pearson Education, 2011

Note*:* Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 16 marks.

DC 138 (WRITTEN)   COMMUNICATION SKILLS AND TECHNICAL WRITING

UNIT I
COMMUNICATION: ITS TYPES AND SIGNIFICANCE   **06 hrs**
What is Communication; Process of Communication; Types of communication; The Media of Communication; Barriers in Communication; Effective Communication.
I (1.1, 1.2, 1.3, 1.4, 1.5, 1.6)

UNIT II
GRAMMAR   **07 hrs**
Synonyms; Antonyms; Words used as different parts of Speech; Spotting errors; Concord; Principle of proximity between subject and verb.
I (4.1, 4.2, 4.3, 4.6, 4.7, 4.8)

UNIT III

SYNTAX **06 hrs**

Sentence Structure; Combination of Sentences; Transformation of Sentences; Verb Patterns in English.
I (5.1, 5.2, 5.3, 5.4)

UNIT IV

READING SKILLS **07 hrs**

The Purpose of Reading; The Process of Reading; How to get Concentration in Reading; Reading Strategies; Reading Comprehension; Preparing outlines.
I (2.1, 2.2, 2.3, 2.5, 2.6, 2.11)

UNIT V

WRITING SKILLS **07 hrs**

Effective Writing; Job Application, Bio-data, Personal Resume and Curriculum Vitae; Agenda and Minutes of a Meeting; Back office job for organizing a conference/seminar; Writing Styles; Scientific and Technical Writing; Writing paragraphs; Writing Essays.
I (3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.9, 3.11)

UNIT VI

9 **LISTENING SKILLS** **04 hrs**

9.1 The Process of listening; Two Styles of Communication; Soft Skills; Feedback Skills; Essentials of Good Communications; Types of Listening; Barriers to Listening; Note taking and Note making.
I (8.1, 8.2, 8.3, 8.4, 8.6, 8.7 8.8, 8.9)

SPEAKING SKILLS **03 hrs**

Skills of Effective Speaking; the Components of an Effective Talk; Tone of Voice; Body Language; Timing and Duration of Speech; Audio-Visual Aids in Speech.
I (9.1, 9.2, 9.4, 9.5, 9.6, 9.7)

10 **UNIT VII**

TECHNICAL REPORT AND SCIENTIFIC REPORT **06 hrs**

Writing a good report; Types of Report; Structure of Reports; Collecting Data; Visual Aids; Tips for Writing Reports.
I (15.1, 15.2, 15.3, 15.4, 15.8, 15.9)

UNIT VIII

CAMPUS RECRUITMENT, INTERVIEW AND GROUP DISCUSSION **03 hrs**

Main Features of Campus Recruitment; Tips for giving an Interview; Body language for Interviews; Group Discussion.
I (10.1, 10.2, 10.3, 10.4)

MEETINGS NEGOTIATIONS PHONE AND MOBILE PHONE SKILLS **03 hrs**

Conducting Meetings, Skills for Participating in a Meeting; Attending Telephonic Calls.
I (11.1, 11.2, 11.5)

Text Book:

I. The Functional Aspects of Communication Skills, Prajapati Prasad, S. K. Kataria & Sons, New Delhi, Fifth Edition, July 2011-12

11 **Reference Books:**
1. Business Communication, Sinha K. K, S. Chand, New Delhi.
2. Business Communication, Asha Kaul, Prentice Hall of India.
3. Business Correspondence and Report Writing: A Practical Approach to Business and Technical Communication, Sharma, R.C. and Krishna Mohan, Tata McGraw-Hill.

4. A New Approach to English Grammar for High Schools, Madan Sabina, Spectrum Books, New Delhi.

NOTE: Examination procedure.
(a) Theory: Consists of written examination for 80 marks.

(b) Students have to answer **FIVE** full questions out of **EIGHT** questions to be set from each unit carrying 12 marks.

DC 137 (ORAL)

Oral Test: Consists of an Oral Test to test the Communication Skills which includes an oral presentation on any subject, of the choice of students (e.g. About IETE, General knowledge topics etc.). This presentation need not be on technical subject. This test carries **20** marks.

GENERAL GUIDELINES for DIPIETE Project work and Seminar

PROJECT WORK

12   Eligibility

For eligibility students may refer to the website **www.iete.org**

13

The project will consist of hardware/software, design/development, experimental / theoretical work of a contemporary topic or a combination of these. There will be no joint project work.

The students may work for the project in any industry, in any educational institution or in R&D laboratory. The student will be required to have a project guide from one of these places who can supervise and guide. In case of difficulties, the students may contact the local centre.

Pass marks for the project will be 5 GPA. Students not getting 5 GPA marks will be required to re-register for the project following the usual procedure. The students will have the option of taking up a new project or continue with the earlier project.

14   DC 135   Project work

Eligible students are required to forward their applications for registration of Project Work to the respective IETE Centres/Sub Centres where the examinations are conducted. The applications should include the synopsis of the Project Work, guide's bio-data and his willingness letter to guide the student, along with requisite project fees.

Project guide

Project guide can be chosen from any one of the following categories

(a) An academic person with a Master's qualification in Engineering having atleast 5 years of experience

(b) A person working in industry/institution with a Bachelor's degree in Engineering having atleast 10 years of experience

(c) IETE corporate member with 10 years of experience

DC 135   Project work;

Execution of the Project Approved and Submission of Project Reports

A student is expected to put in at least 6 hours/week spread over a period of 12 weeks for the project after the same has been approved.

Two bound copies of the project report are required to be submitted by the student (one copy for Evaluation board & one copy for IETE HQ record) to their respective local Centres who will intimate the date, time and venue for appearing before the Evaluation Board & presentation of the Project Work by the student.

15   Evaluation Board

The Regional Evaluation Board already set up for scrutinizing of the proposals will also form the Evaluation Board for assessment of the final Project Reports with one of the member acting as Chairman of the Evaluation Board. **IETE Centre will only act as facilitator and are not to be associated with the Examination Work**.

Evaluation is for 200 Marks (8 Credits)

The following points are required to be checked by the Evaluation Board at the time of assessment of the Project Reports.

   (a) **Time Limit;**   The Project Report is required to be completed within a period of one year.

   (b) **Project Report;**   The Project Report should contain the following certificate from the guide:

16   CERTIFICATE

This is to certify that this is a bonafide record of the Project Work done satisfactorily at _____ by Mr/Ms. _____ in partial fulfillment of his/her AMIETE Examination. This report has not been submitted for any other examination and does not form part of any other course undergone by the candidate.

(Signature, Name, Designation
and Address of the Guide with the seal of
the Organization/Institution/Laboratory)

17   Project Fee
Project Fee of Rs.1200/- is required to be submitted by the student while forwarding his/her application for the project work. The DD of requisite amount is to be drawn in favour of the IETE Centre.

DC 136   SEMINAR

Eligibility:
For eligibility students may refer to the website **www.iete.org**

Registration:
Eligible students are required to submit their applications for the registration of seminar to the respective Centres/Sub-Centres where the examinations are conducted with a brief write up of the topic selected for approval. Seminar topic should be selected from the emerging technologies in ET,CST only. Students who have undergone industrial training may make their presentation of their training report.

Scrutiny/Approval of Seminar proposals:
The members of Regional Evaluation Board will approve the topic of seminar. The students should make presentation on approved topics only.

Seminar Fees:
Each student is required to pay Rs.600/- Seminar fee to the respective IETE Centre/Sub-Centre.

Examination/Evaluation:
The IETE Centre / Sub-Centre will fix up a suitable date immediately after the main examination for the conduct of Seminar. The students should make Power Point presentation on the approved topic. In addition, they have to submit a complete report on the Seminar topic presented.

Evaluation is for 100 Marks (4 Credits)

Appendix 'F'

[TO BE PUBLISHED IN PART-1 SECTION –I OF GAZATTE OF INDIA]

Government of India
Ministry of Human Resource Development
Department of Secondary & Higher Education
* * * * * * * *

Shastri Bhavan, New Delhi,
the 16th January, 2006

NOTIFICATION

No.F.24 – 7 /2002 – TS.III. On the recommendations of the High Level Committee for recognition, Government of India have decided to recognize the Diploma in Computer Science & Engineering, DIPIETE (Computer Science & Engineering) conducted by the Institution of Electronics & Telecommunication Engineers, New Delhi, till further orders for the purpose of employment to the posts and services under the Central Government in the appropriate field.

The recognition will be effective from the year 2002, till further orders.

(Ravi Mathur)
Joint Secretary to the Government of India
Tel: 2338 1097

To

The Manager,
Government of India Press,
Faridabad.

Contd./-

NITI\C:\Ghildiyal\HIGH LEVEL COMMITTEE

GOVERNMENT OF KARNATAKA

No. BTE 36 ERS (2) 92   Office of the Secretary,
Board of Technical Examinations,
Bangalore-1,

Dated 22.12.1992.

To

The Secretary,
Institute of Electronic & Telecommunication,
No.2, Institutional Area,
Lodi Road,
NEW DELHI.

Sir,
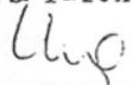
       Sub:- Recognisation by Government of India of
             Diploma Level Examination in Electronic
             conducted by your Institution.

       Ref:- 1. Notification 38 (F.18-9/89 TD-V dt.5.8.92
                of Govt. of India, Ministry of Human Resource
                Development, New Delhi.

             2. G.O.No. GAD 35 SRR 64 dt.20th April 1965
                of Govt. of Karnataka.

       I wish to inform you that the Diploma in Electronic
conducted by your institution has been recognised by Government
of India (vide ref. 1). Hence, the Diploma in Electronic
conducted by your institution stands atomatically recognised
by Government of Karnataka as per Karnataka Government Order
cited under reference(2)

                Yours faithfully,

                SECRETARY,
           BOARD OF TECHNICAL EXAMINATIO
               BANGALORE.

GOVERNMENT OF RAJASTHAN

BOARD OF TECHNICAL EDUCATION,RAJ.JODHPUR

NO.F5(7-11)A/Gen/BTE/99/ 7957   Dated: 30/10/9

Asstt. Secretary(ACMD)
The Institution of Electronics
and Tele communication Engineers,
Institutional Area, Lodi Road,
New Delhi-110003

                    Sub:Recognition of Diploma I.E.T.E
                    Ref:IETE/769/Exam/99 Dt.16.6.98

Sir,

                    It is to inform you that Govt. of Rajasthan

Department of Technical Education as per there order No P.1(10)

T.E./92 dated 13.10.99(Copy enclosed) has recognised the Diploma

in electronics and Telecumminaction awarded by you as equivalent

to 3 years Diploma course awarded by this Board.

                              Yours Faithfully

Encls:As above   (M.D. Bhargava 30.10.95

                              Dy. Director(conf.)

WEST BENGAL STATE COUNCIL OF TECHNICAL EDUCATION
(A Statutory Body Under West Bengal Act XXI of 1995)

No. 1063-SC(T)E   Date 10th Oct., 2002.

From : The Secretary,
W.B.State Council of Tech.Education.
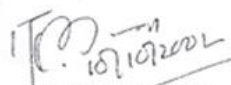
To : The Director, Academic
The Institution of Electronics & Tele-Communication
Engineers (Calcutta Centre),
Salt Lake Electronics Complex,
EP Block, Plot No.JI-7,Sector-V,
Kolkata- 700091.

Sub :- Recognition of Diploma IETE(Diploma Level)in the
field of Electronics & Tele-Communication Engg.

Ref :- Your letter No.IETE/Cal/Recog-SCTE/2001/2002.

It appears that the Diploma level examination in Electronics
conducted by the Institution of Electronics & Tele-Communication
Engineers is recognised by the MHRD, Government of India for the
purpose of employment of posts and services under the Central Govern-
ment in the appropriate field.

In this connection it is intimated that according to existing
procedure any course recognised by Government of India in the
Ministry of Human Resource Development is also recognised by All
State Governments/Union Teretories and as such no further recognition
notification is required to be issued from this end.

(R. C. BHATTACHARYA)
S e c r e t a r y,
W.B.State Council of Tech. Education.

प्रेषक,

तकनीकी शिक्षा आयुक्त एवं विशेष सचिव,
हरियाणा सरकार, तकनीकी शिक्षा विभाग,
चण्डीगढ ।

सेवा में,
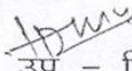
प्रधान सचिव,,
इलैक्ट्रोनिक्स एवं टैलीकम्यूनिकेशन इंजीनियर संस्थान,
2, इंस्टीच्यूशनल ऐरिया, लोदी रोड़,
नई दिल्ली 110 003

यादी कमांक 95   /शैक्षिक,
दिनांक : 18-2-03

विषय :   Regarding – Recognition of Diploma by Haryana
          Govt.

उपरोक्त विषय पर आपके यादी कमांक : आई.ई.
टी.ई.769/2002/दिनांक 11.12.02 के संदर्भ में ।

2.   इस सम्बन्ध में सूचित किया जाता है कि जो
डिप्लोमा/डिग्रीयां भारत सरकार तथा अखिल भारतीय तकनीकी
शिक्षा परिषद द्वारा मान्यता प्राप्त है वही डिप्लोमे हरियाणा राज्य
द्वारा भी मान्यता प्राप्त हैं ।

उप – निदेशक,
कृतेःतकनीकी शिक्षा आयुक्त एवं
विशेष सचिव, हरियाणा सरकार,
तकनीकी शिक्षा विभाग, चण्डीगढ
7|2|03

ફેક્સ : (૦૭૯) ૬૩૦૧૬૫૪

ટેલિફોન : ૬૩૦૧૩૭૧-૬૩૦૦૩૪૨-૪૩,
૬૩૦૦૧૨૬ અને ૬૩૦૦૬૬૪

ટેલિગ્રામ : યુનિગુજરાત

FAX : (079) 6301654

Tele. { Phone : 6301341-6300342-43, 6300126 & 6300664
{ ગ્રામ : UNIGUJARAT

ગુજરાત યુનિવર્સિટી
GUJARAT UNIVERSITY

ગુજરાત યુનિવર્સિટી કાર્યાલય,
પોસ્ટ બૉક્સ નં. ૪૦૧૦,
નવરંગપુરા, અમદાવાદ-૩૮૦ ૦૦૯.

OFFICE OF THE GUJARAT UNIVERSITY
POST BOX No 4010,
NAVRANGPURA,
AHMEDABAD-380 009 (INDIA)

No. Exam/3A/Eli/6370 /2002   Date : 12/9/2002

To,

The Chair Person,
I.E.T.C. ← IETE
206, Umiya Shopping Centre
Satelite Road,
Ahmedabad- 380 015
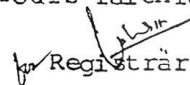
Sub:- Recognition of AMIETE/DIPIETE
Course.

Madam,

With reference to your letter No.IETE/Ch/2/2001

dated 6/12/2001 on the subject mentioned above, I am to

inform you that on the recommendation of the Standing

Committee on equivalence of examination of the University

held on 26/8/2002, It has been resolved that the examinations

of AMIETE/DIPIETE are recognized as equivalent to B.E./DIPLOMA

examination by this University.

Thanking you,

Yours faithfully,

for Registrar

UNIVERSITY OF CALICUT

(Abstract)

Recognition of Diploma in Electronics and Telecommunication Engineering regular Diploma awarded by Institution of Electronics and Telecommunication Engineers, New Delhi as equivalent to 3 years Diploma awarded by State Board of Technical Education – Granted – Orders issued.

GENERAL AND ACADEMIC BRANCH – I 'A' SECTION

No.GAI/A1/6988/05   Dated, Calicut University P.O, 12.08.2009.

Read: 1. Minutes of the meeting of Board of Studies in Electrical, Electronics and Communication Engineering, Instrumentation and Control Engineering Applied Electronics and Instrumentation Engineering (UG) held on 30-03-2006, item No.4.
2. Minutes of the meeting of Faculty of Engineering held on 06-06-2006 item No.5.
3. Minutes of the meeting of Academic Council held on 05-04-08 item No.B-5.

ORDER

The meeting of the Board of Studies in Electrical, Electronics and Communication Engineering, Instrumentation and Control Engineering Applied Electronics and Instrumentation Engineering (UG) held on 30-03-2006, vide paper read first, considered the recognition of Diploma in Electronics and Telecommunication Engineering (regular Diploma) awarded by the Institution of Electronics and Telecommunication Engineers, New Delhi, and decided to recognise the same as equivalent to 3 years diploma awarded by State Board of Technical Education.

The meeting of Faculty of Engineering held on 06.06.2006 and the Academic Council held on 05.04.2008 as paper read 2nd and 3rd above, approved the decision of the Board of Studies.

Sanction has therefore been accorded to recognise the regular Diploma in Electronics and Telecommunication Engineering awarded by the Institution of Electronics and Telecommunication Engineers, New Delhi as equivalent to 3 years Diploma awarded by State Board of Technical Education.

Orders are issued accordingly.

Sd/-

DEPUTY REGISTRAR (G&A–I)
For REGISTRAR

To

   K.M. Ajas
   Karimbil Manalath (H),
   Mundathicode (PO),
   Trichur – 680595.

Copy to:
1. The Assistant Secretary (Acad)
   Institute of Electronics & Telecommunication Engineers,
   New Delhi.
2. The Controller of Examinations
3. Director, Technical Education, Government of Kerala
4. Entrance Commissioner, Trivandrum.
5. E.R.D.I.
6. GAI/'E' Section
7. PS to VC/PA to PVC/PA to Registrar
8. SF/DF/FC

Forwarded By Order

SECTION OFFICER

From

The Director,
Technical Education, U.T.
Chandigarh.

To

The Secretary,
Institution of Electronics &
Telecommunication Engineers,
2, Institutional Area Lodi Road,
New Delhi-110003

Memo. No. F. 213/EA(P&EC)-92/ 1896
dated, Chandigarh, the 16/12/92

Subject: Recognition of Diploma Level Examination in
             Electronics and Telecommunication conducted
             by the Institution of Electronics and
             Telecommunication Engineers, New Delhi.

Reference your letter no. IETEI/769/Exam/92/
dated 23.10.92, on the subject noted above.

In this connection, it is intimated that the
notification regarding recognition of diploma course cited
as subject accorded/received from the Govt.of India,
Ministry of Human Resource Development, New Delhi Delhi
is applicable to all state Govt./ Union Territories as
such no further recognition notification is
required to be issued by this Directorate.

Director Technical Education,
Union Territory, Chandigarh.

1 DEC 1992

Government of India
Ministry of Human Resource Development
Department of Education

Copy of MHRD Letter No.F.24-7/2002-TS.III Dated 10ᵗʰ January, 2006.

To,

The Secretary General,
Institution of Electronics & Telecommunication Engineers,
Delton House, Lodhi Road,
New Delhi

Subject:- Permanent recognition to the Diploma in Electronics and Telecommunication
Engineering (DIPIETE-ETE) run by the Institution of Electronics and
Telecommunication Engineers, New Delhi

Sir,

I am directed to inform that the issue of permanent recognition was discussed by the High Level Committee in its 9ᵗʰ meeting held on 16.11.2005. While giving the approval to the permanent recognition to the course namely, Diploma in Electronics and Telecommunication Engineering run by IETE, the Committee took the policy decision as under.

"Henceforth, the recognition to the courses, granted by the High Level Committee shall be permanent till it is withdrawn either due to deficiencies identified by AICTE or the genuine complaints received against the Institutions".

The Institution is required to put all the details about their educational activities on the website of the All India Council for Technical Education in the format prescribed for the purpose. AICTE can conduct a random review of the courses run by the Institutes to ascertain the standard and level.

Yours faithfully,

Sd/-
(Dr. G.L. Jambhulkar)
Deputy Educational Advisor

Extract of Notification dated 16 Jan 2006

Extract of Notification No. F.24-7/2002 - TS.III. On the recommendations of the High Level Committee for recognition, Government of India have decided to recognize the Diploma in Computer Science & Engineering, DIPIETE (Computer Science & Engineering) conducted by the Institution of Electronics & Telecommunication Engineers, New Delhi, till further orders for the purpose of employment to the posts and services under the Central Government in the appropriate field.

The recognition will be effective from the year 2002, till further orders.
_____

Present Status of Recognition of IETE Courses by MHRD

Current status in respect of IETE writ petition No. W.P.(C.) N. 3239/2013 & CM Appl. 6125/2013 in respect of recognition of its Courses by MHRD.

The above writ petition filed by IETE HQ in Delhi High Court on 13 May 2013 came up for 5th hearing on 09 Jan 2014.

The Hon'ble High Court directed the parties to complete the pleadings before the Joint Registrar on 23 Apr 2014 before the next date of hearing. The Joint Registrar is directed to list these matters before the Court after completion of the pleadings. **Interim Order will continue (Stay)**.

Issued by
Secretary General
For and on behalf of The Institution of Electronics and
Telecommunication Engineers (IETE)

Status in respect of recognitions granted for the examinations conducted by IETE.

A writ petition was filed by the Institution in Delhi High Court on 13 May 2013 for quashing the orders of MHRD dated 10 July 2012 and 06 Dec 2012 withdrawing the recognition in perpetuity for equivalence in Central Govt jobs after 31 May 2013. The writ petition came up for hearing on 17 May, 21 May and 23 May 2013.

The Hon'ble High Court, Delhi is pleased to stay the orders of the Ministry of Human Resource Development dated 06 Dec. 2012 with respect to the dead line of 31 May 2013 till the next date of hearing i.e. 06 Aug 2013. However, the admissions, which are made, will be subject to final orders, which will be passed in the writ petition.

The matter came up for further hearing before the Delhi High Court on 06 Aug 2013.

On the last date of hearing of our Writ Petition in Hon. High Court Delhi, following order has been issued

(i) The case listed for next hearing on 9th January 2014.

(ii) The OM dated 6/12/2012 with respect to the dead line of

31/05/2013 qua the petitioners shall remain stayed till further of the Court.

The above statement does not affect students who have passed & enrolled for IETE courses before 31st May 2013.

The last date of hearing of our case regarding recognitions of our courses from MHRD was 9th Jan 2014 in Hon'ble High Court of Delhi. The Hon'ble High Court has decided the interim orders to continue.

Issued by

Secretary General
The Institution of Electronics and Telecommunication Engineers (IETE)

Status in respect of recognitions granted for the examinations conducted by IETE.

A writ petition was filed by the Institution in Delhi High Court on 13 May 2013 for quashing the orders of MHRD dated 10 July 2012 and 06 Dec 2012 withdrawing the recognition in perpetuity for equivalence in Central Govt jobs after 31 May 2013. The writ petition came up for hearing on 17 May, 21 May and 23 May 2013.

The Hon'ble Delhi Court is pleased to stay the orders of the Ministry of Human Resource Development dated 06 Dec. 2012 with respect to the dead line of 31 May 2013 till the next date of hearing i.e. 06 Aug. 2013. However, the admissions, which are made, will be subject to final orders, which will be passed in the writ petition.

The matter has now been fixed for further hearing before the Delhi High Court on 06 Aug. 2013.

Issued by

Secretary General
The Institution of Electronics and Telecommunication Engineers (IETE)

18.1.1 Last Date for Enrolment for June exam is 28 February and for December exam is
18.1.2 31 August. Please submit your application preferably 15 days before these dates.

18.1.3

18.1.4 THE INSTITUTION OF ELECTRONICS AND TELECOMMUNICATION ENGINEERS (IETE)

18.1.5 2, Institutional Area, Lodhi Road, New Delhi-110 003
18.1.6 Phone: 011-43538858/41/55/56

18.1.7 Email: membership@iete.org

18.1.8 the can

A		B
Size of photograph 3.5x3.5cm exact. *Paste within the box ABCD. *To be attested by the gazette Officer/ Corporate Member of IETE		
C		D

To,
The Secretary General, IETE
2, Institutional Area,
Lodhi Road, New Delhi-110 003

Sir

1. **I wish to enroll myself as a Student Member of (Please tick √ the course opted by you carefully out of the following)**

   AMIETE :   Computer Science & Engineering (CS)
   (Deegree level)

2. **Name** _____

   (In Capital Letters) (Name should be written as per High School Certificate)

3. **Date of Birth** _____ 4. **Father's/Husband Name** _____

5. **Correspondence Address** _____
   _____
   (In Capital Letter)
   _____

   _____ **Dist** _____

   State _____ **PIN** _____

6.   **Permanent Address**

   (In Capital Letter)
   _____

   _____ **Dist** _____

   State _____ **PIN** _____

7. **Phone No. (O)**_____ **(R)**_____ **Mobile** _____

   Fax _____   **Email** _____

   FOR OFFICE USE ONLY
   1. Accepted

   SG-

87

2. Withheld/ Rejected with reason   **Mem No.**

3. Remarks

| Student Member (AM) ET/CS/IT |

Signature _____

8.Educational Qualifications

(Attach attested copies of certificates Age/ Qualification/ Training/ Study etc.)

Examination Passed	Subjects	Board/ University	Year of Passing	Initial of Proposer(s)
Class 10 with General Science and Maths				
10+2/ Intermediate (Physics and Maths)				
Diploma				
B.Sc / M.Sc/ BE / B.Tech				

8. **I enclose herewith Bank Draft No …………………………Dated …………………..for Rs.6000/- Drawn on ……………………………… in favour of IETE, New Delhi.(Please see Sl No.10 of Instructions to applicants)**

> If you are using downloaded form, Please Send a **Photograph (3.5x3.5cms) and Separate Bank Drafts** in the name of IETE, Delhi.
> *Rs.350/-   - Cost of Regulation. Detailed Syllabus and Postage
> *Rs.6000/- - Enrollment Fee

9. **Certificate Practical Experience/Training/Study to be filled in by the Head of Dept/ Institution/ Organization (See Bylaw 17 Refer para 2, on page No 4 of the Regulation of DipIETE Examination) or (See Bylaw 15 / Bylaw 16 on page no.4 of the Regulation & Syllabi of AMIETE Examination). I/ We certify that …………………………………………………….. has been studying / working/ engaged ………………………………………………………(Write the field of his working/ study) since ………………．**

Seal of Dept/ Org.   **Signature &**
Date……………...……………．

                                                         Name ……………………………….....………
                                                         Designation

……………………………………．

10. *PROPOSAR'S RECOMMENDATION **(TO BE FILLED BY A CORPORATE MEMBER OF IETE ONLY) Having satisfied myself in respect of the applicant's qualification and experience, I recommend him/ her to the Council as being in every way a fit and proper person to be admitted as a STUDENT MEMBER of the Institution, in accordance with Byelaw 17 (for DipIETE) or Bylaw 15 / Bylaw 16 (for AMIETE).**

Mem. No…………………………．   **Signature & Date…………………………..**
                                                         Name of the Proposer…………………………………

DECLARATION BY THE CANDIDATE

I declare that the information given in this form is accurate to the best of my knowledge. Obligation duly signed is given on the Card enclosed.

Name of the Candidate……………………………   Signature of the Candidate………………………
Date …………………………

IMPORTANT

1. **The institution of Electronics & Telecommunication Engineers (IETE) neither recognizes nor accepts affiliations of any Private Coaching Institute/ College.**
2. **Membership form IETE-2 forms part of the Regulation & Syllabi of DIPIETE/AMIETE Examination**
3. *** In Case candidate is finding difficulty in getting his application proposed, he may send his application to HQ, IETE directly for necessary assistance.**
4. **Student member are advised to ensure that they do not accept the membership form (IETE-2) without the copy of the Regulation and syllabi of DIPIETE/ AMIETE Examination.**
5. **Fees once paid will neither be adjusted nor be refunded under any circumstances.**

INSTRUCTIONS TO APPLICANTS (To be retained by the student)
(To be read in conjunction with Regulations & Syllabi for AMIETE Examination)

1. a) There are two streams available to a candidate for enrolment in DipIETE viz. Electronics & Telecommunication Engineering and Computer Science & Engineering. Applicant is required to write his enrolment option in Column 1.

   b) There are three streams available to a candidate for enrolment in AMIETE viz. Electronics & Telecommunication Engineering, Computer Science & Engineering and Information Technology. Applicant is required to write his enrolment option in Column 1.

2. Applicants are advised to submit their forms duly filled in direct to the IETE HQ. IETE neither recognizes nor accepts affiliation of any private coaching institution. Col 10 if filled and certified by these institutions will not be accepted. Incomplete application form will be rejected.

3. One shall be allowed to appear in the DipIETE/ AMIETE Examination only after one's enrolment as a Student member with the Institution. Only those Student members who get enrolled on or before 28th February and 31st August will be allowed to appear in the next DipIETE/ AMIETE Examination, held in June and December respectively. Processing of application takes minimum 15 days, therefore to get enrolled, the application completed in all respect must reach IETE HQ well before 14th February for June examination and 14th August for December Examination. Time period for LAB practice examination is counted from the date of enrollment, therefore, students are advised not to wait for last dates but get enrolled as early as possible.

4. Candidates are advised to submit all documents such as Membership Form, Identity Card, IETE Membership Card, self addressed envelope duly filled in, Qualification Certificates, Mark Sheet, Date of Birth Certificate and Experience Certificate (attested copies are required to be submitted) along with, the declaration on the reverse of the Membership Card duly signed by the candidate to IETE HQ only.

5. Membership No. will be allotted by IETE HQ Office. Candidates are advised to leave these columns blank. Membership No will be mentioned while corresponding with IETE HQ.

6. Candidates are advised to paste their stamp size photograph and fill in other columns of the Identity Card and IETE Membership Card. The photographs pasted (not stapled) on the application and Membership Card should be attested by either a Corporate member of the Institution or a Gazetted Officer, with his membership No./ Stamp affixed on it. They must write their complete address with Pin Code No.

7. Membership number, Identity card, receipt of amount paid and examination form will be sent to the applicant within 8-10 weeks of receipt of the application in IETE HQ.

8. FEE FOR ENROLMENT

	Members in India (Rs)	Members Abroad (US $)
Admission Fee	200.00	40.00
Application Fee	200.00	40.00
Building-cum-Library Fee	1300.00	260.00
Composite Subscription (for 5 years)	2500.00	360.00
Lab Infrastructure Fee	600.00	100.00
Development Fee	500.00	100.00
Establishment Fee	700.00	100.00
Total	6000.00	1000.00
Enrolment Form submission Fee	250.00	

9. Once the candidate is enrolled, the enrolment fee will not be refunded under any circumstances.

10. All remittances shall be made by crossed Bank Draft, drawn in favour of "Secretary General, IETE, New Delhi".MONEY ORDER, CHEQUES, IPO or CASH WILL NOT BE ACCEPTED.

11. Any change in the mailing address should be notified immediately. This will help the Office to keep its database up-to-date, and mail important Circulars/Notices/Letters and Journals of Education at the correspondence address.
12. The IETE neither recognizes nor accepts affiliations of any private coaching institution.
13. The student membership will be valid for 10 consecutive examinations from the date of enrollment. Thereafter, the student members not completing their DIPIETE/ AMIETE Examination are to seek re-enrollment by remitting applicable amount before or immediately after the expiry of the membership period to continue their membership to enable them to appear in the remaining papers and complete DipIETE/ AMIETE. Any examination chance not availed by a student due to whatsoever reason will be counted within 10 examinations. No Notice for renewal of membership will be sent.
14. A student is required to complete DipIETE/ AMIETE Examination within 2 enrollment periods from the date of initial enrollment. The student will, therefore, be permitted to seek only one renewal of membership. Renewal is to be applied for before or immediately after the expiry of initial enrollment with continuity of enrollment maintained by the student. Missed chances will be counted towards total number of examinations and no relaxation in this regard will be permissible. If the request for renewal is made after the stipulated period of two enrollments, admission will be treated as a fresh enrollment and no benefit in terms of exemptions in respect of subject(s) passed or exempted during the earlier enrolment will be granted. Students must renew their membership in time. Otherwise they will not be allowed to appear in the DipIETE/ AMIETE examination.
15. All Legal cases concerning IETE HQ shall lie within jurisdiction of Delhi courts only.
16. Every Student member successfully completing Sections A&B subjects including lab examinations with project work, seminar and a course in Communication Skills & Technical Writing of AMIETE Examination as per regulations prescribed by the Council from time to time shall be eligible to become a Associate Member (AMIETE). On payment of requisite fee for membership, he/she will be awarded a certificate of having passed the AMIETE examination of the institution and shall then be eligible for transfer to the class of AMIETE. To pass AMIETE Examination, a student is required to score a minimum grade of "D" having a grade point of 4 for each subject and having an aggregate of 5 CGPA. However for Project, Seminar and lab examinations he/she should get a minimum grade of "C" having a grade point of 5.
17. First examination application form as per the stream opted by the student will be dispatched to him/her along with the identity card at the time of enrolment.

The Institution of Electronics and Telecommunication Engineers
2, Institutional area, Lodhi Road, New Delhi-110 003.

EXEMPTION APPLICATION FORM

Dear Sir/Madam,

1.   I   student   membership   No………………………Name……………………………………….of stream……………………….request you to grant me exemption based on my qualification in the following subject.

	Sub Code	Subject	Qualification based on which exemption asked from Univ./Institution should be mentioned correctly
(a)			
(b)			
(c)			
(d)			

(For more subjects, use photo copy of this from)

2.   A DD of Rs……………………bearing machine no……..………………of …..………..…is enclosed herewith as exemption fee.

3.   I am enclosing following documents (Photo-copies duly attested)

   (a)   Final/Provisional certificate.
   (b)   Marksheets of all semesters.
   (c)   Copy of the syllabus of the course.(Marked on it subject code for which exemption of the subject is applied.
   (d)   Any other document.

4.   Email address :…………………………………………………………………...

5.   Phone No………………………………..

(Signature of Student)

Note :
1.   Fee for exemption for AMIETE is Rs 800/- where as for DipIETE, it is Rs 700/-
2.   This application is not to be clubbed with exam form.
3.   Relevant sufficient syllabus matching upto 80% mentioning the Textbooks & Reference

Books should be enclosed.