

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



सह वीर्यं करवावहे

Published under the authority of the Council of  
**The Institution of Electronics and Telecommunication Engineers**  
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Prof. V N R Pillai VC, IGNOU Chief Guest lighting the ceremonial lamp with Prof. B S Sonde, Past President IETE and Shri S Narayana, President, IETE at the 1st Convocation Day - 02 Nov. 2007



Dr. Anil Kakodkar, Shri G Madhvan Nair and Shri S Narayana at the Inauguration of Exhibition during 50th Annual Technical Convention at Hyderabad -29-30 Sept. 2007.



Students after attending 1st Convocation on 02 Nov. 2007.

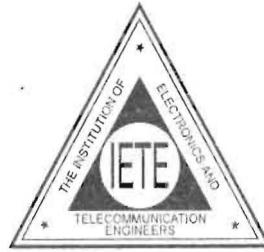


Installation of New President Lt Gen Ashok Agarwal, PVSM (Retd) for the year 2008-09 by the Chief Guest Shri N R Narayana Murthy, Chairman of the Board and Chief Mentor, Infosys Technologies Ltd, Bangalore during the inaugural session of the 51st Annual Technical Convention of 29 Sep 2008



Release of Special Issue of IETE Technical Review during the inaugural session at the 51st Annual Technical Convention on 29 Sep 2008. Seen in the picture are - Shri P N Chopra, Shri S Narayana, Shri N R Narayana Murthy (Chief Guest), Lt Gen Agarwal, PVSM (Retd), Shri ABhaskaranarayana and Brig V K Panday.

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



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**Rs. 250/-**



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## ABOUT THE INSTITUTION

### 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 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, Computers and Information Technology. The Institution is headed by a 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, Associate, Diploma Member and Student Member. Organizational Membership is also open to Public/Private Sector Companies, Institutions, R&D Laboratories and Government Organisations.

### 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-alia 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 programmes for human resource development.
- Stimulate research and development in the Disciplines.
- Bring out quality publications for all levels of readership.
- Honour outstanding professionals.

### EXAMINATIONS

3. The IETE conducts Diploma Level (DIPIETE) Examination, in order that a student qualifies and become a Diploma Member. At the time of enrolment, a student is enrolled as Student Diploma (SD) scheme. On successful completion of the curriculum and clearance of requisite membership fee, he is made a Diploma member of IETE (DIPETE). Such members are then eligible to pursue A M IETE course without paying any enrolment fee. The DIPETE Examination is recognized by the Ministry of Human Resource Development (MHRD). A similar recognition has also been given by several State Governments – **(Annexure I and Annexure II)**.

### **FACILITIES FOR STUDENTS**

4. The IETE helps the students by extending library facilities, laboratory assistance, and coordination of IETE Student Forums and by providing necessary guidance at its Local Centres. To spread its many fold technical activities in all the regions of the country, IETE has established 52 Centres spread all over the country including a Centre at Kathmandu. 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 of their facilities for the benefit of its members

### **ASSISTANCE IN PLACEMENT**

5. IETE makes effort to assist in the placement of students with the help of a placement cell established at IETE HQ, New Delhi.

### **RECOGNITION**

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

**Note: No entrance test is conducted for admission in AMIETE and DIPIETE courses. Even the local center is not authorized to conduct any entrance test for the admission in these courses. In case of any violation of this process, intimation can be given directly to the HQ.**

## **DIPIETE EXAMINATION**

### **REGULATIONS & SYLLABI**

#### **INTRODUCTION**

7. IETE conducts DIPIETE Examination in the following two streams.

- (a) **Computer Science and Engineering (CS)**
- (b) **Electronics and Telecommunication Engineering (ET)**

8. The block and outline syllabi of these streams and detailed syllabi of (CS) stream is appended at appendix "E".

#### **ELIGIBILITY**

9. A candidate desirous of taking up the DIPIETE Examination should first be enrolled as a 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**

10. 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**

11. 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**

12. 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: -

	<b>Member in India (Rs)</b>	<b>Member Abroad (US \$)</b>
(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)	1800.00	360.00
(e) Lab Infrastructure Fee	500.00	100.00
(f) Development Fee	500.00	100.00
(g) Establishment Fee	500.00	100.00
	<b>5000.00</b>	<b>1000.00</b>

13. 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**

14. A Student member shall be allowed to appear in the DIPIETE Examination only after he/she has been enrolled as Student (D) member with the Institution. Only those Students (D) members enrolled on or before 28/29<sup>th</sup> February and 31<sup>st</sup> 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**

15. 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.

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

- |     |                               |                     |
|-----|-------------------------------|---------------------|
| (a) | <b>Course Curriculum (CS)</b> | <b>(Appendix-A)</b> |
| (b) | <b>Outline Syllabus (CS)</b>  | <b>(Appendix-B)</b> |
| (c) | <b>Course Curriculum (ET)</b> | <b>(Appendix-C)</b> |
| (d) | <b>Outline Syllabus (ET)</b>  | <b>(Appendix-D)</b> |

17. The detailed syllabus of the Computer Science stream is given at **Appendix 'E'**.



**DIPIETE EXAMINATION**

18. DIPIETE examination is divided in two Sections viz. Section A & B with a total 15 theory papers (8 in Section A and 7 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 and a Course in Communication Skills & Technical Writing. The course on Communication Skills & Technical Writing is mandatory but would not count towards overall CGPA.

19. 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  | Four subjects & 1 Lab  |
| (ii) | PART-II | Three subjects & 1 Lab<br>(One compulsory & two from<br>Elective subjects) |

**(c) Project Work**

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

20. 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.

21. Notwithstanding 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**

22. Eligibility for Lab Examination -

- To become eligible for lab examination in Section A Part-I, a student should have appeared for all the subjects in Section A Part-I and should have passed atleast 2 of the subjects in Section A Part-I.
- To become eligible for Lab examination in Section A Part-II, a student should have appeared for all the subjects in Section A Part-II. In addition, the student should have passed atleast 2 subjects in Section A Part-II and the lab Examination in Section A Part-I.
- To become eligible for lab examination in Section B Part-I, a student should have appeared for all the subjects in Section B Part-I. In addition, the student should have passed atleast 4 subjects in Section A, 2 subjects in Section B Part-I and both Lab examinations in Section A with a GPA of 5 or more. GPA will be inclusive of theory and lab examination.
- To become eligible for Lab examination in Section B Part-II, a student should have appeared for all the subjects in Section B. In addition, the student should have passed atleast 4 subjects in Section A, 4 subjects of Section B, both lab examinations in Section A and the lab examination in Section B Part-I.

## PROJECT WORK

23. To become eligible for Project, a student should have cleared 12 subjects including Labs of Section A & B with GPA of 5 or more. In addition a student should have completed two and half year from the date of enrolment.

## 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 50% marks individually in theory and oral test has to be obtained by the student at any time before the completion of his/her DIPIETE. 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 70 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 30 marks.

## EXEMPTIONS

25. Exemption may be granted in various paper (s) 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 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. 300/- 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 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 in IETE is given below :

(a) Subject wise conversion of % marks into grade and grade point are as under:-

<u>Grade</u>	<u>Grade Point</u>
A+	10
A	9
B+	8
B	7
C+	6
C	5
D	4

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

$$CGPA = \frac{C_1 G_1 + C_2 G_2 + \dots + C_u G_u}{C_1 + C_2 + C_3 + \dots + C_n}$$

Where  $G_1, G_2, \dots$  denote the grade point scored.  
 $C_1, C_2, \dots$  denote the credits of subjects.

**All theory Subjects & Labs 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) |

**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. 200/-. For any correction in the examination form after processing an additional amount of Rs 200/- 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	400.00	80.00	To be deposited along with exam application form.
(b) Exemption/per subject	400.00	80.00	
(c) Written Test on Communication Skills & Technical Writing	400.00	80.00	
(d) Project work	1100.00	220.00	To be deposited at respective IETE Centre
(e) Each Lab Examination	500.00	100.00	
(f) Oral Test on Communication Skills & Technical Writing	400.00	80.00	

**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 dates for receipt of Examination Applications duly filled in at the IETE HQ office for June and December examinations are 25<sup>th</sup> April & 25<sup>th</sup> October respectively. After these dates, Examination Applications will be considered up to 10 days from the last date i.e. up to 05<sup>th</sup> May & 05<sup>th</sup> November for June & December examinations respectively with a late fee of **Rs. 500/**. Any application received beyond these dates will be rejected, irrespective of date of bank draft for the fee.

**DATE SHEET**

31. The examinations are held twice a year from 15<sup>th</sup> June and 15<sup>th</sup> December and are conducted on all days including holidays and Sundays. The sequence of the papers of CS streams is given at **Appendix 'F'**. These dates are firm and changes if any, will be notified to students along with admit cards and through our website [www.iete.org](http://www.iete.org) and at the Local centre.

**ADMIT CARD**

32. Admit Cards will be sent to all the students or each of them by about 05<sup>th</sup> of June/December. Admit Cards of eligible students will also be available on our Websites [www.iete.org](http://www.iete.org)/[www.iete.info](http://www.iete.info) 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. At present the Examination are conducted at the following Centres: -

**(a) In India:**

<b>Code</b>	<b>Centre</b>	<b>Code</b>	<b>Centre</b>	<b>Code</b>	<b>Centre</b>
01	AHMEDABAD	15	VIJAYAWADA	36	BHOPAL
02	BANGALORE	16	TRIVANDRUM	37	NAGPUR
03	MUMBAI	23	JABALPUR	38	NOIDA
04	KOLKATA	24	ALIGARH	39	NASHIK
05	CHANDIGARH	25	ALLAHABAD	40	MHOW
06	DELHI	26	DEHRADUN	41	PALAKKAD
07	GUWAHATI	27	BHUBANESWAR	42	VADODARA
08	HYDERABAD	28	MANKAPUR	43	AURANGABAD
09	JAIPUR	30	PILANI	44	RAJKOT
10	KANPUR	31	IMPHAL	45	SHIMLA
11	LUCKNOW	32	KOCHI	46	PATNA
12	CHENNAI	33	MYSORE	47	COIMBATORE
13	VARANASI	34	VISAKHAPATNAM	48	RANCHI
14	PUNE	35	JAMMU		

**(b) Abroad:**

<b>Code</b>	<b>Centre</b>
17	ABU DHABI
19	KATHMANDU

**USE OF UNFAIR MEANS**

34. If a student is found to have resorted to or made an attempt to use **Unfair Means**, the Council/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 25<sup>th</sup> March and 25<sup>th</sup> September for December & June examinations respectively and communicated to the candidates through Result Sheets separately. Results will be available on IETE Websites (<http://iete.org>, <http://iete.info>, <http://iete-elan.ac.in>)

**RECOUNTING**

36. It may be noted that there is **no provision of re-evaluation** of answer books. Therefore request for re-evaluation are outrightly rejected.

37. 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 30 days from the date of announcement of results on **a separate application**.

### **IMPROVEMENT OF GRADES**

38. 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 300/- (US\$60) 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**

39. Six awards have been instituted to give incentive to student members for high level of performance in the DIPIETE Examinations. Details of awards are listed at Appendix-G.

### **LEGAL MATTERS**

40. 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”**

### **AFFILIATION/ACCREDITATION**

41. **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**

42. Important announcements concerning students and examinations will be available on the website and are also published in IETE Journal of Education which is issued quarterly (January-April, May-August and September-December) to the DIPIETE Student members who have paid their subscriptions to date. For other facilities like participation in technical lectures, symposia etc. nearest Local/Sub-Centre (Address given in **Annexure-IV**) 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 and/or multicurrency cheques. Facilities for making payments on-line will also be available shortly. Bank drafts/cheques should preferably be drawn on INDIAN OVERSEAS Bank/ AXIS Bank/ ICICI Bank in favour of 'Secretary General IETE, New Delhi'. **MONEY ORDER/IPO/ORDERSH WILL NOT BE ACCEPTED.** All subscriptions/theory examination fees etc. should be paid to the Institution directly and not through a Local Centres of IETE or any other agency. For lab examinations, project work & oral test for communication skills & technical writing, fees should be paid at respective IETE centres.

### **CHANGE OF ADDRESS**

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

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

Course Curriculum for the Programme of DIPIETE in Computer Science & Engineering

Appendix-"A"

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	DC51	Engineering Mathematics – I *	4	-	1	DC55	Engineering Mathematics – II *	4	-
2	DC52	Fundamentals of Electrical & Electronics *	4	-	2	DC56	Object Oriented Programming with C++	4	-
3	DC53	Computer Fundamentals & C Programming *	4	-	3	DC57	Computer Organization	4	-
4	DC54	Data Structures	4	-	4	DC58	Logic Design *	4	-
5	DC91	C & Data Structures Lab	-	4	5	DC92	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**

SECTION B									
Part - I					Part - II				
SI No	Sub Code	Title	Examination Credits		SI No	Sub Code	Title	Examination Credits	
			Theory	Practicals				Theory	Practicals
1	DC59	Analysis & Design of Information Systems	4	-	1	DC63	Data Communication & Networks	4	-
2	DC60	Java & Web Programming	4	-	2		Elective – I	4	-
3	DC61	Operating Systems & Systems Software	4	-	3		Elective – II	4	-
4	DC62	Database Management Systems	4	-	4	DC94	DBMS Lab	-	4
5	DC93	Java & Web Programming Lab	-	4	5	DC64	Project Work	-	8
Total Credits			16	4	Total Credits			12	12

For Electives I & II, students can chose any two of the following elective subjects

SI No	Sub Code	Title
1	DC65	Software Engineering
2	DC66	Computer Graphics
3	DC67	Embedded Systems *
4	DC68	Microprocessors & Microcontrollers †
5	DC69	C# & .Net
6	DC70	Network Management
7	DC71	Internet Applications

1	DC99	Communication Skill & Technical Writing
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**NOTE:** \* Subjects common to ET / CS Streams  
 † Syllabus is same as that of the core subject for DIPIETE (ET)

**OUTLINE SYLLABUS  
DIPIETE (COMPUTER SCIENCE & ENGINEERING)**

**DC51 ENGINEERING MATHEMATICS – I**

- Differential Calculus
- Integral Calculus
- Linear Algebra
- Differential Equations
- Algebra
- Trigonometry
- Coordinate Geometry

**DC52 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

**DC53 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

**DC54 DATA STRUCTURES**

- Advanced C Concepts
- Recursion
- Structures, Union and Files
- Arrays, Searching and Sorting
- Stacks and Queues
- Linked List
- Trees
- Graphs

**DC91 C & DATA STRUCTURES LAB****DC55 ENGINEERING MATHEMATICS – II**

- Differential calculus
- Integral calculus
- Complex numbers
- Vector algebra
- Linear differential equation of higher order
- Laplace transform
- Fourier series

**DC56 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

**DC57 COMPUTER ORGANIZATION**

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

**DC58 LOGIC DESIGN**

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

**DC92 OOPS LAB****DC59 ANALYSIS & DESIGN OF INFORMATION SYSTEMS**

- The Context of Systems Analysis & Design Methods
- Information System Building Blocks
- Information Systems Development
- Systems Analysis



## Regulations and Syllabi for DiplETE (CS) Examination

- 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

### **DC60 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 Forms Processing
- Client-Side Scripting: JavaScript

### **DC61 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

### **DC62 DATABASE MANAGEMENT SYSTEMS**

- Databases and Database Users
- Database System - Concepts and Architecture

- Data Modeling using the Entity-Relationship 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, Basic constraints and Queries
- Relational Database Design
- File Organizations and Indexes
- Algorithms for Query Processing and Optimization
- Introduction to Transaction Processing Concepts and Theory

### **DC93 JAVA & WEB PROGRAMMING LAB**

### **DC63 DATA COMMUNICATION & NETWORKS**

- Data Communications, Data Networking, and the Internet
- Protocol Architecture, TCP/IP, and Internet-Based Applications
- Data Transmission
- Transmission Media
- 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

### **DC65 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

## Regulations and Syllabi for DiplETE (CS) Examination

- Verification and Validation
  - Software Testing
  - Quality Management
  - Configuration Management
- DC66 COMPUTER GRAPHICS**
- Introduction to Computer Graphics
  - Graphics Systems
  - Output Primitives
  - Two-dimensional Transformations
  - Windowing and Clipping
  - 3-D Concepts and Techniques
  - Space Curves
  - Surface Generation
  - Visible Surface Detection
  - Animation
  - Introduction to Multimedia
- DC67 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
- DC68 MICROPROCESSORS & MICROCONTROLLERS**
- Evolution of Microprocessors
  - Fundamentals of a Computer
  - Number Representation
  - Fundamentals of Microprocessor
  - First Assembly Language Program
  - Instruction set of 8085
  - Chip select logic
  - Addressing of I/O ports
  - Architecture of 8085
  - Assembly language programs
  - Use of PC in writing and executing 8085 programs
  - Interrupts in 8085
  - 8255 Programmable peripheral interface chip
  - Programs using interface modules
  - Interfacing of I/O devices
  - Intel 8259A, 8257, 8253, 8251A
  - Intel 8051 microcontroller
- DC69 C# & .NET**
- Introducing C#
  - Understanding .Net: The C# Environment
  - Overview of C#
  - Literals, Variables and Data Types
  - Operators and Expressions
  - Decision Making and Branching
  - Decision Making and Looping
  - Methods in C#
  - Handling Arrays
  - Manipulating Strings
  - Structures and Enumerations
  - Class and Objects
  - Inheritance and Polymorphism
  - Interfaces: Multiple Inheritance
  - Operator Overloading
  - Delegates and Events
  - Managing Console I/O Operations
  - Managing Errors and Exceptions
  - Multithreading in C#
- DC70 NETWORK MANAGEMENT**
- Data Communications and Network Management Overview
  - SNMP Management
  - Network Management Tools And Systems
  - Network Management Applications
  - Web-Based Management
- DC71 INTERNET APPLICATIONS**
- Hypertext Markup Language
  - More HTML
  - Cascading Stylesheets
  - Cascading Stylesheets 2
  - 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
- DC94 DBMS LAB**
- DC64 PROJECT WORK**
- DC99 COMMUNICATION SKILLS AND TECHNICAL WRITING**
- Communication: Its Types and Significance
  - Grammar
  - Syntax
  - Reading Skills
  - Writing Skills
  - Listening Skills
  - Technical Report
  - Speaking Skills
  - Self Development

## **DIPIETE (CS)**

### **STREAMWISE 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 feedback/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 DE51 and DC51 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 indicate 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 feedback 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.

## 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  $n^{\text{th}}$  derivative of standard functions; Leibnitz theorem for the  $n^{\text{th}}$  derivative of the product of two functions; Applications of differentiation – Tangents and Normals; Increasing and Decreasing functions; Maxima and Minima.

**III (1.6, 1.8, 1.9, 1.10, 2.3, 2.25, 2.26, 2.27, 2.30, 2.31, 2.37, 3.1, 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 Trigonometric functions; Definite Integrals - Introduction; Theorems on Definite Integrals.

**III (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

**LINEAR ALGEBRA****08 hrs**

Introduction; Determinants; Minors and Cofactors; Properties of Determinants; Laplace's Expansion of a Determinant; Solutions of Simultaneous Linear Equations by Determinants (Cramer's Rule); Rule for Multiplication of two Determinants; Matrices – Types of Matrices; Matrix Multiplication; Properties of Matrix Multiplication; Adjoint of a Square Matrix; Inverse of a Matrix by using Adjoint of a Matrix; Solutions of Simultaneous Equations; Elementary transformation; Elementary Matrices; Rank of a Matrix; Types, Consistency and Solutions of system of Linear equations.

**I (2.1, 2.2, 2.4, 2.5, 2.7, 2.12, 2.13, 2.14, 3.1, 3.2, 3.6, 3.7, 3.8, 3.9, 3.10, 3.11, 3.12, 3.13, 3.16 to 3.19)**

## 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 1<sup>st</sup> Order; Equations Reducible to Linear Form; Linear Differential Equation in  $x$ ; Exact Differential Equation; Equations Reducible to Exact Equations; Simple Electric Circuits.

**I (7.1 to 7.14)**

## 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 Trigonometric Functions; Trigonometric Equations; Relations between the Sides and the Trigonometric 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**

Co-ordinates; Conversion of Cartesian Co-ordinates into Polar Co-ordinates and vice versa; Distance between Two Points; Ratio formula for internal and external division (No proof); Concurrence of the Medians of a Triangle; Concurrence of the bisectors of the angles of a triangle; Area of a triangle; Straight lines; Slope of a line; Intercepts; Different forms of equation to a straight line; Line through two points; intersection of straight lines; Line through intersection of two given lines; Angle between two lines; Condition for Parallelism and Perpendicularity; Length of perpendicular.

**I (4.1, 4.2, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9, 4.10, 4.11, 4.12, 4.13, 4.14, 4.15, 4.16, 4.17, 4.18, 4.19, 4.20, 4.21, 4.23)**

**UNIT VIII**

**CO-ORDINATE GEOMETRY (CONTINUED)**

**08 hrs**

Circle - Definition; Standard Form; Central Form; General equation of a circle; General Form; Conditions for the equation of a Circle; Circle through three given points; Diameter form; Conic; Geometrical definition of a conic; Parabola; Ellipse; Hyperbola; Finding equations of conic when its focus, directrix and vertex are given.

**I (4.25, 4.26, 4.27, 4.28, 4.29, 4.30, 4.31, 4.32, 4.33, 4.34, 4.36, 4.38)**

**Text Books:**

- I. Applied Mathematics for Polytechnics, H. K. Dass, 8<sup>th</sup> Edition, CBS Publishers & Distributors.
- II. A Text book of Comprehensive Mathematics Class XI, Parmanand Gupta, Laxmi Publications (P) Ltd, New Delhi.
- III. Engineering Mathematics, H. K. Dass, S, Chand and Company Ltd, 13<sup>th</sup> Edition, New Delhi.

**Reference Book:**

1. Higher Engineering Mathematics, B. S. Grewal, 40<sup>th</sup> 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.

PART A: FUNDAMENTALS 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: FUNDAMENTALS 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, 2<sup>nd</sup> 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, 2<sup>nd</sup> 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.

**DC53 COMPUTER FUNDAMENTALS & C PROGRAMMING**

**PART A: COMPUTER FUNDAMENTALS**

**UNIT I**

**COMPUTER BASICS**

**07 hrs**

Algorithms, A Simple Model of a Computer, Characteristics of Computers, Problem Solving Using Computers

**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)**

**UNIT II**

**INPUT / OUTPUT UNITS**

**08 hrs**

Description of Computer Input Units, Other Input Methods, Computer Output Units

**COMPUTER LANGUAGES**

Why Programming Language? Assembly Language, Higher Level Programming Languages, Compiling High Level Language Program, Some High Level Languages

**OPERATING SYSTEMS**

Why Do We Need an Operating System? Personal Computer Operating System, The Unix Operating System

**I (3, 9, 10.1, 10.5, 10.6)**

**UNIT III**

**MICROCOMPUTERS**

**07 hrs**

An Ideal Microcomputer, An Actual Microcomputer, Memory Systems for Microcomputers, A Minimum Microcomputer Configuration, Evolution of Microcomputers

**COMPUTER NETWORKS**

Need for Computer Communication Networks, Internet and the World Wide Web, Local Area Networks

**I (11.1 to 11.4, 14.1, 14.2, 14.4)**

**PART B: C PROGRAMMING**

**UNIT IV**

**CONSTANTS, VARIABLES AND DATA TYPES**

**08 hrs**

Introduction, Characters set, Constants, Keywords and Identifiers, Constants, Variables, Data types, Declaration of variables

**OPERATORS AND EXPRESSIONS**

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 conversions in expressions, Operator precedence and associativity

**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)**

**UNIT V**

**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

**DECISION MAKING AND LOOPING**

Introduction, The *while* statement, The *do* statement, The *for* statement, Jumps in Loops.

**II (5, 6)**

**UNIT VI**

**ARRAYS**

**08 hrs**

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

**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)**

**UNIT VII**

**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**

**POINTERS**

**08 hrs**

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.

**FILE MANAGEMENT**

Introduction, Defining and Opening a File, Closing a File, Input/Output Operations on Files

**II (11.1 to 11.12, 12.1 to 12.4)**

**Text Books:**

- I. Fundamentals of Computers, V. Rajaraman, Fourth Edition, PHI, 2007
- II. Programming in ANSI C, E. Balagurusamy, Third Edition, Tata McGraw Hill

**Reference Book:**

1. Computer Science – A Structured Programming Approach Using C, Behrouz A. Forouzan, Richard F. Gilberg, Second Edition, Thomson Learning.

**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.

DC54

**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 contd.****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:**

1. C & Data Structures, P.S. Deshpande and O.G. Kakde, Dreamtech Press, 2007

**Reference Book:**

1. Data Structures – A Pseudocode approach with C, 2<sup>nd</sup> 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.

**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 generate and print the first  $N$  Fibonacci numbers.
3. Write a C program to find the GCD and LCM of two given integers, and output the results.
4. 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.
5. Write a C program to sort a given set of  $N$  student names in alphabetical order.
6. Write a C program to read two matrices  $A$  ( $M \times N$ ) and  $B$  ( $P \times Q$ ), and compute the product of  $A \cdot B$  after checking compatibility for multiplication.
7. 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.

8. 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.
9. 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.
10. 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.
11. Write a C program to implement a queue in which insertions, deletions and display can be performed.
12. 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:**

- Minimum of 11 experiments to be conducted.
- All the C programs to be executed using Turbo C or similar environment.

DC55

**ENGINEERING MATHEMATICS – II**

**UNIT I**

**DIFFERENTIAL CALCULUS**

**07 hrs**

Introduction to Limit, continuity and differentiability of function; fundamental theorems of differential calculus; Rolle's theorem; Geometrical interpretation; Lagrange's Mean value theorem; Cauchy's Mean value theorem; Taylor's theorem for one variable (without proof); Maclaurin's series expansion; Indeterminate forms.

I (3.3, 3.3(1), 3.3(2), 3.3(3), 3.3(4), 3.4, 3.5)

**UNIT II**

**INTEGRAL CALCULUS**

**07 hrs**

Reduction formulae; 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; Areas of Cartesian curves; Length of curves, Volumes of revolution; Surface area of revolution.

I (5.1, 5.2, 5.3, 5.9, 5.10, 5.11(1), 5.12)

**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; DeMoivre's Theorem; Phasor; R and A.C Circuits; L and A.C Circuits; C and A.C. Circuits; Impedance; R-L in Parallel Circuit.

Reference 1 Chapter 10

**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; Condition for coplanarity; Vector triple product.

II (20.1 to 20.10 except 20.5, 20.10(2), 20.13, 20.14, 20.14 (2), 20.17 to 20.22)

**UNIT V**

**LINEAR DIFFERENTIAL EQUATION OF HIGHER ORDER**

**07 hrs**

Definition; General form; complete solution as C.F+P.I; Method of finding complimentary function; Method of finding particular integral for the functions

$e^{ax}$ ;  $\sin(ax+b)$ ;  $\cos(ax+b)$ ;  $x^m$ ;  $e^{ax} V$  where  $V = \sin(ax+b)$  or  $\cos(ax+b)$  or  $x^m$

Application of Linear Differential equation; Simple Harmonic motion; Simple pendulum; Oscillation of a spring; Oscillatory Electrical Circuits; Deflection of beams.

I (9.1, 9.2, 9.3, 9.4, 9.8, 9.9, 9.10, 9.11, 9.12)

**UNIT VI**

**FOURIER SERIES**

**08 hrs**

Introduction; Periodic functions; Dirichlet conditions; Euler's coefficients; Fourier Series expansion of Periodic functions of period  $2\pi$  defined in  $(c, c + 2\pi)$ ; Functions having points of discontinuity; change of interval; Even and odd functions; Half range series; Complex form of Fourier series; Practical Harmonic Analysis.

I (11.1 to 11.3, 11.4(1), 11.4(2), 11.5, 11.7, 11.8)



**UNIT VII**

**LAPLACE TRANSFORMS**

**08 hrs**

Introduction; Definition; Linearity property; Laplace transforms of standard functions; Shifting theorem of Laplace transform; change of scale property; Laplace transform of derivatives; Laplace transforms of integrals; Multiplication by  $t^n$ ; Division by  $t$ ; unit step function; Unit Impulse function; Laplace transforms of Periodic functions.

**III (18.1 to 18.4, 18.5(a), 18.5(b), 18.7 to 18.10, 18.13(1), 18.13(2), 18.13(3))**

**UNIT VIII**

**INVERSE LAPLACE TRANSFORMS**

**08 hrs**

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

**III (18.6, 18.11, 18.12)**

**Text Books:**

- I. Engineering mathematics –Dr. B.S.Grewal, 12th edition 2007, Khanna publishers, Delhi.
- II. Engineering Mathematics – H.K.Dass, S. Chand and Company Ltd, 13<sup>th</sup> Revised Edition 2007, New Delhi.
- III. A Text book of engineering Mathematics – N.P. Bali and Manish Goyal , 7<sup>th</sup> Edition 2007, Laxmi Publication(P) Ltd.

**Reference Book:**

1. Applied Mathematics for Polytechnic, H.K.Dass, 8<sup>th</sup> Edition, CBS Publishers & Distributors, New Delhi

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

**DC56**

**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)

Regulations and Syllabi for DiplETE (CS) Examination

**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:**

1. 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.

**DC57**

**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 (CONTD.)**

**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 (CONTD.)**

**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 (CONTD.)**

**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 (CONTD.)**

**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:**

1. Computer Organization, Carl Hamacher, Zvonko Vranesic, Safwat Zaky, 5<sup>th</sup> Edition, TMH, 2002

**Reference Books:**

1. Computer Organization & Architecture, William Stallings, 7<sup>th</sup> Edition, PHI, 2006
2. Computer Systems Design and Architecture, Vincent P. Heuring & Harry F. Jordan, 2<sup>nd</sup> Edition, Pearson Education, 2004

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

DC58

**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; Putting it all together; The Byte; Nibble and Word; Alphanumeric Codes; Parity Method for Error Detection.

**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; Enable and Disable Circuits.

**I (4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8)****UNIT III****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)****UNIT IV****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 V****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.

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

**UNIT VI**

**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 VII**

**SYNCHRONOUS COUNTER DESIGN**

**07 hrs**

Synchronous Counter Design; 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:**

1. Digital Systems – Principles and Applications, Ronald J. Tocci, Neal S. Wildmer, Gregory L. Moss, Ninth Edition, Pearson Education, 2008.

**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.

**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.  $s1 = s1 + \text{element}$ ; 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.  $\text{no\_of\_days} = d1 - d2$ ; where d1 and d2 are DATE objects,  $d1 \geq d2$  and no\_of\_days is an integer.
  - ii.  $d2 = d1 + \text{no\_of\_days}$ ; 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
  
```

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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 UG STUDENT and PG STUDENT 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:**

- Minimum of 13 experiments to be conducted.
- All the C++ programs have to be executed in Turbo C++ / Visual C++ or similar environment



**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**

**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:**

1. 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.

**DC60**

**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, Third Edition, TMH, 2007.
- 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.

DC61

**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:**

1. 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.

**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**

**08 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 RELATIONAL DATA MODEL AND RELATIONAL DATABASE CONSTRAINTS**

Relational Model Concepts, Relational Model Constraints and Relational Database Schemas, Update Operations and Dealing with the Constraint violations.

**I (3.1 to 3.7, 4)**

**UNIT III**

**THE RELATIONAL ALGEBRA AND RELATIONAL CALCULUS**

**07 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 (5.1 to 5.6, 6.1)**

**UNIT IV**

**SQL-99: SCHEMA DEFINITION, BASIC CONSTRAINTS AND QUERIES**

**07 hrs**

SQL Data Definition, 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 General Constraints as Assertions, Views (Virtual tables) in SQL, Database programming: Issues and techniques.

**I (7.1 to 7.6, 7.8 to 7.10)**

**UNIT V**

**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 Forms.

**I (8.1 to 8.4)**

**UNIT VI**

**RELATIONAL DATABASE DESIGN *contd.***

**07 hrs**

Boyce-Codd Normal Form, Properties of Relational Decompositions, Algorithms for Relational Database Schema Design, Multivalued Dependencies and Fourth Normal Forms, Join Dependencies and Fifth Normal Forms.

**I (8.5 to 8.9)**



**UNIT VII**

**FILE ORGANIZATIONS AND INDEXES**

**08 hrs**

Introduction, Secondary Storage Devices, Buffering of Blocks, Placing File Records on Disk, Operations on Files, Files of Unordered Records (Heap Files), Files of Ordered records (Sorted files), Hashing Techniques, Other Primary File Organizations, Indexing Structures for Files - Types of single-level ordered indexes, Multilevel indexes, Dynamic Multilevel indexes using B-Trees and B<sup>+</sup>-Trees, Indexes on Multiple keys.

**I (9.1 to 9.9, 9.12.1 to 9.12.4)**

**UNIT VIII**

**1.1.1.1 ALGORITHMS FOR QUERY PROCESSING AND OPTIMIZATION**

**08 hrs**

Translating SQL queries into Relational Algebra, Algorithms for External Sorting, Algorithms for SELECT and JOIN operations, Algorithms for PROJECT and SET operations, Implementing Aggregate Operations and Outer Joins, Combining operations using pipe-lining, Using Heuristics in Query Optimization, Using Selectivity and Cost Estimates in Query Optimization, Overview of Query Optimization in Oracle, Semantic Query Optimization.

**I (10)**

**Text Book:**

1. Fundamentals of Database Systems, Elmasri, Navathe, Somaajulu, Gupta, Pearson Education, 2006.

**Reference Books:**

1. Database System Concepts, Silberschatz, Abraham Korth, Sudarshan S., Fourth Edition, Mc-Graw Hill, 2006.
2. Database Management Systems, Raghurama Krishnan, 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.

**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
  - heightMethods
  - 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 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.
4. Write a Java program to read data from keyboard up to N names, sort in alphabetical order using Bubble sort.
5. Write a Java program to count the number of tokens, given a string and a separator.
6. 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 values successfully, we must read the integer values of the array a[ ]. Each input string must be converted into integer. So use NumberFormatException appropriately.
7. Write a Java program to perform a file copy operation using the file streams of Java.
8. Write a Java program to find the number of characters, words, lines in a given input file.
9. 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
- Your page must meet the following minimum criteria:
  - It must validate to XHTML 1.0 Strict. Use the W3C validator to check your page as described in class.
  - Try to write professionally. Use an online dictionary if necessary to check your spelling

## Regulations and Syllabi for DipIETE (CS) Examination

- 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.
10. Write a CGI program that collects the name and email address of a person from an XHTML form and responds with a “Hello” message.

### **Note:**

- Minimum of 09 experiments to be conducted.
- To develop and run Java programs, use the NetBeans /Eclipse IDE (latest version).

**DC63**

**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)**

**PROTOCOL ARCHITECTURE, TCP/IP, AND INTERNET-BASED APPLICATIONS 03 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 II**

**DATA TRANSMISSION 05 hrs**

Concepts and Terminology; Analog and Digital Data Transmission; Channel Capacity.

**I (3.1, 3.2, 3.4)**

**TRANSMISSION MEDIA 03 hrs**

Guided Transmission Media; Wireless Transmission.

**I (4.1, 4.2)**

**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)**

Regulations and Syllabi for DipIETE (CS) Examination

**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** **07 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**

**INTERNETWORK OPERATION** **03 hrs**  
Multicasting; Routing Protocols.  
**I (19.1, 19.2)**

**TRANSPORT PROTOCOLS** **03hrs**  
TCP; UDP.  
**I (20.2, 20.4)**

**INTERNET APPLICATIONS** **02 hrs**  
Electronic Mail: SMTP and MIME.  
**I (22.1)**

**Text Book:**

1. Data and Computer Communications, Eight Edition (2007), William Stallings, Pearson Education Low Price Edition.

**Reference Book:**

1. Data Communications and Networking, Fourth Edition (2006), Behrouz A. Forouzan, Tata McGraw-Hill Special Indian Edition.

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

**DC65 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**

**OBJECT-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:**

1. Software Engineering, Ian Sommerville, 7th edition, Pearson Education, 2004

**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.

DC66

**COMPUTER GRAPHICS**

**UNIT I**

**INTRODUCTION TO COMPUTER GRAPHICS**

**08 hrs**

Introduction, Noninteractive / Interactive Graphics, Uses of Computer Graphics, Classification of Applications, Programming Language, Graphics and Operating Software, Graphics System Configuration.

**GRAPHICS SYSTEMS**

Introduction, Refresh Display, Raster Display, Input Devices, Output Devices, Computer Graphics Software, Graphical User Interface.

**I (1, 2.1, 2.3, 2.5, 2.6, 2.7, 2.8, 2.11)**

**UNIT II**

**OUTPUT PRIMITIVES**

**07 hrs**

Introduction, Representing Image, Straight Line, Line-Drawing Algorithms, Circle Generating Algorithm, Polygon Filling Algorithms, Character or Text Generation, Aliasing and Antialiasing.

**I (3.1, 3.2, 3.3, 3.4, 3.7, 3.12, 3.13, 3.14)**

**UNIT III**

**TWO-DIMENSIONAL TRANSFORMATIONS**

**08 hrs**

Introduction, Representation of Points, Matrix Algebra and Transformation, Transformation of Points, Transformation of Straight Line, Rotation, Reflection and Scaling of Straight Lines or Polygons, Translation and Homogeneous Coordinates, Rotation about an Arbitrary Point, Reflection about an Arbitrary Line.

**I (4.1 to 4.5, 4.9 to 4.13)**

**UNIT IV**

**WINDOWING AND CLIPPING**

**07 hrs**

Viewing Transformation, Clipping, Point Clipping, Line Clipping, Cohen-Sutherland Line Clipping, Polygon Clipping, Sutherland-Hodgman Algorithm

**I (5.2 to 5.6, 5.8, 5.9)**

**UNIT V**

**3-D CONCEPTS AND TECHNIQUES**

**08 hrs**

Introduction, 3D Transformation, 3D Modeling Schemes, Projection, Orthographic Projection, Isometric Projection, Oblique Projection, Perspective Projection, Viewing Parameters.

**SPACE CURVES**

Introduction, Parametric Cubic Polynomial Curves, Bezier Curves.

**SURFACE GENERATION**

Introduction, Parametric Representation of Surface, Concept of Quadric Surfaces and Bezier Surfaces.

**I (7.1, 7.2, 7.6 to 7.11, 7.13, 8.1, 8.2, 8.4, 9.1, 9.2, 9.3 (only concept), 9.4 (only concept))**

**UNIT VI**

**VISIBLE SURFACE DETECTION**

**07 hrs**

Introduction, Hidden Surface Removal Algorithms – Back Face Detection Method, Depth Buffer Method or Z-Buffer Algorithm, Hidden Line Removal Method.

**I (10.1, 10.2.1, 10.2.2, 10.3)**

**UNIT VII**

**ANIMATION**

**08 hrs**

Introduction, Devices for Producing Animation, Computer-Assisted Animation, Video Formats, Frame-By-Frame Animation Techniques, Real-Time Animation Techniques, Animation Software.

**I (15)**



**UNIT VIII**

**INTRODUCTION TO MULTIMEDIA**

**07 hrs**

Introduction, Visual Elements, Sound Elements, Multimedia Storage.

**I (16)**

**Text Book:**

1. Computer Graphics, Amarendra N. Sinha, Arun D Udai, TMH, 2008

**Reference Book:**

1. Computer Graphics C version, Hearn D, Baker P. M., Second edition, PHI/Pearson

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

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**EMBEDDED SYSTEMS**

**UNIT I**

**INTRODUCTION TO EMBEDDED SYSTEMS**

**07 hrs**

Embedded Systems Overview; Design Challenge; Processor Technology; IC Technology; Design Technology; Trade-Offs.

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; Sequential Logic; Custom Single Purpose Processor Design; RT-level Custom Single Purpose Processor Design; Optimizing Custom Single Purpose Processors.

I (2.1, 2.2, 2.3, 2.4, 2.5, 2.6)

**UNIT III**

**GENERAL PURPOSE PROCESSORS: SOFTWARE**

**08 hrs**

Introduction; Basic Architecture; Operation; Programmer's View; Development Environment; ASIPs; 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 Timer; UART; Pulse Width Modulators; LCD Controllers; Keypad Controllers; Stepper Motor Controllers; Analog to Digital Converters; Real Time Clock.

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; Common Memory Types; Composing Memory; Memory Hierarchy and Cache; Advanced RAM.

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; Tasks and Data; Semaphores and 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, 11.2, 11.3)

**Text Books:**

- I. Embedded System Design, A Unified Hardware/Software Introduction, Frank Vahid / Tony Givargis, 2006 reprint, John Wiley Student Edition.
- II. An Embedded Software Primer, David .E. Simon, Fourth Impression 2007, Pearson Education.
- III. Embedded Systems, Raj Kamal, 13<sup>th</sup> reprint 2007, Tata-McGrawHill Publications.

**Reference Book:**

1. Embedded Microcomputer Systems, Valvano, Thomson.

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

DC68

**MICROPROCESSORS & MICROCONTROLLERS**

**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)

**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)

**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)

**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)

**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)

**UNIT VI**

**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)

**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)

**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:**

1. 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, Fourth Edition, R. S. Gaonkar, Penram International Publishing (India), 2000
2. The 8051 Microcontroller and Embedded Systems, Muhammad Ali Mazidi, Janice Gillispie Mazidi, Rolin D. McKinlay, Second 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.

**DC69**

**C# &.NET**

**UNIT I**

**INTRODUCING C#**

**08 hrs**

What is C#?, Why C#, Evolution of C#, Characteristics of C#, Applications of C#, How does C# differ from C++ and Java

**UNDERSTANDING .NET: THE C# ENVIRONMENT**

The .NET Strategy, The Origins of .NET Technology, The .NET Framework, The Common Language Runtime, Framework Base Classes, User and Program Interfaces, Visual Studio.NET, .NET Languages, Benefits of the .NET Approach, C# and the .NET

**OVERVIEW OF C#**

Introduction, A Simple C# Program, Namespaces, Adding Comments, Main Returning a Value, Using Aliases for Namespace Classes, Passing String Objects to WriteLine Method, Command Line Arguments, Main with a Class, Providing Interactive Input, Using Mathematical Functions, Multiple Main Methods, Compile Time Errors, Program Structure, Program Coding Style

**LITERALS, VARIABLES AND DATA TYPES**

Introduction, Literals, Variables, Data Types, Value Types, Reference Types, Declaration of Variables, Initialization of Variables, Default Values, Constant Variables, Scope of Variables, Boxing and Unboxing  
**I (1, 2, 3, 4)**

**UNIT II**

**OPERATORS AND EXPRESSIONS**

**08 hrs**

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 Conversions, 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, The for each Statement, Jumps in Loops  
**I (5, 6, 7)**

**UNIT III**

**METHODS IN C#**

**07 hrs**

Introduction, Declaring Methods, The Main Method, Invoking Methods, Nesting of Methods, Method Parameters, Pass by value, Pass by Reference, The Output Parameters, Variable Argument Lists, Methods Overloading

**HANDLING ARRAYS**

Introduction, One-dimensional Arrays, Creating an Array, Two-dimensional Arrays, Variable Size Arrays, The System.Array Class, ArrayList Class  
**I (8, 9)**

**UNIT IV**

**MANIPULATING STRINGS**

**07 hrs**

Introduction, Creating Strings, String Methods, Inserting Strings, Comparing Strings, Finding Sub-strings, Mutable Strings, Arrays of Strings, Regular Expressions

**STRUCTURES AND ENUMERATIONS**

Introduction, Structures, Structs with Methods, Nested Structs, Differences between Classes and Structs, Enumerations, Enumerator Initialization, Enumerator Base Types, Enumerator Type Conversion  
**I (10, 11)**

**UNIT V**

**CLASS AND OBJECTS**

**08 hrs**

Introduction, Basic Principles of OOP, Defining a Class, Adding Variables, Adding Methods, Member Access Modifier, Creating Objects, Accessing Class Members, Constructors, Overloaded Constructor, Static Members, Static Constructor, Private Constructors, Copy Constructors, Destructors, Member Initialization, The this Reference, Nesting of Classes, Constant Members, Read-Only Members, Properties, Indexers

**INHERITANCE AND POLYMORPHISM**

Introduction, Classical Inheritance, Containment Inheritance, Defining a Subclass, Visibility Control, Defining Subclass Constructors, Multilevel Inheritance, Hierarchical Inheritance, Overriding Methods, Hiding Methods, Abstract Classes, Abstract Methods, Sealed Classes: Preventing Inheritance, Sealed Methods, Polymorphism

**I (12, 13)**

**UNIT VI**

**INTERFACES: MULTIPLE INHERITANCE**

**08 hrs**

Introduction, Defining an Interface, Extending an Interface, Implementing Interfaces, Interfaces and Inheritances, Explicit Interface Implementation, Abstract Class and Interfaces

**OPERATOR OVERLOADING**

Introduction, Overloadable Operators, Need for Operator Overloading, Defining Operator Overloading, Overloading Unary Operators, Overloading Binary Operators, Overloading Comparison Operators

**I (14, 15)**

**UNIT VII**

**DELEGATES AND EVENTS**

**07 hrs**

Introduction, Delegates, Delegate Declaration, Delegate Methods, Delegate Instantiation, Delegate Invocation, Using Delegates, Multicast Delegates, Events

**MANAGING CONSOLE I/O OPERATIONS**

Introduction, The Console Class, Console Input, Console Output, Formatted Output, Numeric Formatting, Standard Numeric Format, Custom Numeric Format

**I (16, 17)**

**UNIT VIII**

**MANAGING ERRORS AND EXCEPTIONS**

**07 hrs**

Introduction, Type of Errors, Exceptions, Syntax of Exception Handling Code, Multiple Catch Statement, The Exception Hierarchy, General Catch Handler, Using Finally Statement, Nested Try Blocks, Throwing Our Own Exception, Checked and Unchecked Operators, Using Exceptions for Debugging

**MULTITHREADING IN C#**

Introduction, Understanding the System, Threading Namespace, Creating and Starting a Thread, Scheduling a Thread, Synchronizing Threads, Thread Pooling.

**I (18, 19)**

**Text Book:**

1. Programming in C# - A Primer, E. Balagurusamy, Second Edition, TMH, 2008

**Reference books:**

1. C# and the .NET Platform, Andrew Troelsen, Second Edition, Dreamtech Press, 2003
2. Understanding .NET, David Chappell, Second Edition, Pearson Education, 2006

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

**DC70**

**NETWORK MANAGEMENT**

**UNIT I**

**DATA COMMUNICATIONS AND NETWORK MANAGEMENT OVERVIEW**

**07 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, Case Histories of Networking and Management, Challenges of Information Technology Managers, Network Management: Goals, Organization, and Functions, Network and System Management, Network Management System Platform, Current Status and Future of Network Management

**I (1)**

**UNIT II**

**SNMP MANAGEMENT**

**08 hrs**

**BASIC FOUNDATIONS: STANDARDS, MODELS, AND LANGUAGE**

Network Management Standards, Network Management Model, 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 AND SYSTEMS**

**08 hrs**

Network Management Tools, Network Statistics Measurement Systems, History of Enterprise Management, Network Management Systems, Commercial Network Management Systems, System Management, Enterprise Management Solutions

**I (12)**

**UNIT VI**

**NETWORK MANAGEMENT APPLICATIONS**

**07 hrs**

Configuration Management, Fault Management, Performance Management, Event Correlation Techniques, Security Management

**I (13.1 to 13.5)**

**UNIT VII**

**NETWORK MANAGEMENT APPLICATIONS (CONTD)**

**07 hrs**

Accounting Management, Report Management, Policy-Based Management, Service Level Management

**I (13.6 to 13.9)**

**UNIT VIII**

**WEB-BASED MANAGEMENT**

**08 hrs**

NMS with Web Interface and Web-Based Management, Web Interface to SNMP Management, Embedded Web-Based Management, Desktop Management Interface, Web-Based Enterprise Management, WBEM: Windows Management Instrumentation, Java Management Extensions, Management of a Storage Area Network: The Jiro Platform

**I (14.1 to 14.8)**

**Text Book:**

I. Network Management Principles and Practice, Mani Subramanian, Pearson Education, 2000.

DC71

**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.

**DC94**

**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:
  - 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.
  - Every member must belong to at least one team and each team has a number of members.
  - Every team must belong to a club and clubs must have at least one team.
  - 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. Consider the following three tables – SAILORS, RESERVES and BOATS having the following attributes

SAILORS (Salid, Salname, Rating, Age)  
RESERVES (Salid, Boatid, Day)  
BOATS (Boatid, Boat-name, Color)

Use the above schema and solve the queries using SQL

- i) Find the name of sailors who reserved green boat.
- ii) Find the colors of boats reserved by "Ramesh"
- iii) Find the names of sailors who have reserved a red or green boat.
- iv) Find the Sailid's of sailors with age over 20 who have not registered a red boat.

3. 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".



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4. 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

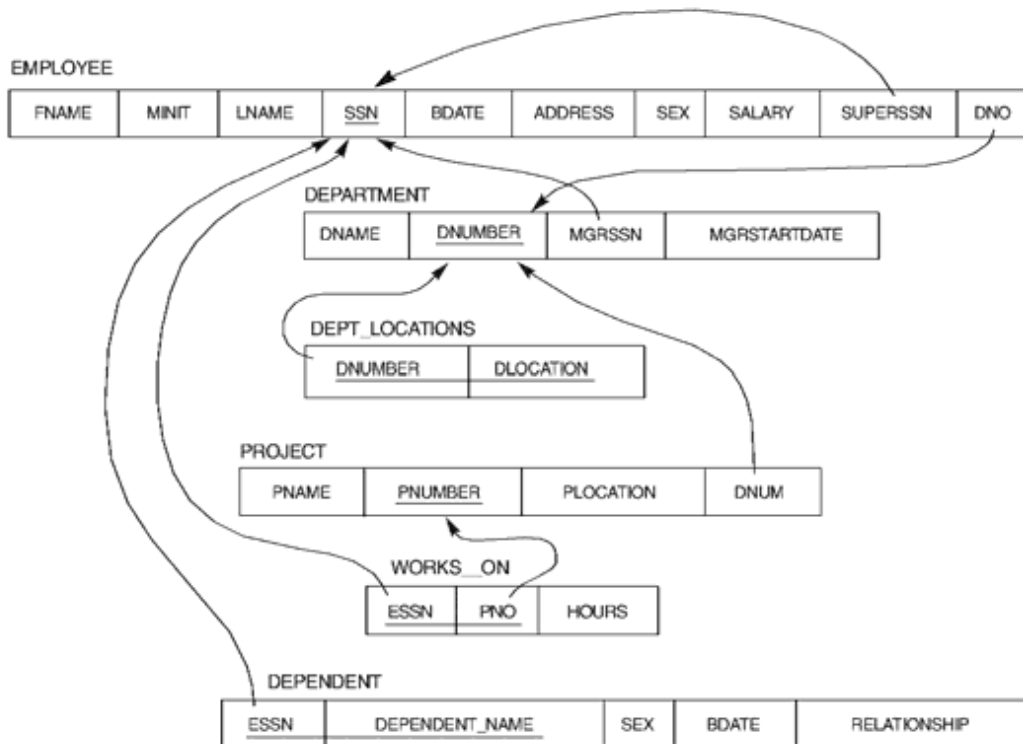
TRUCK (TRUCK\_#, DRIVER\_NAME)

CITY (CITY\_NAME, POPULATION)

Perform the following queries:

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

5. Consider the following schema for the COMPANY relational database Schema.



Perform the following queries:

- For every project located in 'Stafford', list the project number, the controlling department number, and the department manager's last name, address, and birthdate.
- For each employee, retrieve the employee's name, and the name of his or her immediate supervisor.
- 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.

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

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

PERSON (driver – id #: String, name: string, address: string)

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.

7. 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.

8. 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.

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9. 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.

10. Consider the following database for a banking enterprise:

BRANCH(branch-name:string, branch-city:string, assets:real)

ACCOUNT(accno:int, branch-name:string, balance:real)

DEPOSITOR(customer-name:string, accno:int)

COUSTOMER(customer-name:string, customer-street:string,  
customer-city:string)

LOAN(loan-number:int, branch-name:string, amount:real)

BORROWER(customer-name:string, loan-number: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:**

- Minimum of 09 experiments to be conducted.
- The exercises are to be executed in Oracle, MySQL or similar RDBMS environment.

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**COMMUNICATION SKILLS AND TECHNICAL WRITING**

DC99

	<b>UNIT I</b>	
<b>COMMUNICATION: ITS TYPES AND SIGNIFICANCE</b>	<b>05 hrs</b>	
Basic Concepts of Communication; Process of Communication; Types of Formal communication; The Media of Communication; Channels of Communication; Barriers in Communication; How to Overcome Barriers to Communication.		
<b>I (1.1, 1.2, 1.3, 1.4, 1.5, 1.6)</b>		
	<b>UNIT II</b>	
<b>GRAMMAR</b>	<b>06 hrs</b>	
Synonyms; Antonyms; Words used as different parts of speech; Spotting errors; Principle of proximity between subject and verb.		
<b>I (4.1 to 4.3, 4.6, 4.8)</b>		
	<b>UNIT III</b>	
<b>SYNTAX</b>	<b>07 hrs</b>	
Sentence Structure; Combination and Transformation of sentences; Verb Patterns in English.		
<b>I (5.1 to 5.4)</b>		
	<b>UNIT IV</b>	
<b>READING SKILLS</b>	<b>05 hrs</b>	
Purpose and Process of Reading; Reading Tactics; Reading Comprehension; Paraphrase; Preparing outlines of paragraph/text.		
<b>I (2.1 to 2.3, 2.6, 2.10, 2.11)</b>		
	<b>UNIT V</b>	
<b>WRITING SKILLS</b>	<b>07 hrs</b>	
Elements of Effective Writing; Job Application, Bio-data, Personal Resume and Curriculum Vitae; Writing Styles; Scientific and Technical Writing; Summary Writing; Writing paragraphs; Writing Essays.		
<b>I (3.1, 3.2, 3.5, 3.6, 3.8, 3.9, 3.11)</b>		
	<b>UNIT VI</b>	
<b>LISTENING SKILLS</b>	<b>06 hrs</b>	
Process of Listening; Hard and Soft Skills; Feedback Skills; Essentials of Good Communications; Types of Listening; Barriers to Listening.		
<b>I (8.1 to 8.4, 8.6 to 8.8)</b>		
<b>SPEAKING SKILLS</b>		
Skills of Effective Speaking; Component of an Effective Talk; Tone of Voice; Body Language; Timing and Duration of Speech; Audio-Visual Aids in Speech.		
<b>I (9.1, 9.2, 9.4 to 9.7)</b>		
	<b>UNIT VII</b>	
<b>TECHNICAL REPORT</b>	<b>06 hrs</b>	
Main considerations in writing a good report; Types and Structure of Reports; Collecting Data; Visual Aids; General Tips for Writing Reports.		
<b>I (12.1 to 12.4, 12.8, 12.9)</b>		
	<b>UNIT VIII</b>	
<b>SELF DEVELOPMENT</b>	<b>06 hrs</b>	
Know yourself; Tips for giving an Interview; Body language for Interviews; Group Discussion; Skills of participating in meeting; Attending Calls.		
<b>I (10.1 to 10.4, 10.6)</b>		

## Regulations and Syllabi for DiplETE (CS) Examination

### **Text Book**

1. The Functional Aspects of Communication Skills, Prajapati Prasad and Rajendra K. Sharma, S. K. Kataria & Sons, New Delhi, Reprint 2007.

### **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.**

**Theory** - consists of written examination for 70 marks.

**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 30 marks.

**DC64**

**PROJECT WORK**

**PROGRAMME OF DIPIETE EXAMINATION  
(COMPUTER SCIENCE & ENGINEERING)**

<b>Jun/Dec</b>	<b>FORENOON 10 AM TO 1 PM</b>	<b>AFTERNOON 2.30 PM TO 5.30 PM</b>
15 <sup>th</sup> /15 <sup>th</sup>	DC51 Engineering Mathematics-I DC69 C# & .Net	DC59 Analysis & Design of Information Systems
16 <sup>th</sup> /16 <sup>th</sup>	DC52 Fundamentals of Electrical & Electronics Engineering DC63 Data Communication & Networks	DC68 Microprocessors & Microcontrollers
17 <sup>th</sup> /17 <sup>th</sup>	DC53 Computer Fundamentals & C Programming	DC61 Operating Systems & Systems Software
18 <sup>th</sup> /18 <sup>th</sup>	DC54 Data Structures DC56 Object Oriented Programming with C++	DC62 Database Management Systems
19 <sup>th</sup> /19 <sup>th</sup>	DC55 Engineering Mathematics – II DC71 Internet Applications	DC65 Software Engineering
20 <sup>th</sup> /20 <sup>th</sup>	DC70 Network Management	DC60 Java & Web Programming
21 <sup>st</sup> /21 <sup>st</sup>	DC57 Computer Organization	DC66 Computer Graphics
22 <sup>nd</sup> /22 <sup>nd</sup>	DC58 Logic Design	DC67 Embedded Systems DC99 Communication Skills & Technical Writing

**Lab Practice Examination, Project Evaluation and Oral Test (DC99)**

Candidates are to contact their Local Centre for Lab Exam DC91,DC92,DC93, DC94, DC99 and Project(DC64).

- 
- Note :
1. MKS System of units will be used.
  2. Non-programmable calculators & log tables (Mathematics only) be used.
  3. Mobile phones are not allowed inside examination hall/room.

**IETE ACADEMIC AWARDS**

IETE has instituted the following academic awards for excellence for AMIETE students to be awarded every year. Awardees are intimated sufficiently in advance and are invited to receive these prestigious awards during students' session of the Annual Technical Convention of IETE. The award consists of a medal and a citation. Details of awards are given below:

**DIPIETE Council Award-I** for securing the highest percentage with 6.5 CGPA and above grade and completing Part-I of Section A in one attempt without any exemptions.

**DIPIETE Council Award-II** for securing the highest percentage with 6.5 CGPA and above grade and completing Part-II of Section A in one attempt without any exemptions.

**DIPIETE Council Award-III** for securing the highest percentage with 6.5 CGPA and above grade and completing Part-I of Section B in one attempt without any exemptions.

**DIPIETE Council Award-IV** for securing the highest percentage with 6.5 CGPA and above grade and completing Part-II of Section B in one attempt without any exemptions.

**DIPIETE Council Award-V** for securing the highest percentage with 6.5 CGPA and above grade and completing DIPIETE in 3 years without any exemptions.

**DipIETE - Gopal M Dandekar Memorial Award** to a girl student for securing the highest percentage with 6.5 CGPA and above marks and completing DipIETE (considering ET & CS streams of current June and previous Dec exams together) in three years without any exemptions.

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

Shastri Bhavan, New Delhi,  
the 16<sup>th</sup> 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./-



प्रेषक,

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

सेवा में,

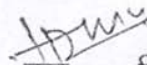
प्रधान सचिव,  
इलैक्ट्रॉनिक्स एवं टैलीकम्यूनिकेशन इंजीनियर संस्थान,  
2, इंस्टीच्यूशनल ऐरिया, लोदी रोड़,  
नई दिल्ली 110 003

यादी क्रमांक 95 /शैक्षिक,  
दिनांक : 13-2-03

विषय : Regarding – Recognition of Diploma by Haryana Govt.

उपरोक्त विषय पर आपके यादी क्रमांक : 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,  
कृते: तकनीकी शिक्षा आयुक्त एवं  
विशेष सचिव, हरियाणा सरकार,  
तकनीकी शिक्षा विभाग, चण्डीगढ़  
7/2/03

ફોન : 1 (૦૨૯) ૬૩૦૧૬૪  
ફેક્સ : ૬૩૦૧૩૪૧-૬૩૦૦૩૪૨-૪૩,  
૬૩૦૦૧૨૬ અને ૬૩૦૦૬૬૪  
ઇલેક્ટ્રોનિક્સ : યુનિવર્સિટી



FAX : (079) 6300342

Phone : 6301341-6300342-43, 6300126 &  
6300664

ગુજરાત યુનિવર્સિટી  
GUJARAT UNIVERSITY

ગુજરાત યુનિવર્સિટી કચેરી,  
સેટેલાઇટ રોડ નં. ૨૦૧૦,  
અમદાવાદ, ગુજરાત-૩૮૦ ૦૨૬.

OFFICE OF THE CHAIRPERSON  
POST BOX No. 1485,  
NAVRA-GPURA,  
AHMEDABAD-380 015

No. Exam/3A/ELI/ 6310 /2002 Date : 12/9/2002

To,

The Chair Person,  
I. E. T. C. / 4 - 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. /~~Engineering~~ examination by this University.

Thanking you,

Yours faithfully,

Registrar

भारत सरकार  
विज्ञान और प्रौद्योगिकी मंत्रालय  
वैज्ञानिक और औद्योगिक अनुसंधान विभाग  
टेक्नोलॉजी भवन, नया महरोली मार्ग, नई दिल्ली-110016  
GOVERNMENT OF INDIA  
MINISTRY OF SCIENCE & TECHNOLOGY  
Department of Scientific & Industrial Research  
Technology Bhawan, New Mehrauli Road,  
New Delhi-110016

तार/Telegram : SCIENCTECH / SCINDRECH  
दूरभाष/Telephone : 6567373, 6562134, 6562122,  
6562123, 6562125, 6562128  
6562160 (EPABX)  
फैक्स/Fax : 6960629, 6868607, 6962955  
ई मेल/Email :

No. 11/274/92-TU-V

(Registered)

Dated: 4 October, 2006

The Secretary General  
The Institution of Electronics and  
Telecommunication Engineers  
2, Institutional Area  
Lodi Road  
New Delhi – 110 003

**Subject: Renewal of recognition of Scientific and Industrial Research Organisations (SIROs).**

Dear Sir,

This has reference to your application for renewal of recognition of **The Institution of Electronics and Telecommunication Engineers, New Delhi**, beyond 31.3.2006 by the Department of Scientific & Industrial Research under the Scheme on Recognition of Scientific and Industrial Research Organisations (SIROs) – 1988.

2. This is to inform you that it has been decided to accord renewal of recognition to **The Institution of Electronics and Telecommunication Engineers, New Delhi**, from **01.04.2006** to **31.03. 2009**. The recognition is subject to terms & conditions mentioned overleaf.
3. Receipt of this letter may kindly be acknowledged.

Yours faithfully

  
(R. R. Abhyankar)  
Scientist 'G'

**IETE CENTRES**

AHMEDABAD	206, U miya V ijay Shopping Centre, Satellite Road, AHMEDABAD – 380 015. Ph : 079-26753938 Fax : 079-26753938 Email : ahmedabad@iete.org	CHANDIGARH	IETE Building, Sector 30-B (Opp. CSIO) CHANDIGARH – 160 030 Ph : 0172-2651061 Fax : 0172-2657333 Email : chandigarh@iete.org
ALIGARH	Flat No 1&2, Shah Residency, Medical Road, ALIGARH-202 002 Ph : 0571-270190 Email : aligarh@iete.org	CHENNAI	37, Conran Smith Road, (New No. 169) Main Entrance Peters Road Gopalapuram, CHENNAI – 600 086. Ph : 044-28350773, 28356045 Fax : 044-28350773 Email : chennai@iete.org
ALLAHABAD	C/o J K Institute of Applied Physics, & Technology University of Allahabad, ALLAHABAD – 211 002. Ph : 0532-2460442 Fax : 0532-2460443 Email : allahabad@iete.org	COIMBATORE	Amrita Vishwa Vidyapeetham Amrita University, Ettimadai, COIMBATORE – 641 105 Ph : 0422-2656422 Fax : 0422-2656274 Email : coimbatore@iete.org
AMRAVATI	45, Anand, Ganediwal Layout, Camp, AMRAVATI – 444 602 Ph : 0721-2663908 Email : amravati@iete.org	DEHRADUN	C/o DEAL Campus, Riapur Road, DEHRADUN – 248 001. Ph : 0135-2787257, 2787083 Fax : 0135-2787265, 2787290 Email : dehradun@iete.org
AURANGABAD	C/o Deptt. of Computer Science & Information Technology, Dr B A M University Campus, AURANGABAD – 431 004 Ph : 0240-2400431-37 Ex.461,534 Fax : 0240-2400986 Email : aurangabad@iete.org	DELHI	16/1-2, Institutional Area, Pankha Road, Janakpuri (Opp Vashisht Park), NEW DELHI – 110 058. Ph : 28521618 Tele-fax : 011-28520912 Email : delhi@iete.org
BANGALORE	IETE Building, Bellary Road, Ganganagar Extn., BANGALORE – 560 032 Ph : 080-23331133 Fax : 080-23337231 Email : bangalore@iete.org Website : <a href="http://www.ietebr.org">www.ietebr.org</a>	DHARWAD	C/o Dept of E & CE S D M College of Enng & Tech., DHARWAD – 580 002. Ph : 0836-2447465 Fax : 0836-2464638 Email : dharwad@iete.org Website : <a href="http://www.sdmcet.ac.in">www.sdmcet.ac.in</a>
BHOPAL	Office Hall No. 3, Gamantika Parisar, Jawahar Chowk, TT Nagar, BHOPAL – 462 003. (M.P) Ph : 0755-2010086 M : 09425301024 Email : Bhopal@iete.org	GOA	C/o ETC Deptt., Govt Engineering College, Farmagudi, Ponda, GOA-403 0401. Email : goa@iete.org
BHUBANESWAR	Room No. 4,5 & 6 IInd Floor, Barabhuja Commercial Complex, Khandgiri Square, BHUBANESWAR – 751 003. Email : <a href="mailto:bhubaneswar@iete.org">bhubaneswar@iete.org</a>	GULBARGA	C/o PDA College of Engineering, GULBARGA – 585 102. Ph : 08472-256155 Fax : 08472-255685 Email : gulbarga@iete.org Webstie : <a href="http://www.pdaengg.com">www.pdaengg.com</a>
BURDWAN	C/o Dept of physics Burdwan University, Gopalbag (North), BURDWAN – 713 104. Ph : 0342-2657800 Ext. 37 Email : burdwan@iete.org	GUWAHATI	3 <sup>rd</sup> Floor, Eureka Tower, Chandmari, GUWAHATI - 781 003. Ph : 0361-2656166, 2571117 Email : guwahati@iete.org

GWALIOR	NAND Bhawan 133-Panchwati Vastra Nagar, (inside water works) Roshani Ghar Road, GWALIOR – 474 009. Email : gwalior@iete.org	LUCKNOW	Flat No. 3-D, Khushnuma Complex, 7, Meerabhai Marg, LUCKNOW – 226 001. Tele Fax : 0522-2207779 Fax : 0522-2207763 Email : lucknow@iete.org
HYDERABAD	Near Jama-I-Osmania Post Office Osmania University Campus, HYDERABAD – 500 007. Ph : 040-27098025 Telefax : 040-27097175 Email : hyderabad@iete.org Website : <a href="http://www.ietehyd.org">www.ietehyd.org</a>	MANKAPUR	MKP SOFT-Building Sanchar vihar ITI Ltd. Mankapur, GONDA-271 308 Ph : 05265-274358 Email : mankapur@iete.org
IMPHAL	IETE Building Lamphel Langol Road, IMPHAL. Email : imphal@iete.org	MEERUT	D-188, Shastri Nagar, & 492/3-B, Shastri Nagar, MEERUT – 250 004 Ph : 0121-2765501 Email : meerut@iete.org
JABALPUR	Raj Kumari Bhawan Complex, South Civil Lines, JABALPUR – 482 001. Ph : 0761-4081469 Email : jabalpur@iete.org	MHOW	Faculty of Communication Engg., FCE, MCTE MHOW – 453 441 (M.P.) Ph : 07324-275871/228395 Fax : 07324-275871 Email : imhow@iete.org
JAIPUR	'D' Block Shopping Centre, 1 <sup>st</sup> Floor, Malaviya Nagar, JAIPUR – 302 017 Ph : 0141-2545924 Email : jaipur@iete.org	MUMBAI	IETE House 73-B, Collectors Colony, Mahul Road, Chembur, Mumbai-400 074 Ph: 022-25536391 Email : mumbai@iete.org Website : <a href="http://www.ietemumbai.org">www.ietemumbai.org</a>
JAMMU	7C/C Gandhi Nagar, (Near Triveni Hospital) JAMMU – 180 004. Ph : 01991-285699 Ext. 2010 Email : jammu@iete.org	MYSORE	No. 201, Mythri Arcade, 1 <sup>st</sup> Floor, 1 <sup>st</sup> Main Saraswathipuram, MYSORE – 570 009 Ph : 0821-2518171 Email : mysore@iete.org
KANPUR	111/457 1 <sup>st</sup> Floor, Vasundhara Complex, Opp S wagat H otel, N ear B rahm Nagar Crossing, 80 Feet Road, KANPUR – 208 012. Ph : 0512-3259019 Email : kanpur@iete.org	NAGPUR	131, 131-A, Old Dharampeth, Near Shri Sant Gajanan Maharaj Temple, Zarda Chowk, NAGPUR – 440 010. Ph : 0712-2551890 Email : nagpur@iete.org
KATHMANDU	C/o Nepal Telecom Training Centre Babar Mahal, PB No 5662, Kathmandu, Nepal Ph : 00977-1-4784213 Fax : 00977-1-4784220 Email : kathmandu@iete.org	NASHIK	Sanchar Parisar, Canada Corner, Sharanpur Road, NASHIK – 422 002 Ph : 0253-2571155 Email : nashik@iete.org Website : <a href="http://www.ietenashik.org.in">www.ietenashik.org.in</a>
KOCHI	IETE House, XL/216K, Third Floor, Jewel Arcade Building, Layam Road, KOCHI – 682 011. Tele Fax : 0484-2369944 Email : kochi@iete.org	NAVI MUMBAI	C/o A C Patil College of Engg., Sector-4, Kharghar, NAVI MUMBAI-410 210. Email : navimumbai@iete.org
KOLKATA	No. J 1-7, EP-Block, Sector – V Salt Lake Electronics Complex, Salt Lake, KOLKATA – 700 091. Tele Fax : 033-23577054 Email : kolkata@iete.org Website : ietekol.org	NOIDA	PS-1D,Behind Brahmaputra Shopping Complex, Sector – 29, Arun Vihar, NOIDA – 201 303. Ph : 0120-4230533/34 Tele Fax : 0120-42315697 Email : noida@iete.org

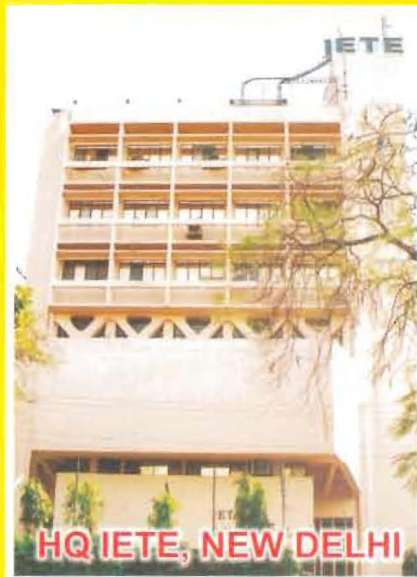
PALAKKAD	18/424 (12) – Second Floor, Ponnaran's Avenue, West Fort Road, PALAKKAD – 678 001 Tele Fax : 0491-2525666 Email : palakkad@iete.org	SHIMLA	Saligram Bhawan, Below Reliance India Mobile, Khallini, SHIMLA – 171 002. Ph : 0177-2625268 Email : shimla@iete.org
PATNA	Flat No. 205, (2 <sup>nd</sup> Floor) Shri Ram Plaza, Station Road PATNA – 800 001. Telefax : 0612-2207447 Email : patna@iete.org	THIRUVANANTHAPURAM	Pottakuzhy, Pattom THIRUVANANTHAPURAM–695 004. Ph : 0471-2554727 Email : thiruvan@iete.org Website : ietetum.com
PILANI	Central Elect Engg Research Inst (CEERI) PILANI – 333 031 (Raj). Ph : 01596-252340 Fax : 242294 Email : pilani@iete.org	TIRUPATI	4 <sup>th</sup> Floor, AVR Complex, Balaji Colony, Tirupati-517 502. Ph : 09247007122 Email : tirupati@iete.org
PUNE	Raghuraj', 62 Indiranagar, Near Mehendale Garage, Erandwana, PUNE – 411 004. Ph : 020-25449762 Fax : 25410179 Email : pune@iete.org Website : www.ietepune.org	VADODARA	501-506, Fifth Floor, Vraj Siddhi Tower, Khanderao Market Char Rasta, Rajmahal Road, VADODARA – 390 001. Tele Fax : 0265-2422475 Email : vadodara@iete.org Website : ietevadodara.org
RAIPUR	Qtr No 6/1, Telecom Officers Colony, New Rajinder Nagar, RAIPUR-492 006. Ph : 0771-2229500, 2538080 Email : raipur@iete.org	VARANASI	Prof S K Srivastava C/o Dept of ECE Banaras Hindu University, VARANASI. Email : varanasi@iete.org
RAJKOT	PRERNA – 2, 1 <sup>st</sup> Floor, 3 – Tirupatinagar, Raiya Road, Near Hanuman Madhi, RAJKOT – 360 002. Ph : 0281-2572357 Email : rajkot@iete.org website : www.ieterjakot.org	VIJAYAWADA	Flat No. 107 & 108 Vijaya Soudha Apartments, High School Road Cross, Patamata, M.G. Road, VIJAYAWADA – 520 010. Ph : 0866-2550974 Email : vijayawada@iete.org
RANCHI	C/o ECE Dept., Govt Polytechnic, Church Road, RANCHI-834 001. Ph: 0651-2210168 Email : ranchi@iete.org	VISAKHAPATNAM	IETE Building, Near ECE Department, College of Engg., Andhra University, VISAKHAPATNAM – 530 003. Email : visakha@iete.org
SELAM	Dept of ECE Sona College of Techonology, SALEM-636 0005 (M) 09443590048 Ph : 044-4099777 Fax : 044-4099888 Email : salem@iete.org	WARANGAL	3 <sup>rd</sup> Floor, Mayuri Mall Complex Kishanpura, Karim Nagar Road, Hanmakonda WARANGAL – 506 015. M : 094901244 Email : warangal@iete.org
SIVAKASI	Prof & Head Dept of ECE MEPCO Schlenk Engg College Sivakasi, VIRUDHUNAGAR-626 005 (M) 09442775282 Email : sivakasi@iete.org		



# IETE BUILDINGS



**DELHI CENTRE**



**HQ IETE, NEW DELHI**



**THIRUVANANTHAPURAM CENTRE**



**NOIDA CENTRE**



**BANGALORE CENTRE**



**ALLAHABAD CENTRE**



**VISAKHAPATNAM CENTRE**



**NAGPUR CENTRE**



**KOLKATA CENTRE**



**HYDERABAD CENTRE**



**CHANDIGARH CENTRE**

**Government of India  
Ministry of Human Resource Development  
Department of Education**

**Copy of MHRD Letter No.F.24-7/2002-TS.III Dated 10<sup>th</sup> 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 9<sup>th</sup> 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 compliants 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

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**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.

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