# SYLLABUS

## DIPLOMA IN COMPUTER ENGINEERING

### Academic Regulation: 2016-2019

### E- SCHEME

### Academic Year(w.ef): 2017 - 2018

---

**SESHASAYEE INSTITUTE OF TECHNOLOGY**
**(Autonomous)**
**ISO 9001:2008 certified Institute**
**Tiruchirappalli – 620010.**

# CONTENTS

# PREFACE

The wave of liberalization and globalization has created an environment for free flow of information and technology through fast and efficient means the world over. This has lead to shrinking of world, bringing people from different cultures and environment together, giving rise to a global village. A shift has been taking place in India from closed economy to knowledge based and opens economy. In order to cope-up with the challenges of handling new technologies, materials and methods, we have to develop human resources having appropriate knowledge, professional skills and attitude. Technical education system is one of the significant components for human resource development. Polytechnics play an important role in meeting the requirements of trained technical manpower for industries and field organizations. The initiatives being taken by to revise the curriculum as per the needs of the industry are laudable.

In order to meet the requirements of future technical manpower, constant efforts have to be made to identify new employment opportunities, carryout activity analysis and design need based curricula of diploma programmes. This curriculum document has been designed by identifying job potential and competency profile of diploma holders leading to identification of curriculum areas for the course. It is needless to emphasize that the real success of the diploma programme depends upon its effective implementation. This will require harnessing and effective utilization of resources. In addition to acquisition of appropriate physical resources, the availability of competent and qualified faculty is essential. It is time for the managers of technical education system to reorganize the system to accept the challenges of both quantitative and qualitative expansion of technical education.

There are various online training facilities created by the Government of India through MHRD for the benefit of both the Teaching and Student community. Facilities like Spoken-Tutorial, NPTEL, e-Yantra must be exploited to its fullest extent to reap the benefits of interactive electronic media for teaching-learning process. It is hoped that polytechnics will carry out job market research on a continuous basis to identify the new skill requirements and develop innovative methods of course offering and thereby infuse dynamism in the system.

PRINCIPAL & CHAIRMAN

## ACKNOWLEDGEMENTS

We gratefully acknowledge the assistance and guidance received from the following persons:

i) Commissioner and Principal Secretary, Directorate of Technical Education, Govt. of Tamilnadu.

ii) Principal & Chairman, ,Seshsasayee Institute of Technology, Trichy for initiating this project on designing of curriculum.

iii) Smt. J. Rama, Regional Officer-IV Directorate Technical Education, Tamilnadu for their assistance and support in evaluation of this curriculum.

iv) **Dr.S. Ravimaran**, Professor and Principal, MAM College of Engineering, Siruganur, **Mr.A.M. Ibrahim Shah**, CEO, Activsoft Technologies, Chennai and **Mr. S. Manishekar**, Principal, Valivalam Desikam Polytechnic College, Nagapatinam for their professional inputs and support in the design of this curriculum.

v) All the faculty members of the Computer Engineering department for their sustained effort and support in the design of this curriculum and documentation.

**Coordinator**

# 1 . SALIENT FEATURES OF THE DIPLOMA PROGRAMME IN COMPUTER ENGINEERING

| | |
|---|---|
| Name of the Programme | Diploma in Computer Engineering |
| Duration of the Programme | Three years (Six Terms) |
| Entry Qualification | Matriculation or equivalent as prescribed by State Board of Technical Education, Tamilnadu |
| Intake | 50 (or as approved by AICTE) |
| Pattern of the Programme | Semester Pattern |
| Ratio between theory and practical | 50:50 (Approximately) |
| Entrepreneurship Development | A subject on Entrepreneurship Development and Management has been incorporated in the scheme. |

## 2. EMPLOYMENT OPPORTUNITIES AND JOB/ACTIVITY PROFILE FOR DIPLOMA HOLDERS IN COMPUTER ENGINEERING

### *(A) EMPLOYMENT OPPORTUNITIES*

**Diploma holders in computer engineering can find employment in following divisions:**

(1) Service Division (IT enabled services, maintenance service and installation Computers)
(2) Assembly and Quality Control Division
(3) Techno Marketing (Corporate Handling, SME, Institutional Segment, Government Tender Business)
(4) Telecommunication Sector
(5) Teaching Organizations (Technical Institution, Vocational Institutions etc)
(6) Networking ( LAN, WAN etc)
(7) Cloud industry
(8) Cyber security industry
(9) In Govt. Services like Railway, Law Enforcement Agencies
(10) Call Centers, KPO, BPO etc.
(11) Financial Institutions.

**While in employment, the following areas of activity in different organizations (Industry and service sector) are visualized for diploma holders in Computer Engineering:**

- Assembly and Installation of computer systems, peripherals and software
- Programming customer based applications including web page designing
- Software testing and Maintenance of computer systems
- Techno Marketing and pre sales
- Teaching and training at technical institutions
- Self employment – call centers, BPO, EPO and KPO etc.
- Network installation and maintenance

**Various designations for diploma holders in Computer Engineering are given as follows:-**

***Wage Employment***

(1) Service engineer/customer support engineer/maintenance engineer in installation, Maintenance and service of computer systems and networking

(2) Software tester in testing of software systems and mobile applications

(3) Assembly supervisor in manufacturing and production activity

(4) DTP operator, Technician

(5) Technical Consultant

(6) Web designer/developers

(7) Search Engine Optimization Professionals and Social Media Optimization Professionals

(8) Technical Assistant/ Junior engineer in quality control and testing activities of Computer systems manufacturing

(9) Junior marketing executive/sales engineer in marketing activities

(10) Technical assistant/ Instructor/Junior Programmer in R&D laboratories and Educational institutions to help in maintaining computers and networks

***Self Employment***

(1) Small scale unit doing third party service and maintenance of computer systems and networks

(2) Small scale vendor of computer cards, computer peripherals and electronic Components and devices

(3) Setting up of computer assembly unit (small scale)

(4) Setting up of training institute for computer assembly, maintenance and Networking

(5) As Web designer, web application developer.

## 3. COMPETENCY PROFILE OF DIPLOMA HOLDERS IN COMPUTER ENGINEERING

Keeping the job opportunities, activity profile and domains of learning of diploma holders in Computer Engineering in view, the programme is aimed at developing following competency Profile in terms of knowledge and skills in the students:

1. Able to read and interpret drawings related to plant layout, equipment and components.
2. Understand the working of computers and peripherals and is able to install computer system including software loading
3. Able to assemble computers and change/ replace various parts and peripherals
4. Able to write computer programs in high level languages
5. Knowledge of data structure and programming techniques
6. Proficiency in operating computer systems and ability to use various application and Software/package
7. Understand the functioning and administration of various operating systems
8. Able to prepare specifications for computer systems, evaluating the specifications and Verifying computer system for given specifications
9. Understanding of databases and knowledge of database management system
10. Able to troubleshoot various faults in computer system and networks
11. Understand architecture of microprocessor, interfacing techniques (memory I/O and Interrupts).
12. Knowledge about computer system architecture and organization
13. Knowledge of principles of digital data transmission, communication methodologies, protocols and networking equipment used in data transmission and concept of network security
14. Understand the basic concept of network technology, Local Area Network (LAN) and Wide Area Network (WAN) and establish Local Area Networks using wired and wireless technologies
15. Able to prepare layout and environmental specifications for site can supervise the installation and testing of computers systems
16. Proficient in developing a software and web sites
17. Understand system software and ability to use applications and open source software
18. Understand basic principles of management and manage the resources optimally.

19. Aware about the opportunity available for setting up one's own enterprise and its benefits
20. Reflect generic skills of thinking, problem solving, good communication, interpersonal skills and entrepreneurial qualities for effective functioning in the world of work
21. Aware about technological advancements and forthcoming areas of development and current trends in the field of Computer Engineering and IT
22. Understand basic principles of Applied Sciences and Mathematics for developing scientific temper
23. Understand basic principles of electrical and electronic Engineering
24. Understand basic principle of digital electronics
25. Able to design complex software as an individual and contribute as a team member.
26. Able to test software using various techniques.

## 4. DERIVING CURRICULUM AREAS FROM COMPETENCY PROFILE

Following curriculum areas have been derived from competency profile :

| S.NO | Competency Profile | Subject Areas |
|---|---|---|
| **1.** | Able to read and interpret drawings related to plant layout, equipment and components | Engineering Graphics |
| **2.** | Understand the working of computers and peripherals and is able to install computer system including software loading | Computer Hardware and Servicing |
| **3.** | Able to assemble computers and change/ replace various parts and peripherals | Computer Hardware and Servicing |
| **4.** | Able to write computer programs in high level languages | C++ Programming<br>Object oriented Programming with Java<br>Open source software<br>Component based Technology |
| **5.** | Knowledge of data structure and programming techniques | Data Structure |
| **6.** | Proficiency in operating computer systems and ability to use various application and software/package | Operating System<br>Linux Lab |
| **7.** | Understand the functioning and administration of various operating systems | Operating System |
| **8.** | Able to prepare specifications for computer systems, evaluating the specifications and verifying computer system for given specifications | Computer Peripheral and Maintenance<br>Hardware and Networks Lab |
| **9.** | Understanding of databases and knowledge of database management system | RDBMS |
| **10.** | Able to troubleshoot various faults in computer system and networks | Hardware and Networks Lab |
| **11.** | Understand architecture of microprocessor, interfacing techniques (memory I/O and interrupts). | Operating System<br>Computer Peripheral and Maintenance |

| | | |
|---|---|---|
| **12.** | Knowledge of principles of digital data transmission, communication methodologies, protocols and networking equipment used in data transmission | Computer Networks |
| **13.** | Understand the basic concept of network technology, Local Area Network (LAN) and Wide Area Network (WAN) and establish Local Area Networks using wired and wireless technologies | Computer Networks<br>Hardware and Networks lab<br>Cloud Computing |
| **14.** | Able to prepare layout and environmental specifications for site can supervise the installation and testing of computers systems | Computer Peripheral and Maintenance<br>Hardware and Networks lab |
| **15.** | Proficient in developing a software and web sites | Internet concepts<br>Web Technology |
| **16.** | Understand system software and ability to use applications and open source software | Java Programming<br>Open source software |
| **17.** | Understand basic principles of management and manage the resources optimally. | Entrepreneurship Management |
| **18.** | Aware about the opportunity available for setting up one's own enterprise and its benefits | Entrepreneurship Management |
| **19.** | Reflect generic skills of thinking, problem solving, good communication. interpersonal skills and entrepreneurial qualities for effective functioning in the world of work | Entrepreneurship Management<br>Communication and life skill practice lab |
| **20.** | Aware about technological advancements and forthcoming areas of development and current trends in the field of Computer Engineering and IT | Cloud Computing |
| **21.** | Understand basic principles of Applied Sciences and Mathematics for developing scientific temper | Physics I & II<br>Chemistry I & II<br>Mathematics I, II, III & IV |
| **22.** | Understand basic principles Electronic Engineering | Digital Electronics |
| **23.** | Understand the graphics, 2D animation and image manipulation | Multimedia Lab |
| **24.** | Understand and able to work with Linux operating system and to program | Linux Lab |

## 5. DEPARTMENT VISION, MISSION ,PO and PEOs

**The Vision and Mission of the Department**

***VISION***

Attaining global recognition in Computer Engineering education, and training to meet the growing needs of the industry and society.

***MISSION***

- To educate computer engineering students to become successful professionals who can analyse, design, develop, install, maintain with enhance software and hardware through best-in class faculty and facilities.
- To provide quality education through well-designed curriculum with the challenging software needs of the industry to carry out the state-of-the-art research and emerging technologies.
- To provide platforms to work effectively and innovatively in multi-disciplinary domain.

**Program Educational Objectives**

The Program Educational Objectives (PEOs) of the department of CSE are given below:

**PEO1:** To provide the imperatives knowledge of engineering and technology concepts fundamental for a computer professional and equip the proficiency of algorithmic principles, logic development and problem solving ability.

**PE02:** To inculcate ability in creativity & design of computer application and support systems and impart knowledge and skills for analyze, design, test and implement various software applications

**PE03:** To exhibit leadership capability, triggering social and economical commitment and inculcate community services and protect environment

## List of Program Outcomes

| | |
|---|---|
| PO1 | **Engineering Knowledge**: Apply knowledge of logic and problem solving with fundamentals of Computer Engineering to be able to solve complex engineering problems related to Computer Engineering. |
| PO2 | **Problem Analysis**: Identify, Formulate, review text book problems and analyze complex engineering problems related to CSE and reaching substantiated conclusions using first principles of mathematics, natural sciences and engineering sciences |
| PO3 | **Design/Development of solutions**: Design solutions for engineering problems related to CSE and design system components or |

| | |
|---|---|
| | processes that meet the specified needs with appropriate consideration for the public health and safety and the cultural societal and environmental considerations |
| PO4 | **Modern Tool Usage**: Create, Select and apply appropriate techniques, resources and modern engineering and IT tools related to complex engineering activities with an understanding of the limitations |
| PO5 | **The Engineer and Society**: Apply Reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the CSE professional engineering practice |
| PO6 | **Environment and Sustainability:** Understand the impact of the CSE professional engineering solutions in societal and environmental contexts and demonstrate the knowledge of, and need for sustainable development |
| PO7 | **Ethics**: Apply Ethical Principles and commit to professional ethics and responsibilities and norms of the engineering practice |
| PO8 | **Individual and Team Work**: Function effectively as an individual and as a member or leader in diverse teams and in multidisciplinary Settings |
| PO9 | **Communication:** Communicate effectively in the work environment , with the professionals of the engineering community and with society at large to comprehend and communicate to write effective reports and design documentation, make effective presentations and give and receive clear instructions. |
| PO10 | **Project Management and Finance**: Demonstrate knowledge and understanding of the engineering management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multi disciplinary environments |
| PO11 | **Life-Long Learning**: Recognize the need for and have the preparation and ability to engage in independent and life-long learning the broadest context of technological change |

**List of PSO's (Program Specific Outcomes)**

***PS01: Foundation of mathematical concepts***: To use mathematical methodologies to crack problem using suitable mathematical analysis, data structure and suitable algorithm.

***PSO2: Foundation of Computer System***: the ability to interpret the fundamental concepts and methodology of computer systems. Students can understand the functionality of hardware, networking and software aspects of computer systems.

***PSO3: Foundations of Software development***: the ability to grasp the software development lifecycle and methodologies of software systems. Possess competent skills and knowledge of software design process. Familiarity and practical proficiency with a broad area of programming concepts and provide new ideas and innovations.

## 6. Curriculum

## I - VI : TERM CURRICULUM AND SYLLABUS

### Term I

| Sl. No | Course Code | Course Title | Load Allocation | | | Mark Distribution | | Total Mark |
|---|---|---|---|---|---|---|---|---|
| | | | L | P | C | Internal | External | |
| **THEORY** | | | | | | | | |
| 1 | 4E1101 | Communication English – I | 4 | 0 | 4 | 25 | 75 | 100 |
| 2 | 4E1102 | Engineering Mathematics – I | 7 | 0 | 7 | 25 | 75 | 100 |
| 3 | 4E1103 | Engineering Physics – I | 5 | 0 | 5 | 25 | 75 | 100 |
| 4 | 4E1104 | Engineering Chemistry – I | 5 | 0 | 5 | 25 | 75 | 100 |
| **PRACTICAL** | | | | | | | | |
| 5 | 4E1105 | Engineering Physics Practical – I | 0 | 2 | 1 | 25 | 75 | 100 |
| 6 | 4E1106 | Engineering Chemistry Practical – I | 0 | 2 | 1 | 25 | 75 | 100 |
| 7 | 4E1107 | Engineering Graphics - I | 0 | 4 | 4 | 25 | 75 | 100 |
| 8 | 4E1108 | Workshop Practice | 0 | 4 | 2 | | | |
| | | **Total** | | | | **150** | **500** | **600** |

### Term II

| Sl. No | Course Code | Course Title | Load Allocation | | | Mark Distribution | | Total Mark |
|---|---|---|---|---|---|---|---|---|
| | | | L | P | C | Internal | External | |
| **THEORY** | | | | | | | | |
| 1 | 4E2101 | Communication English – II | 5 | 0 | 5 | 25 | 75 | 100 |
| 2 | 4E2102 | Engineering Mathematics – II | 5 | 0 | 5 | 25 | 75 | 100 |
| 3 | 4E2103 | Applied Mathematics | 5 | 0 | 5 | 25 | 75 | 100 |
| 4 | 4E2104 | Engineering Physics – II | 5 | 0 | 5 | 25 | 75 | 100 |
| 5 | 4E2105 | Engineering Chemistry – II | 5 | 0 | 5 | 25 | 75 | 100 |
| **PRACTICAL** | | | | | | | | |
| 6 | 4E2106 | Engineering Physics Practical – II | 0 | 2 | 1 | 25 | 75 | 100 |
| 7 | 4E2107 | Engineering Chemistry Practical – II | 0 | 2 | 1 | 25 | 75 | 100 |
| 8 | 4E2108 | Engineering Graphics - II | 0 | 4 | 4 | 25 | 75 | 100 |
| | | **Total** | | | | **150** | **500** | **600** |

## Term III

| Sl. No | Course Code | Course Title | Load Allocation | | | Mark Distribution | | Total Mark |
|---|---|---|---|---|---|---|---|---|
| | | | L | P | C | Internal | External | |
| **THEORY** | | | | | | | | |
| 1 | 4E3201 | Digital Electronics | 5 | 0 | 5 | 25 | 75 | 100 |
| 2 | 4E3202 | Operating System | 6 | 0 | 6 | 25 | 75 | 100 |
| 3 | 4E3203 | Programming With C++ | 6 | 0 | 6 | 25 | 75 | 100 |
| **PRACTICAL** | | | | | | | | |
| 4 | 4E3204 | Digital Electronics Practical | 0 | 4 | 2 | 25 | 75 | 100 |
| 5 | 4E3205 | Linux Practical | 0 | 4 | 2 | 25 | 75 | 100 |
| 6 | 4E3206 | C++ Programming Practical | 0 | 4 | 2 | 25 | 75 | 100 |
| 7 | 4E3301 | Multimedia Practical | 0 | 4 | 4 | 25 | 75 | 100 |
| | | **Total** | | | | **150** | **500** | **600** |

## Term IV

| Sl. No | Course Code | Course Title | Load Allocation | | | Mark Distribution | | Total Mark |
|---|---|---|---|---|---|---|---|---|
| | | | L | P | C | Internal | External | |
| **THEORY** | | | | | | | | |
| 1 | 4E4207 | Data Structures | 6 | 0 | 6 | 25 | 75 | 100 |
| 2 | 4E4302 | Object Oriented Programming With Java | 6 | 0 | 6 | 25 | 75 | 100 |
| 3 | 4E4208 | Web Programming | 6 | 0 | 6 | 25 | 75 | 100 |
| **PRACTICAL** | | | | | | | | |
| 5 | 4E4209 | Data Structures Practical | 0 | 4 | 3 | 25 | 75 | 100 |
| 6 | 4E4303 | Java Programming Practical | 0 | 4 | 3 | 25 | 75 | 100 |
| 7 | 4E4210 | Web Programming Practical | 0 | 4 | 2 | 25 | 75 | 100 |
| 8 | 4E4401 | Life and Employability Skill Practical | 0 | 4 | 2 | 25 | 75 | 100 |
| | | **Total** | | | | **150** | **500** | **600** |

## Term V

| Sl. No | Course Code | Course Title | Load Allocation | | | Mark Distribution | | Total Mark |
|---|---|---|---|---|---|---|---|---|
| | | | L | P | C | Internal | External | |
| **THEORY** | | | | | | | | |
| 1 | 4E5210 | RDBMS | 5 | 0 | 5 | 25 | 75 | 100 |
| 2 | 4E5304 | Open Source Software | 6 | 0 | 6 | 25 | 75 | 100 |
| 3 | 4E5305 | Component Based Technology | 6 | 0 | 6 | 25 | 75 | 100 |
| 4 | 4E5211 | Computer Network | 5 | 0 | 5 | 25 | 75 | 100 |
| **PRACTICAL** | | | | | | | | |
| 5 | 4E5212 | RDBMS Practical | 0 | 4 | 2 | 25 | 75 | 100 |
| 6 | 4E5306 | Open Source Software Practical | 0 | 4 | 2 | 25 | 75 | 100 |
| 7 | 4E5307 | Component Based Technology Practical | 0 | 4 | 2 | 25 | 75 | 100 |
| | | **Total** | | | | **150** | **500** | **600** |

## Term VI

| Sl. No | Course Code | Course Title | Load Allocation | | | Mark Distribution | | Total Mark |
|---|---|---|---|---|---|---|---|---|
| | | | L | P | C | Internal | External | |
| **THEORY** | | | | | | | | |
| 1 | 4E6308 | Computer Hardware and Servicing | 6 | 0 | 6 | 25 | 75 | 100 |
| 2 | 4E6309 | Mobile Computing | 5 | 0 | 5 | 25 | 75 | 100 |
| 3 | 4E6213 | Software Engineering | 5 | 0 | 5 | 25 | 75 | 100 |
| 4 | 4E6310.1<br>4E6310.2 | Elective:<br>1.Cloud Computing<br>2. Enterprise Programming With Java | 6 | 0 | 5 | 25 | 75 | 100 |
| **PRACTICAL** | | | | | | | | |
| 5 | 4E6311 | Computer Servicing And Network Practical | 0 | 4 | 2 | 25 | 75 | 100 |
| 6 | 4E5312 | Mobile computing Practical | 0 | 4 | 2 | 25 | 75 | 100 |
| 7 | 4E6402 | Project Work & Entrepreneurship | 0 | 5 | 2 | 25 | 75 | 100 |
| | | **Total** | **17** | **18** | **29** | **175** | **525** | **700** |

## Non Credit Courses

1. System Administration
2. Graphics Design

## 7. HORIZONTAL AND VERTICAL ORGANISATION OF THE SUBJECTS

| Sl. No. | Subject | Distribution of time in various semesters | | | | | |
|---|---|---|---|---|---|---|---|
| | | I | II | III | IV | V | VI |
| 1. | Communication English – I | 4 | | | | | |
| 2 | Engineering Mathematics – I | 7 | | | | | |
| 3 | Engineering Physics – I | 5 | | | | | |
| 4 | Engineering Chemistry – I | 5 | | | | | |
| 5 | Engineering Physics Practical – I | 1 | | | | | |
| 6 | Engineering Chemistry Practical – I | 1 | | | | | |
| 7 | Engineering Graphics - I | 4 | | | | | |
| 8 | Workshop Practice | 2 | | | | | |
| 9 | Communication English – II | | 5 | | | | |
| 10 | Engineering Mathematics – II | | 5 | | | | |
| 11 | Applied Mathematics | | 5 | | | | |
| 12 | Engineering Physics – II | | 5 | | | | |
| 13 | Engineering Chemistry – II | | 5 | | | | |
| 14 | Engineering Physics Practical – II | | 1 | | | | |
| 15 | Engineering Chemistry Practical – II | | 1 | | | | |
| 16 | Engineering Graphics - II | | 4 | | | | |
| 18 | Digital Electronics | | | 5 | | | |
| 19 | Operating System | | | 6 | | | |
| 20 | Programming With C++ | | | 6 | | | |
| 21 | Digital Electronics Practical | | | 2 | | | |
| 22 | Linux Practical | | | 2 | | | |
| 23 | C++ Programming Practical | | | 2 | | | |
| 24 | Multimedia Practical | | | 4 | | | |
| 25 | Data Structures | | | | 6 | | |
| 26 | Object Oriented Programming With | | | | 6 | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Java | | | | | | |
| 27 | Web Programming | | | | 6 | | |
| 28 | Data Structures Practical | | | | 3 | | |
| 29 | Java Programming Practical | | | | 3 | | |
| 30 | Web Programming Practical | | | | 2 | | |
| 31 | Life and Employability Skill Practical | | | | 2 | | |
| 32 | RDBMS | | | | | 5 | |
| 33 | Open Source Software | | | | | 6 | |
| 34 | Component Based Technology | | | | | 6 | |
| 35 | Computer Network | | | | | 5 | |
| 36 | RDBMS Practical | | | | | 2 | |
| 37 | Open Source Software Practical | | | | | 2 | |
| 38 | Component Based Technology Practical | | | | | 2 | |
| 39 | Computer Hardware and Servicing | | | | | | 6 |
| 40 | Mobile Computing | | | | | | 5 |
| 41 | Software Engineering | | | | | | 5 |
| 42 | Elective:<br>1.Cloud Computing<br>2. Enterprise programming With Java | | | | | | 5 |
| 43 | Computer Servicing And Network Practical | | | | | | 2 |
| 44 | Mobile computing Practical | | | | | | 2 |
| 45 | Project Work & Entrepreneurship | | | | | | 2 |
| | **TOTAL - 170** | **29** | **31** | **27** | **28** | **28** | **27** |

## 8. STUDY OF EVALUATION SCHEME

**Continuous Internal Assessment:**

**A . For Theory Subjects:**

The Internal Assessment marks for a total of 25 marks, which are to be distributed as follows:

***i. Subject Attendance 5 Marks***

(Award of marks for subject attendance to each subject theory/practical will be as in the range given below)

| | |
|---|---|
| 80% - 83% | 1 Mark |
| 84% - 87% | 2 Marks |
| 88% - 91% | 3 Marks |
| 92% - 95% | 4 Marks |
| 96% - 100% | 5 Marks |

***ii) Test # 10 Marks***

- Two Tests each of 2 hours duration for a total of 50 marks are to be conducted. Out of which the best one will be taken and the marks to be reduced to**:** **05 marks**
- The Test – III is to be the Model test covering all the five units and the marks so obtained will be reduced to : **05 marks**

**Total 10 marks**

***iii) Assignment 10 Marks***

For each subject Three Assignments are to be given each for 20 marks and the average marks scored should be reduced for 10 marks All Test Papers and assignment notebooks after getting the signature with date from the students must be kept in the safe custody in the Department for verification and audit. It should be preserved for 2 Semesters and produced to the flying squad and the inspection team at the time of inspection/verification

| # TEST | UNITS | WHEN TO CONDUCT | MARKS | DURATION |
|---|---|---|---|---|
| Cycle Test I | Unit – I & II | End of 6th week | 50 | 2 Hrs |
| Cycle Test II | Unit – III & IV | End of 12th week | 50 | 2 Hrs |
| **Model Examination** | Compulsory Covering all the 5 Units. | End of 15th week | 75 | 3 Hrs |

**Question Paper Pattern for the Cycle Test :( Test - I & Test- II)**

**With no choice:**

PART A type questions: 4 Questions X 2 mark … … 8 marks

PART B type questions: 4 Questions X 3 marks … … 12 marks
PART C type questions: 3 Questions X 10 marks … … 30 marks

---

Total **50 marks**

---

**Autonomous Examination - Question paper pattern**

**Common for all theory subjects**

**Time: 3 Hrs** **Max. Marks: 75**

**Question Paper Pattern for Autonomous Examination**

**PART A**
Short answers questions (5 out of 8) 5 x 2 = 10

**PART-B**
Short answers questions (5 out of 8) 5 x 3 = 15

**PART C**
Descriptive questions – (10 questions) (2x5/10) x5 = 50
(A & B or C& D in each unit)

---

TOTAL 75 marks

---

***PART A - (1 to 8)*** *5 Questions are to be answered out of 8 questions for 2 marks each.(**Question No. 8 will be the compulsory question** and can be asked from any one of the units)(From each unit maximum of two 2 marks questions alone can be asked)*

***PART B - (9 to 16)*** *5 Questions are to be answered out of 8 questions for 3 marks each. (**Question No. 16 will be the compulsory question** and can be asked from any one of the units) (From each unit maximum of two 3 marks questions alone can be asked)*

***PART C - (17 to 21)*** *Five Questions will be in the Either OR Pattern. Students have to answer these five questions. Each question carries 10 marks. (Based on the discretion of the question setter, he/she can ask two five mark questions (with sub division A & sub division B) instead of one ten marks question if required)*

**B. For Practical Subjects:**

The internal assessment mark for a total of 25 marks which are to be distributed as follows:-

a) Attendance : **5 Marks** (Award of marks as same as Theory subjects)
b) Procedure/ observation and tabulation/Other Practical related Work : **10 Marks**
c) Record writing : **10 Marks**
**TOTAL : 25 Marks**

- All the Experiments/exercises indicated in the syllabus should be completed and the same to be given for final board examinations.
- The Record for every completed exercise should be submitted in the subsequent Practical classes and marks should be awarded for 20 for each exercise as per the above allocation.
- At the end of the Semester, the average marks of all the exercises should be calculated for 20 marks and the marks awarded for attendance is to be added to arrive at the internal assessment mark for Practical. (20+5=25 marks)

**C. Project Work:**

The students of all the Diploma Programmes (except Diploma in Modern Office Practice) have to do a Project Work as part of the Curriculum and in partial fulfilment for the award of Diploma by the State Board of Technical Education and Training, Tamilnadu. In order to encourage students to do worthwhile and innovative projects, every year prizes are awarded for the best three projects i.e. institution wise, region wise and state wise. The Project work must be reviewed twice in the same semester.

***a) Internal assessment mark for Project Work & Viva Voce:***

| | | |
|---|---|---|
| Project Review I | … | **10 marks** |
| Project Review II | … | **10 marks** |
| Attendance | … | **05 marks** (award of marks same as theory subjects ) |
| Total | … | **25 marks** |

Proper record to be maintained for the two Project Reviews, and it should be preserved for current Semester and produced to the inspection team as and when required.

***b) Allocation of Mark for Project Work & Viva Voce in Board Examination:***

| | | |
|---|---|---|
| Viva Voce | … | **30 marks** |
| Marks for Report Preparation, Demo | … | **35 marks** |
| Total | | **65 marks** |

***c) Written Test Mark (from a topics for 30 minutes duration):***

i) Entrepreneurship Management 2 questions X 5 marks = **10 marks**

Selection of Questions should be from Question Bank, by the External Examiner. No choice need be given to the candidates.

| | |
|---|---|
| Project Work & Viva Voce in Board Examination | **-- 65 Marks** |
| Written Test Mark (from a topics for 30minutes duration) | **-- 10 Marks** |
| TOTAL | **-- 75 Marks** |

**Criteria for pass**

Minimum marks for pass in Theory subjects: External – 30 Marks, Total – 40 Marks

Minimum marks for pass in Practical subjects – 50 Marks

**Grading of students:**

| | |
|---|---|
| First class with Distinction | Candidate passes all the papers in first attempt with CGPA equal to or greater than 75 |
| First class | Candidate passes all the papers within the stipulated period of 3 or 3 ½ years with CGPA equal to or greater than 60 |
| Second class | All other candidates who passes the diploma |

**CGPA :** Cumulative Grade Point Average

- Each subject is allotted certain credit
- When a candidate passes a subject he/she earns the credit allotted for the subject
- A candidate has to secure 170 credits to get the diploma for students admitted in the first year and 110 credits for admitted in lateral entry.
- For the award of class to a candidate the marks & credits secured in Term III to VI are considered.
- To calculate CGPA,

Credit multiplied by mark secured in a particular subject.

Find $X = \Sigma$ Credit

$Y = \Sigma$ (Credit x Mark)

$CGPA = Y/X$

# DETAILED SYLLABUS

# III – TERM

## 9. DETAILED SYLLABUS

### III – TERM

## 4E3201 - DIGITAL ELECTRONICS

| Course Code | Instruction | | Credits | Examination | | | |
|---|---|---|---|---|---|---|---|
| | Hours/ week | Hours/ Term | | Marks | | | Duration |
| | | | | Internal | External | Total | |
| 4E3201 | 5 | 75 | 5 | 25 | 75 | 100 | 3 Hours |

### RATIONALE

Diploma Engineers from all branches of Engineering are expected to have some basic knowledge of Electrical and Electronics Engineering. Also the technicians working in different engineering fields have to deal with various types of electrical equipments. Various types of electronic circuits are used in different electrical equipments. Hence it is necessary to study electric circuits, different types of electrical machines and electronic devices, their principles and working characteristics. The basic concepts studied in this subject will be very useful for understanding of higher level subjects in further study.

### OBJECTIVES

- On completion of the subject, the students must be able to
- Understand the basic essential terms in electricity.
- Define Ohm's Law and Kirchhoff's Laws.
- Know the concept of series and parallel circuits.
- Understand DC and AC fundamentals.
- Understand the working principles of transformer circuits.
- To explore the electrical safety.
- Familiarize with semi conductor devices, rectifier circuits, transistors and its applications.
- Use binary, octal and hexadecimal numbers.
- Define logic gates.
- Describe the significance of Boolean algebra in digital circuits.
- Understand the working principles of sequential and combinational logical circuits
- Define flip-flops and describe behaviour of various flip-flops.

- Differentiate asynchronous counters from synchronous counters.
- Draw and explain the circuit diagram of shift registers

| UNITS - ALLOCATION OF HOURS AND MARKS | | | |
|---|---|---|---|
| **UNIT NO.** | **TOPICS** | **NO. OF HOURS** | **MARKS** |
| I | DC CIRCUITS, AC CIRCUITS THEOREMS | 13 | 20 |
| II | SEMICONDUCTOR DIODE & APPLICATION | 13 | 20 |
| III | TRANSISTOR | 14 | 20 |
| IV | LOGIC GATES & FLIP FLOPS | 15 | 20 |
| V | CONVERTORS & REGISTERS | 15 | 20 |
| | TEST & REVISION | 10 | |
| | TOTAL | 80 | 100 |

# 4E3201 - DIGITAL ELECTRONICS

## Unit – 1 : DC CIRCUITS, AC CIRCUITS THEOREMS:

1.1 Atomic structure and electron theory, definition of Conductors, insulators, Resistors in series& parallel, Series, parallel circuits. Ohm's law-problems, Kirchhoff's laws, Thevenin's theorems and simple problems.

1.2 Definition of Resistors, capacitor, insulator-unit & their color coding.

1.3 Electrical units of current, voltage, power, energy, Sinusoidal & non sinusoidal waveforms, average value, RMS value, peak factor, form factor, power factor, frequency, amplitude. Series, parallel resonance condition.

1.4 Electricity Safety – Electric shock, Earthing, Fuses

## Unit-2 : SMPS,UPS AND TRANSISTOR:

2.1 Study block diagram of linear power supply, Study block diagram of SMPS. Mention the merits and Demerits

2.2 Discuss need of UPS and study block diagram of on line and off line UPS, Discuss Merits and demerits, Difference between online UPS and offline UPS

2.3 Photo Transistor: Schematic representation and working Principle of Photo Transistor and its uses.

## Unit – 3: SEMICONDUCTOR DIODE & APPLICATION:

3.1 Semiconductor Theory – Types of semiconductors – PN junction diodes – Semiconductor diode: symbol, principle of operation and VI characteristics

3.2 Zener diode: symbol, principle of operation and VI characteristics, Applications of zener diode

3.3 Light Emitting Diodes-operation, construction and characteristics. LDR Principle of operation and Characteristics

3.4 Rectifiers: Half wave, Full wave, Bridge rectifiers. Ripple factor, rectifier Efficiency

## Unit-4 : LOGIC GATES & FLIP FLOPS:

4.1 Numbering System: Decimal, Binary, Octal and Hexa Decimal-conversion-1scompliment-2scompliment-uses.

4.2 Basic logic gates: Circuits, Symbols, Truth table & Logic equation for two, Three Input gates: AND, OR, EX-OR, NOR, NAND & NOT-Universal Building blocks- its uses.

4.3 Combinational logic circuit: Multiplexer, De-multiplexer

4.4 Arithmetic Circuit: Half Adder, Full Adder, Half Subtractor, Full Subtractor, Demorgan's Therom, Two and three variable Karnaugh map

4.5 Flip-flops: definition-types-RS, JK, JKMS, D and T flip-flops. Operation and truth table.

**Unit-5 : CONVERTORS & REGISTERS:**

5.1 Counters: definition-types-Synchronous and asynchronous Counters.-function-truth table and wave forms.

5.2 MOD counter: Construction of Modulus N counter- Mod5 counter-Mod6 counter-Mod7 counter- Decade counter-Function- truth table and waveforms. Up and down counters.

5.3 Shift Registers: definition-Modes of operation- Serial in Serial out, Serial in Parallel out- Parallel in Parallel out- Parallel in Serial out Shift register.

5.4 Analog to digital and digital to analog converters.

**Course Outcome**

| Course outcome | Details |
|---|---|
| **CO 1** | Understand the basics of the AC, DC concepts.<br>Understanding the working principle of Earthing |
| **CO 2** | Understanding the working principle of SMPS,UPS, photo transistor |
| **CO 3** | Understand the working principle of semiconductor diode, zener diode and rectifiers |
| **CO 4** | Understand the working principle of the various logic gates, flip flops<br>Understand the working principle of the logic and arithmetic circuits |
| **CO 5** | Understand the working principle of the various types of counters, shift registers<br>Understand the working principle of the analog to digital convertors |

**Text Books:**

| Sl.No. | Title | Author | Publisher |
|---|---|---|---|
| 1. | Digital Electronics | Anil K.Maini | WILEY publication. |
| 2. | Electrical Technology | BL. Theraja | S.Chand & Co |
| 3. | Modern Digital Eletronics | R.P.Jain | Tata Mc-GrawHill |

## 4E3202-OPERATING SYSTEM

| Course code | Instructions | | | Examination | | | |
|---|---|---|---|---|---|---|---|
| 4E3202 | Hours/week | Hours/ Term | Credits | Marks | | | Duration |
| | | | | Internal | External | Total | |
| | 6 | 90 | 6 | 25 | 75 | 100 | 3 Hrs |

**Rationale:**

An **operating system** is a program that manages a computer's hardware. It provides the basic functionality, look, and feel for a computer. It also provides a basis for application programs and acts as an intermediary between the computer user and the computer hardware. An amazing aspect of operating systems is how they vary in accomplishing these tasks

The course provides the students with an understanding of human computer interface existing in computer system and the basic concepts of operating system and its working. The students will also get hand-on experience and good working knowledge to work in DOS and Linux environments. The aim is to gain proficiency in using various operating systems after undergoing this course.

**Course Objectives:**

| | |
|---|---|
| CO1 | To understand the role and responsibilities of OS in the computer system. |
| CO2 | To explain how the OS deals with process management, memory management and secondary storage management |
| CO3 | To analyze working of process, synchronization and deadlocks. |
| CO4 | To apply the knowledge about OS, for the case study of Linux operating system and Mobile operating system. |

| UNITS - ALLOCATION OF HOURS AND MARKS | | | |
|---|---|---|---|
| **Unit no.** | **Topics** | **No. Of hours** | **Marks** |
| I | Introduction , operating system overview | 15 | 20 |
| II | Process management | 12 | 20 |
| III | Memory management | 14 | 20 |
| IV | I/O and File Management , Security & Protection | 12 | 20 |
| V | Case study : Linux system, windows, Android , IoS | 12 | 20 |
| | Test & revision | 15 | |
| | Total | 80 | 100 |

## 4E3202 - OPERATING SYSTEM

### UNIT I : Introduction , Operating System Overview

**1.1 Operating Systems** : Definition- User view and System view. Computer-System Organization: Computer system operation – Storage structure – I/O structure.

**1.2 Computer-System Architecture**: Single processor system – Multi processor system – clustered system. Operating-System Structure. Generations of Operating systems. Types of Operating Systems: Mainframe, Desktop, Multiprocessor, Distributed, Clustered, Multiprogramming, Real time, Embedded and Time sharing.

**1.3 OS structures:** Operating-system services - User and OS interface – system calls – system program – OS structure: simple structure – layered approach – micro kernels – modules – hybrid systems - Concept of Virtual Machine – Booting

**1.4 Operating System Components**: Process Management – Memory Management - I/O Management – File Management - Protection System – Networking management – Command interpreter

**1.5 Operating System Services**: Process Execution – I/O operations – File manipulations – Communications – Error detection and recovery – Resource allocation – Accounting – System Protection - System Calls – System call Execution

### UNIT II : Process Management

**2.1 Processes:** Job Definition –process in memory - Process states – Process State transitions - Process Control Block – Threads – Concept of multithreads – Benefits of threads – Types of threads – user and kernel threads

**2.2 Process Scheduling:** Definition – Scheduling objectives – scheduling queues - . Schedulers – types - Context switching –. Scheduling criteria – CPU utilization, Throughput, Turnaround Time, Waiting Time, Response Time (Definition only).

**2.3 Scheduling algorithms**:

**2.4** Pre emptive and Non – pre emptive - FCFS – SJF – RR Multiprocessor scheduling – Types - Performance evaluation of the scheduling.

**2.5 Inter-process Communication and Synchronization** : Definition – Shared Memory System – Message passing – Critical section – Mutual Exclusion - Semaphores.

**2.6 Deadlocks:** Definition. Deadlock characterization: Mutex locks –necessary conditions – Handling deadlocks: Deadlock Prevention– Mutual exclusion – Holds and Wait – No preemption – Circular wait . Deadlock Avoidance – Deadlock detection and Recovery.( Basic concepts only)

**UNIT III Memory management**

**3.1 Basic Memory Management :** Definition – Basic hardware – Address binding - Logical versus Physical address space – dynamic loading – dynamic linking and shared libraries.

**3.2 Memory allocation** – Contiguous Memory allocation – Fixed and variable partition – Internal and External fragmentation and Compaction – Paging – Principle of operation – Page allocation – Hardware support for paging – Protection and sharing – Disadvantages of paging.

**3.3 Virtual Memory** : Basics of Virtual Memory – virtual address space – Demand paging: swapper – page fault - Hardware and control structures –Working Set , Dirty page/Dirty bit – Demand paging ( Concepts only) – Page Replacement policies – Basic page replacement - Optimal (OPT) , First in First Out (FIFO), Second Chance (SC), Not recently used (NRU) and Counting-Based Page Replacement :Least Recently used (LRU) , most frequently used (MRU)

**UNIT IV I/O and File Management , Security & Protection**

4.1 **Disk Management:** Mass storage structure : magnetic disk - Solid state disks, Magnetic tapes, Disk Structure. Disk attachment – Host attached storage- Network attached storage(NAS) , storage area network (SAN), RAID. ( Basic concepts only)

4.2 **Disk Scheduling algorithms**: FCFS – SSTF – SCAN – CSCAN. Disk Management : partition – formatting - Boot block – bad clock.

4.3 **File Management**: File concept – File attributes – Name, Identifier, Type, Location, Size, Time, Date, user identification – File Operations . File information: File pointer File-open count, Disk location of the file, Access ights.

4.4 **Directory Structure**: – Single level, Two level, Tree Structure – Disk space allocation methods– Contiguous, Linked, Indexed.

**File Access Methods**: Sequential, Random access – File system structure – Byte sequence, Record sequence and Tree-based – Disk formatting

4.5 **Security**: Security problem –Security threats – Security Policies and mechanisms.- Standard security attack. Level of security measures : physical, Human , Operating system, Network. Cryptography as security tool – symmetric encryption , asymmetic encryption

**V Case study : Linux ,Windows 7, Android & iOS**

**5.1 Linux :** Linux history – kernel –Linux system – Licensing . Design Principles – Component of Linux system : Kernel – system libraries - system utilities.

5.2 **Windows 7:** History – Design principles – security – reliability - Windows and POSIX Application Compatibility - High Performance - Extensibility – Portability - International Support - Energy Efficiency - Dynamic Device Support . System Components: Hardware abstraction layer – Kernel.

5.3 **Android –** History – Versions – Architecture**.**

5.4 iOS – History – Architecture.

**Textbook:**

| Sl.No. | Title with Edition | Author | Publisher |
|---|---|---|---|
| 1 | Operating System Concepts – 9th Edition | A. Silberschatz, P.B. Galvin, and G. Gagne | Wiley |
| 2 | Modern Operating Systems – Second edition | T. Anderson and M. Dahlin | Prentice Hall of India |
| 3. | Operating Systems: Principles and Practice - Third edition | Andrew S. Tanenbaum | Pearson |
| 4 | Opearating Systems | Achyut S. Godbole | Tata McGraw-Hill |

**Course Outcomes:**

After learning the course the students should be able to:

| | |
|---|---|
| CO1 | The role and responsibilities of OS in the computer system are understand. |
| CO2 | Able to understand the OS deals with process management, memory management and secondary storage management |
| CO3 | Able to analyze working of process, synchronization and deadlocks. |
| CO4 | Able to understand the File management and security in Operation system. |
| CO5 | To apply the knowledge about OS, for the case study of Linux operating system and Mobile operating system. |

## 4E3203-PROGRAMMING WITH C++

| Course code | Instructions | | | Examination | | | |
|---|---|---|---|---|---|---|---|
| 4E3203 | Hours/week | Hours/ Term | Credits | Marks | | | Duration |
| | | | | Internal | External | Total | |
| | 6 | 90 | 6 | 25 | 75 | 100 | 3 Hrs |

**Course Objectives:**

- To learn basics of problem solving , programming logic , algorithm design and development
- To understand and practice constructs of programming
- To know object-oriented programming concepts
- To familiarize with files processing , pointers and other advanced topics.

| UNITS - ALLOCATION OF HOURS AND MARKS | | | |
|---|---|---|---|
| **Unit no.** | **Topics** | **No. Of hours** | **Marks** |
| I | Fundamentals of Programming | | 20 |
| II | Introduction to CPP & Functions | | 20 |
| III | Object Oriented Programming | | 20 |
| IV | Inheritance And Overloading | | 20 |
| V | Pointers , Files and Streams | | 20 |
| | Total | 80 | 100 |

## DETAILED SYLLABUS

### UNIT I : FUNDAMENTALS OF PROGRAMMING

1.1 **Introduction to Programming languages:** High-level – Low Level – Middle level (Assembly) Languages – Packages – ASCII

1.2 **Program**: Program Definition : Program Development Cycle- Features of good Programming Language – Compiler – Interpreter

1.3 **Algorithm** : Algorithm-Definition-Properties of an Algorithm-Classification of Algorithms-Algorithm Logic

**1.4 Flow chart** : Importance of Flow chart, Flow chart Symbols, Advantages Of Flowchart-Limitation of Flow chart and Algorithm

**1.5 Tokens**: Character set – Constants – variables -Operators – Header files - iostream.h– Simple programs - I/O Statements cin, cout. Manipulators:-endl & setw

## UNIT II : INTRODUCTION TO CPP & FUNCTIONS

2.1 Control Statements - if-else, else if – Nested if , goto, switch-case.
2.2 Loops : while, do-while, for – statements- break, continue statement.
2.3 Array: Array declaration – accessing array elements – single and Multidimensional array
2.4 Functions: Build in functions – user defined function – Need for user defined function, return values and their types- String functions –Mathematical functions.
2.5 Calling a function, Call by Vale and Call by reference - Nesting of functions and recursion.

## UNIT III OBJECT ORIENTED PROGRAMMING

**3.4 Overloaded Functions**: Different numbers of Arguments, Different kinds of Arguments, Inline functions, Default Arguments,
**3.5 Structures** : Structure definition, Structure initialization, Processing a Structure
**3.6 User defined data types**:- typedef, Arrays of structures, Structure within Structure
**3.7 Object Oriented programming**: Procedural languages – limitations –Object Oriented Approach,
**3.8 Characteristics of object oriented languages:** Objects, Classes, inheritance, Reusability, Creating new data types, Polymorphism and Overloading.

## UNIT IV INHERITANCE AND OVERLOADING

4.1 **Objects & Classes:** Simple class, Constructors, Destructors, Object as function argument, Overloaded constructors, member functions defined outside the class, Object as argument, Returning Object from functions
4.2 **Inheritance**: Concept of inheritance. Derived class and base class. Derived class constructors, member function, inheritance in the English distance class, class hierarchies Access Specifiers – Private-Public-Protected - Types of Inheritance – Simple , Multiple , Multilevel, Hierarchical and Hybrid
4.3 **Overriding member function**: Scope resolution with overridden functions
4.4 **Polymorphism** : Operator overloading – Operator keyword

## UNIT V POINTERS , FILES AND STREAMS

**5.1 Pointers**: Address and pointers, the address of operator (&) pointer variable, accessing the variable pointed to, pointer to void

**5.2 Pointers and arrays:** pointers and functions, passing array as function argument, call by reference, pointers and string, pointers and structures, pointers & objects.
**5.3 Memory management**: "new" and "delete", a string class using new, pointers to objects, linked list, pointers to pointers.

**5.4 Virtual functions**: Static binding, Late binding, Pure Virtual Function, 'friend' Functions , Static function

**5.5 Files:** Streams –. Streams classes, Stream Errors, Disk File I/O with streams, file pointers, error handling in file I/O with member function, overloading the extraction and insertion operators, memory as a stream object, I/O redirection, ios flags. - printer output- Command line arguments

**Textbook:**

| Sl.No. | Title | Author | Publisher |
|---|---|---|---|
| 1 | Object oriented programming in C++ ($4^{th}$ edition) | Robert Lafore | SAMS |
| 2 | Object oriented programming with C++ ($6^{th}$ edition) | E Balagurusamy | McGraw Hill |
| 3. | Thinking in C++, Volume 1, (2nd Edition) | Bruce Eckel | Prentice Hall |

**Course Outcome:**

| | |
|---|---|
| CO1 | Able to write, compile and debug Programs |
| CO2 | Able to design programs involving decision structures, loops and functions |
| CO3 | Developing applications Using Object Oriented Programming Concepts, pointes and files |
| CO4 | Solve real world problems by implementing features of OOP |

## 4E3204-DIGITAL ELECTRONICS PRACTICAL

| Course Code | Instruction | | Credits | Examination | | | |
|---|---|---|---|---|---|---|---|
| | Hours/ week | Hours/ Term | | Marks | | | Duration |
| | | | | Internal | External | Total | |
| 4E3204 | 4 | 60 | 2 | 25 | 75 | 100 | 3 Hours |

**OBJECTIVES**

On completion of the following units of syllabus contents, the students must be able to

- Gain experience in handling of electronic equipments.
- Test and draw the characteristics of PN junction diode& Study the reverse bias characterizes of Zener diode.
- Construct and realize various logic gates using ICs.
- Construct and verify the truth table of Arithmetic circuits.
- Design, implement and test the various flip-flops, ripple Counters, Asynchronous Counter

| SCHEME OF EVALUATION | |
|---|---|
| Aim | 10 |
| Procedure & circuit diagram / Truth table | 35 |
| Simulation | 35 |
| Result | 10 |
| Viva | 10 |
| Total | 100 |

**LIST OF EXPERIMENTS:**

1. Characteristics of Semi-conductor diode.
2. Characteristics of Zener diode.
3. Characteristics of Bridge Rectifiers with and without filter.
4. Characteristics of Full wave Rectifier.
5. Verify truth table of logic gates: AND, OR, EX-OR, NOT, NAND, NOR.
6. Verify truth table of universal logic gates : NAND
7. Verify truth table of universal logic gates : NOR
8. Verify the Demorgan's Law using IC's.
9. Verify the Half Adder using IC's.
10. Verify the Full Adder using IC's.
11. Verify the Half Subtractor using IC's.
12. Verify the Full Subtractor using IC's.
13. Verify the truth table of JK Flip Flop.

14. Verify the truth table of RS Flip Flop
15. Verify 4 bit binary counter using IC 7476.
16. Verify the truth table of 1:8 Demultiplexer
17. Verify the truth table of 8:1 multiplexer

**Course Outcome**

| Course outcome | Details |
|---|---|
| **CO 1** | Understand the construction of the diodes, rectifiers and its respective characteristic |
| **CO 2** | Understand the construction of various logic gates and flip flop |
| **CO 3** | Understand the construction of the counters and multiplexer and de-multiplexer |

## 4E3205-LINUX PRACTICAL

| Course | Instructions | | | Examinations | | | |
|---|---|---|---|---|---|---|---|
| 4E3205 | Hours/week | Hours/ | Credits | Marks | | | Duration |
| | 4 | 60 | 3 | Internal | External | Total | 3 Hrs |
| | | | | 25 | 75 | 100 | |

**Course objectives :**

- Get familiar with Linux shell & commands
- Understand Linux file system hierarchy and pathnames; manage files from the command line
- Install Red Hat Enterprise Linux and configuring
- Know the managing the system through shell scripting

| SCHEME OF EVALUATION | |
|---|---|
| Part A Program | 20 |
| Part A Output | 20 |
| Part B Program | 30 |
| Part B Output | 20 |
| Viva | 10 |
| Total | 100 |

## LIST OF EXPERIMENTS

### PART-A

**1.** Usage of directory management commands:

- Use ***ls*** command with all options to list out the content of a directory.
- Use ***cd*** command to change between directories.
- Use ***pwd*** command to check your directory.
- Use ***mkdir*** & ***rmdir*** to create and remove directories

2. Usage of File Management commands:

- touch command – to create files

- Use ***cat*** command to display the create files.
- Use ***chmod*** command to set file permissions-
- Use ***cp, rm*** and ***mv*** commands to copy, delete and rename files.
- Use ***more*** command to see a halted output of file being displayed.
- Use ***file*** command to see the type of the file.
- Use man command to view the documentation of a Linux command

3. Use ***wc*** command to count lines, words and characters.
   - Display a file's content using ***od*** command.
   - Compare the contents of two files using ***cmp*** command.
   - Find the differences present in 2 similar files using ***diff*** command.
   - Use the ***cal*** command to display calendar.
   - Use ***date*** command to display the system date.
   - Find the users login details using ***who*** command.
   - Know your terminal details using ***tty*** command.
4. Filter Commands ;
   - Display the beginning of a file using ***head*** command.
   - Display the end of file using ***tail*** command
5. Split a file vertically using ***cut*** command.
   - Paste file using ***paste*** command.
   - Line numbering using ***nl*** command.
   - Ordering file using ***sort*** command.
   - Sort lines based in field contents.

6. Advanced filters:-
   - Search for a pattern using ***grep*** command. Use -c, -n, -v, -l, -i options.
   - Form regular expressions for the search pattern. Use [ ],*,$ to form expressions.
   - Use ***fgrep*** command to specify more than one pattern.
7. Use basic data entry, cursor movement and editing commands using ***vim editor.***
   - Familiarize with the 3 modes of vi editor.:
   - Command mode, Insert mode, Last line mode,

**8.** To practice deletions, undoing and writing to other files using vi.
   - To practice using various change command and additional insert commands in vi file.
   - To practice using search and substitution in vi.
   - To practice using buffers to copy and move text.

**9.** To know the details of process status- ***ps*** command. Use –f,-u,-a,-l options.
   - To know system processes details using ***ps*** –e.

**10.** Running multiple jobs in the background using ***&*** and ***nohup*** command. Prematurely terminate the process use ***kill*** command.

11. Linux Communication commands:

- Host, ipcalc, ping, traceroute, finger

**12.** Use ***write*** command to have two communication with any persons who is currently logged in.

- Use 'mesg n' to insulate oneself from other users.
- Read your mail using ***mail*** command and manage mail in the system mailbox.
- Use ***wall*** command to address all users.

13. Device pattern using meta character to match each of the following situation:-

a. All two character filenames.
b. All filenames consisting of two lowercase letters.
c. All filenames ending with .c.
d. All filenames beginning with a ***c*** and ending with a digit.
e. All filenames beginning with ***p*** and having at somewhere.

14. Using the sed command, print records from 6th to 12th line of seddemo.txt

- Using the awk, Display roll no., stream and marks

**PART-B**

**SHELL SCRIPT:**

**15.** Write a shell-script that accepts a numerical value i. Then display the Decrementing value of I till it reaches 0.

16. Write a shell-script that takes three command line argument. The first argument is the name of the destination file and the other two arguments are names of files to be placed in the destination file.

17. i)Write a shell-script that print out date information in this order: time, day of the week, day number, year – that is like this. 16/07/2014 - Wednesday

ii) Write a shell-script that tells you its name and PID

18. Write a shell-script that presents a multiple-choice question, gets the user's answer and report back whether the answer is right, wrong or not one of the choices.

19. Write a shell-script that takes a login name as a command line argument and reports to you when that person logs in. Have it sent a greeting to that person.

**20.** Write a shell-script that takes a command line argument and reports on whether it is a directory, a file, or something else.

21. Write script to determine whether given file exist or not, file name is supplied as command line argument, also check for sufficient number of command line argument

22. Write script to demonstrate the array operations for the following :

1) Declare an Array names of length 7 and find

a) The total number of elements

b) Print all the elements

c) Print the 5th element

**HARDWARE REQUIREMENT**

- Desktop Computers – 60 Nos + 1 Server
- Printer – 1 No

**SOFTWARE REQUIREMNT**

- Linux (Fedora /CentOS/ RHEL/BOSS )

**Course Outcome:**

| | |
|---|---|
| CO1 | Do the Linux basic operation by commands |
| CO2 | Doing the File creation and other file related operations |
| CO3 | Installation of any flavor of Linux |
| CO4 | Doing the shell script |

## 4E3206-C++ PROGRAMMING PRACTICAL

| Course | Instructions | | | Examinations | | | |
|---|---|---|---|---|---|---|---|
| 4E3206 | Hours/week | Hours/ | Credits | Marks | | | Duration |
| | 4 | 60 | 2 | Internal | External | Total | 3 Hrs |
| | | | | 25 | 75 | 100 | |

**Course objectives :**

- To learn logic development to solve simple problems
- Use basic program constructs (selection, sequence & iteration)
- To Write program using classes & objects
- Use OOP concepts for application developments
- Handle file for storing retrieval of data

| SCHEME OF EVALUATION | |
|---|---|
| Part A Program | 20 |
| Part A Output | 20 |
| Part B Program | 30 |
| Part B Output | 20 |
| Viva | 10 |
| Total | 100 |

## LIST OF EXPERIMENTS

### PART-A

1. I) Write programs to find the biggest of given 2 numbers
   II) Write program to find the biggest of given 3 numbers
2. Write program to arrange set of numbers is ascending order
3. Write program to arrange set of names is alphabetical order
4. Write a program to find the value of ncr using function.
5. Write a program to find the sum of series: S=1!+2!+3!+……+N!
6. Write a program to create a structure and store student data
7. Write a program to demonstrate recursive function. Find factorial of a number.
8. Write a program to array of structure to store and retrieve ‘n’employees data

**PART-B**

**9.** Create a class stud with data members name, regno, result, one member function read student data another member function display student data. Write a main program to read and print student data.

**10.** Create a class employee with data members NAME, CODE, BP, HRA, DA, LIC & PF. Write member functions

i) To read employee
ii) To display employee pay slip.
iii) Write a main program to read employee data and print pay slip.

**11.** Write a program to demonstrate Inheritance.

**12.** Write a program to overload + operator to add 2 distance objects

**13.** Write a program to overload + operator to add 2 string objects

**14.** Write a program to store and retrieve data in a sequential file

**15.** Write a program to copy the content of a file to another file. Accept file name through keyboard and check for existence of file before copying.

**16.** Write a program to store and retrieve data in a random file

**17.** Write a program to demonstrate using command line arguments

**18.** Write a program to demonstrate dynamic memory allocation

**19.** Write a program to sum the array elements using pointers

**20.** Write a program to demonstrate dynamic binding using Virtual functions

**21.** Creating and invoking DLL using C++

**HARDWARE REQUIREMENT**

- Desktop Computers – 60 Nos
- Printer – 1 No

**SOFTWARE REQUIREMNT**

- Turbo C or
- Linux g++

**Course Outcome:**

| | |
|---|---|
| CO1 | Simple applications developed using basic programming skills |
| CO2 | Programs developed using classes & objects |
| CO3 | OOP concepts used in solving problems |
| CO4 | Files used to store program data |

## 4E3301-MULTI MEDIA PRACTICAL

| Course code | Instructions | | | Examinations | | | |
|---|---|---|---|---|---|---|---|
| | Hours/week | Hours/ Term | Credits | Marks | | | Duration |
| 4E3301 | 4 | 60 | 4 | Internal | External | Total | 3 Hrs |
| | | | | 25 | 75 | 100 | |

**Course Objective:**

- To formulate a working definition of interactive multimedia
- To demonstrate the use of animation, digitized sound, video control, and scanned images.
- To learn Photoshop, Flash and 3Ds MAX

| SCHEME OF EVALUATION | |
|---|---|
| Part A & B | 15 |
| Part C | 15 |
| Execution Part A & B | 30 |
| Execution Part C | 30 |
| viva | 10 |
| Total | 100 |

**LIST OF EXPERIMENTS**

**PART A**

**PHOTOSHOP:**

1. Create a cover page and natural scenery in Photoshop using Blur, sharpen, magic wand, clone stamp, & crop tools.
2. Replace the damaged part of a picture using Photoshop tools.
3. Create a fireball using Photoshop effects.
4. Create galactic effects with eight planets using gradients in Photoshop.
5. Perform masking using layers in Photoshop.
6. Merge the images in Photoshop using photo merge and apply filters to it

**PART B**

**FLASH:**

7. Combine two animations in same window using flash.
8. Create motion guide animation in flash.
9. A. Mask an object in flash
   B. Create smiley animation.

10. Create flash application to convert shape to text and convert text to any shape.
11. Create an animation to represent an image using frame by frame Animation.
12. Create a graphic symbol and movie clip symbol in flash.
13. Create a button symbol in flash and rotate a text using action script.
14. Create an action script in flash to stop and play a button and add sound to one of the button.

## PART C

**3dx max**

**15.** Modeling :
i)Using Photos to Model Façades
ii) Modeling a helmet using ribbons

**16.** Animation :
i) Use Auto Key, Curve Editor and other tool to create a bouncing ball
ii) Adding Sound Effects to Animation
Add audio files to Track View, then in the Dope Sheet Editor, use ProSound to synchronize the sounds with the animation.

17. Character Animation :
i)Create an animated character and learn how to skinning a character

**18.** Material and mapping:
i) Create a composite map layers two or more texture maps onto one another, in order to produce a more detailed image.

**19.** Lighting and Rendering
i) Lighting and Rendering a Daylight Scene
**ii)** Lighting and Rendering a Nighttime Scene

**20.** Effects
i) Creating a Costume out of Cloth
ii) Adding Hair to a Human Head
iii) Creating Particle Effects with Particle Flow

**Software:**

- Photoshop
- Adobe Flash
- 3Ds MAX
- Sound Pro (Audio Editing)
- Adobe Premiere Pro (Video Editing)

# IV - TERM

# IV – TERM

## 4E4207-DATA STRUCTURES

| Course | Instructions | | | Examinations | | | |
|---|---|---|---|---|---|---|---|
| | Hours/week | Hours/ Term | Credits | Marks | | | Duration |
| 4E4207 | | | | Internal | External | Total | |
| | 6 | 90 | 6 | 25 | 75 | 100 | 3 Hrs |

**RATIONALE**

Data structures are the techniques of designing the basic algorithms for real-life projects. In the present era, it is very essential to develop programs and organize data in such a way that it solves a complex problem efficiently. Understanding of data structures is essential and this facilitates to acquire sound knowledge of the insight of hardware requirement to any problem base. The practice and assimilation of data structure techniques is essential for programming.

This course introduces fundamental concepts in data structures and reviews important concepts in object oriented programming; it also attempts to develop good programming skills and habits, including for example, good software testing skills.

**Course Objectives:**

| | |
|---|---|
| CO1 | To understand the concepts of algorithm and operation of stack |
| CO2 | To understand the concept of queue and linked list operation in data structures |
| CO3 | To know about the tree structure and analyze how the values are inserted and deleted in binary tree |
| CO4 | To sort the data using different sorting techniques and how to use hash table functions to store the data |
| CO5 | To understand the graph techniques to solve problems and to know how to use file indexing. |

**Topics And Allocation Of Hours**

| Unit No. | Topic | No .Of Hours | Marks |
|---|---|---|---|
| I | Introduction | 15 | 20 |
| II | Linear Data Structures | 20 | 20 |

| | | | |
|---|---|---|---|
| III | Non Linear Data Structures | 15 | 20 |
| IV | Searching & Sorting | 15 | 20 |
| V | Graph & File Structure | 15 | 20 |
| Test & Revision | | 10 | |
| Total | | 90 | 100 |

## 4E4207-DATA STRUCTURES

**Unit – I**

1.1 **Problem Solving**-Various aspects-Different phases- Implementation of Algorithms-Characteristics-Algorithm design Techniques- Judgment of Algorithm

1.2 **Algorithm** -Efficiency of algorithms-Computational complexity-Analysis of algorithms-Worst case, Best case, Average case (Definition only)

1.3 **Stack**-Stack operations-push, pop-Stack Implementation- Application of stack: Conversion of Infix to Prefix and Postfix Expressions, Evaluation of postfix expression using stack., Applications of recursion in problems like 'Tower of Hanoi'.

**Unit – II**

2.1 **Queues:** Array and linked representation and implementation of queues, Operations on Queue: Create, Add, Delete, Full and Empty, Circular queues, D-queues and Priority Queues

2.2 **Linked lists:** Representation-Traversing and searching of a linked list-insertion and deletion operations- Insertion and deletion Algorithms -Doubly linked list- Polynomial representation and addition - Garbage Collection and Compaction

**Unit– III**

3.1 **Trees**: Basic terminology, Binary Trees, Binary tree representation, algebraic Expressions, Complete Binary Tree, Extended Binary Trees and Array -Traversing Binary trees, Threaded Binary trees, Traversing Threaded Binary trees, Huffman algorithm

3.2 **Searching and Hashing:** Sequential search, binary search, comparison and analysis, Hash Table, Hash Functions, Collision Resolution Strategies, Hash Table Implementation.

**Unit – IV**

4.1 **Sorting:** Insertion Sort, Bubble Sorting, Quick Sort, Two Way Merge Sort, Heap Sort, Sorting on Different Keys, Practical consideration for Internal Sorting

4.2 **Binary Search Trees**: Binary Search Tree (BST), Insertion and Deletion in BST, AVL Tree-representation-single rotation-double rotation- B-trees.

**Unit – V**

5.1 **Graphs:** Terminology & Representations, Graphs & Multi-graphs, Directed Graphs, Sequential Representations of Graphs, Adjacency Matrices, Traversal, Connected Component and Spanning Trees. Minimum Cost Spanning Trees. Application of Graph -Travelling salesman Problem.

5.2 **File Structure:** Concepts of fields, records and files, Sequential, Indexed and Relative/Random File Organization, Indexing structure for index files, hashing for direct files, Multi-Key file organization and access methods.

**Reference Books:**

| Sl.No. | Name of the Book | Author | Publisher |
|---|---|---|---|
| 1. | Programming in ANSI C | E Balagurusamy | Tata McGraw-Hill, 1998 |
| 2. | Fundamentals of Data Structure | Ellis Horowitz & Sartaj Sahni | Galgotia Book Source,1999 |
| 3. | Data structure using C | ANDREW S Tanenbaum, Yedidyeh langsam, Moshe J Augenstein | PHI Pub |

**COURSE OUTCOMES:**

At the end of the course, the student should be able to:

| | |
|---|---|
| CO1 | Use the control structures of C appropriately for problems. |
| CO2 | Implement abstract data types for linear data structures. |
| CO3 | Apply the different linear data structures to problem solutions. |
| CO4 | Critically analyse the various algorithms. |
| CO5 | Able to understand the graph techniques to solve problems and to know how to use file indexing. |

## 4E4302- OBJECT ORIENTED PROGRAMMING WITH JAVA

| Course code | Instructions | | | Examination | | | |
|---|---|---|---|---|---|---|---|
| 4E4302 | Hours/week | Hours/ Term | Credits | Marks | | | Duration |
| | 6 | 80 | 6 | Internal | External | Total | 3 Hrs |
| | | | | 25 | 75 | 100 | |

**Rationale:**

Nowadays, object oriented paradigm is of utmost importance for programming. Java language supports and is a very good means of understanding and implementing the OOP concepts. Java language enables the easy development of robust, secure, reusable and portable application. An application may be a standalone or it may be a web based. This subject provides an insight to understand and implement the OOP concepts, develop console and window applications based on multithreaded programming concepts and interact with the stream data. It also builds strong foundation for advanced java programming

OBJECTIVES

- Use of programming language constructs.
- To know apply different logics to solve the given problem.
- To be able to write program using different implementations for the same problem.
- Study different types of errors & Debugging of programs.

| UNITS - ALLOCATION OF HOURS AND MARKS | | | |
|---|---|---|---|
| **UNIT NO.** | **TOPICS** | **NO. OF HOURS** | **MARKS** |
| I | INTRODUCTION TO JAVA | 16 | 20 |
| II | CLASSES, OBJECTS & METHODS | 16 | 20 |
| III | INTERFACE AND PACKAGE & EXCEPTION | 16 | 20 |
| IV | MULTI THREADING, IO & FILES | 16 | 20 |
| V | APPLETS, GRAPHICS & GUI PROGRAMMING | 16 | 20 |
| | TEST & REVISION | 10 | |
| | TOTAL | 90 | 100 |

## 4E4302- OBJECT ORIENTED PROGRAMMING WITH JAVA

### UNIT I : Introduction to Java

**1.1 Java Features and the Java Programming Environment**. Java history - Features Object Oriented, Compiled, Interpreted, Platform independent, Portable, Robust and Secure, Dynamic.

**1.2** Java Tokens & Data types Constants & Symbolic Constants, variables, dynamic initialization, data types, array & string, scope of variable, type casting, standard default values. - Evaluation of Expressions, Type conversions in expressions, Mathematical Functions - min(), max(), sqrt(), pow(), exp(), round(), abs().

**1.3** Decision making & looping If statement, if else &nested if else statement, if else if ladder, the switch statement, nested switch statement, The ?:operator, The while statement, the Do while statement, the 'for' statement, break, continue & return statement, nested loops, labeled loops, for-each version of the for loop

### UNIT II : Classes & Objects

**2.1** Defining a class, creating object, accessing class members, Constructors & methods, types of constructors, nesting of methods, argument passing the 'this' keyword, command line arguments, varargs: variable-length arguments, garbage collection, finalize() method, the object class.

**2.2** Visibility Control Public, Private, Protected, default, friendly private Protected access.

**2.3** More on Arrays & Strings Types of arrays, creating an array, strings, string classes & string buffer, vectors, wrapper, classes, enumerated types.

**2.4** Inheritance Types of Inheritance, single Inheritance, multilevel Inheritance, Hierarchical Inheritance, method & constructor Overloading & overriding, dynamic method dispatch, final variables, final methods, use of super, abstract methods & classes, static members.

### UNIT III Interface, Package & Exception Handling

**3.1** Interface Define Interface, implementing interface , accessing interface, variables& methods, extending interfaces, interface references, nested interfaces

**3.2** Package : Define package, type of package naming & creating packages, accessing package, import statement, static import, adding class & interfaces to a package.

**3.3** Errors & Exception :Types of errors, exceptions, try & catch statement, nested try statement, throws & Finally statement, build-in exceptions, chained exceptions, creating own exception, subclasses.

### UNIT IV Multi threading, IO & Files

**4.1** Multithreaded Programming: Creating a Thread: By extending to thread class & by implementing Runnable Interface. Life cycle of thread: Thread Methods:wait(), sleep(), notify(), resume(), suspend(), stop(). Thread exceptions, thread priority & methods, synchronization, inter-thread communication, deadlock.

**4.2** Java I/O classes & Interfaces : Stream classes – Byte streams – DataInputStream - Character Streams – Reader, Writer classes.

**4.3** File classes: Stream classes, byte stream (FileInputStream & FileOutputStream), character stream (FileReader & FileWriter) - serialization

**UNIT V Applet & GUI Programming**

**5.1** Introduction to applets Applet, Applet life cycle (skeleton), Applet tag, Adding Applet to HTML file, passing parameter to applet, embedding <applet>tags in java code, adding controls to applets- Appletviewer

**5.2** Graphics Programming Graphics classes, lines, rectangles, ellipse, circle, arcs, polygons, color & fonts, setColor(), getColor(), setForeGround(), setBackGround(), Font class, variable defined by font class: name, pointSize, size, style, font methods: getFamily(), getFont(), getFontname(), getSize(), getStyle(), getAllFonts() & getavailablefontfamilyname() of the graphics environment class.

**5.3** GUI programming : java.awt package – AWT components – Event handling – event handlers – Event classes, Swings.

**Textbook:**

| Sl.No. | Title | Author | Publisher |
|---|---|---|---|
| 1 | Java – The complete reference<br>9th Edition | Herbert Schildt | McGraw Hill |
| 2 | Core Java Volume -1 Fundamentals<br>Ninth Edition | Cay D. Horstmann<br>Gary Cornell | Prentice Hall |
| 3. | Java – A beginners guide<br>6th edition | Herbert Schildt | Oracle press |
| 4 | Programming with Java – A Primer<br>4th edition | E Balagurusamy | Tata McGraw Hill |

**Course Outcomes:**

**At the end of the course, the student should be able to:**

| | |
|---|---|
| CO1 | Implement Java programs |
| CO2 | Understand the fundamental of Class and objects |
| CO3 | Able to understand Interface and Package and create new package |
| CO4 | Understand the threading concept |
| CO5 | Able to understand Applet and AWT components |

## 4E4208 - WEB PROGRAMMING

| Course Code | Instruction | | Credits | Examination | | | |
|---|---|---|---|---|---|---|---|
| | Hours/week | Hours/Term | | Marks | | | Duration |
| | | | | Internal | External | Total | |
| 4E4208 | 6 | 90 | 6 | 25 | 75 | 100 | 3 HRS |

**RATIONALE**

Web technology is the development of the mechanism that allows two of more computer devices to communicate over a network. For instance, in a typical office setting, a number of computers plus additional devices such as printers may be interconnected via a network, allowing for quick and convenient transmission of information. The processes involved in web technology are complex and diverse, which is why major businesses employ whole departments to deal with the issue. The course provides Explanation of the Major Web technologies. The students will also get hand-on experience and good working knowledge to work in HTML,CSS, JAVA SCRIPT,C#.NET,ASP.NET&ADO.NET environments. The aim is to gain proficiency in using various Web technologies after undergoing this course.

**Course Objectives:**

| | |
|---|---|
| CO1 | Design and develop basic web pages using HTML and CSS. |
| CO2 | Design and develop web pages using CSS styles, internal and/or external style sheets |
| CO3 | Discuss about events and Event Handlers in JavaScript. |
| CO4 | Design Web page using Jquery. |
| CO5 | Design Web page and connect database with JSP . |

**UNITS - ALLOCATION OF HOURS AND MARKS**

| UNIT No. | TOPICS | No. OF HOURS | MARKS |
|---|---|---|---|
| I | INTRODUNCTION TO INTERNET HTML 4 HTML 5 | 12 | 20 |
| II | INTRODUCTION TO CSS&CSS3 | 10 | 20 |
| III | JAVASCRIPT | 10 | 20 |
| IV | JQUERY | 10 | 20 |
| V | BOOTSTRAP | 10 | 20 |
| | TEST & REVISION | 12 | |
| | TOTAL | 64 | 100 |

## 4E4208 - WEB PROGRAMMING

**UNIT I**

**1.1 Introduction to Internet:** Definition of Internet – History of Internet - Packet Switching – Different types of Connections : Dial-up connection – ISDN – Advantages and Disadvantages – ASDL Connection – Advantages and Disadvantages – DSL – Leased Line – Satellite Connections - Modem - Cable Modem – Internet tools - Web server – Domain name - Search Engines –- Web browser – IP address – Versions ( concepts only) – Internet Protocols – TCP/IP – FTP – HTTP – Telnet –WAIS

**1.2.Introduction to HTML**: Introduction - Basic Tags of HTML - HTML Tag - TITLE Tag – BODY Tag-Tags for Formatting Text- Working with Images - META Tag

**1.3.Advanced HTML**: Links - Anchor tag – Lists - Unordered Lists - Ordered Lists – Definition Lists; Tables - TABLE, TR and TD Tags - Colspan and Rowspan; Frames: Frameset – FRAME Tag – Frame inside other frames – NOFRAMES Tag ; Forms : FORM and INPUT Tag –TextBox - Radio Button –Checkbox –SELECT Tag and Pull Down Lists : Hidden - Submit and Reset ; Some Special Tags: COLGROUP -THREAD

**1.3.Introduction to HTML5**:Introduction to HTML5- Difference between HTML and HTML5-HTML5 Document-New Form Elements-New Input attributes-Structural and Semantic Elements-Media Elements-Canvas Elements-Geo Location.

**UNIT II**

**2.1.Introduction to CSS**: Introduction –Features –Style Sheet basics - Working with CSS files – Syntax - Types of Style Sheets Inline Styles - Embedded Styles - External or Linked Styles

**2.2. Formatting Text and Background**: Font Families Font Size Kerning, Leading, and Indenting - Formatting Colors and Backgrounds: The Color Attribute The Background Attribute - Background Colors and Images

**2.3.Exploring CSS Class and ID Attributes**: Defining the CSS Class Attribute –Defining the CSS ID Attribute - Dynamic effects with CSS - Lists- Tables – Forms - simple Examples using above properties.

**2.4.Introduction to CSS3**: Animation –Borders –Backgrounds –Fonts –Multiple columns – Text effects.

**UNIT III**

**3.1 JavaScript Basics** : Need of scripting languages – Variables and Data Types : Declaring Variables – Life span of variables - Data Types - Operators : Assignment , comparison, computational and logical operators - Control Structures : Conditional Statements – Loop Statements : for, while, for in, break and continue statements

**3.2 Object-Based Programming and Message boxes**: Functions - Executing Deferred Scripts – objects : Document object Model , Predefined objects, Array object, History object , Location object - Dialog Boxes - Alert Boxes - Confirm Boxes - Prompt Boxes

**3.3 JavaScript with HTML**: Events - Event Handlers : onLoad and onUnload – onFocus and onBlur – onError - Forms : Forms Array – Form element properties – Example.

**UNIT IV**

**4.1 JQuery:** jQuery introduction- jQuery syntax JQuery selectors - jQuery events

**4.2 jQuery html**:jQuery set - jQuery get- JQuery add etc..

**4.3 jQuery Ajax**: jQuery load -jQuery GET/POST. JQuery plugins – using JQuery UI

**UNIT V**

**5.1.Bootstrap Introduction** : History- Advantage of Bootstrap-Setting up Environment- What is Modal First Strategy- Bootstrap First Application.

**5.2.Bootstrap Grid**: What is Grid System- Container- Floating Container-Multiple Grids-Offset Column-Centering Content Horizontally-Reordering Columns- Images and Responsive Helpers

**5.3.Bootstrap Basics** :Bootstrap Typography- Bootstrap Tables- Lists- Forms- Validation States-Button-Bootstrap Helpers- Hiding content based on resolution.

**5.4.Bootstrap Components**: Dropdown Menus-Button Toolbar and Groups- Button Dropdown- Input Group- Navigation Tabs and Pills- Navigation Bar- Breadcrumb-Pager-Labels- Alerts-Progress Bar

**5.5. Bootstrap Plugin**: overview- Transition Plugin -Collapsible Plugin- Tab Plugin- Scrollspy Plugin - Dropdown Plugin -Modal Dialog Plugin - Carousel Plugin-Button Plugin - Alert Plugin - Popover Plugin -Tooltip Plugin

**TEXT BOOK**

| Sl.No. | Title | Author | Publisher |
|---|---|---|---|
| 1. | Programming in HTML5 with JavaScript and CSS3 – Training Guide | Glenn Johnson | Microsoft Press |
| 2. | HTML BLACK BOOK | Steven Holzner | Dreamtech Press |
| 3. | Java Script Unleashed | Richard Wagner and A.AllenWyke | Laxmi Publications |
| 4. | The Internet | Douglas E.Comer | *Prentice Hall* |
| 5. | Web Technologies | Achyut S Godbole and Atul Kahate | Tata McGraw-Hill Education |
| 6. | Programming In C# | Balagurusamy | McGrawHill Publications |
| 7. | Comdex.NET Programming Course Kit | VIKAS GUPTA | DreamTech |

**REFERENCE:**

http://www.ics.uci.edu/~ics143/lectures.html

**Course Outcomes:**

**At the end of the course, the student should be able to:**

| | |
|---|---|
| CO1 | Able to Design and develop basic web pages using HTML and CSS. |
| CO2 | Able to Design and develop web pages using CSS styles, internal and/or external style sheets |
| CO3 | Design and implement dynamic web page with validation using JavaScript objects and by applying different event handling mechanisms. |
| CO4 | Design and implement simple web page in Jquery, and to present data in XML format. |
| CO5 | Design and implement server side programs using Bootstrap. |

# 4E4209-DATA STRUCTURES PRACTICAL

| Course code | Instructions | | | Examinations | | | |
|---|---|---|---|---|---|---|---|
| 4E4209 | Hours/week | Hours/ Term | Credits | Marks | | | Duration |
| | | | | Internal | External | Total | |
| | 3 | 45 | 2 | 25 | 75 | 100 | 3 Hrs |

**Course Objective:**

The student will be able to:

1. To impart the basic concepts of data structures and algorithms
2. To understand concepts about searching and sorting techniques
3. To Understand basic concepts about stacks, queues, lists, trees and graphs
4. To understanding about writing algorithms and step by step approach in solving problems with the help of fundamental data structures

| SCHEME OF EVALUATION | |
|---|---|
| Program (A & B) | 15 + 25 |
| Execution (A & B) | 20 + 30 |
| Viva | 10 |
| Total | 100 |

## LIST OF EXPERIMENTS

1 Create a program Fibonacci series using recursion function.

2. Write a program to find biggest of three numbers.

3. Write a program to find leap year.

4. Write a program to calculate and display student Mark, Total and Average

5. write a program to display students detail

6. Write a program for swapping

7. Write a program to stimulate operations on stack using class

8. To generate a single linked list program using its operation using menu

9. To generate a double linked list program using its operation using menu
10. To create a stack application which convert infix notation to post fix notation.
11. Write a program for tree traversal
12. Write a program in for binary search
13. To create a queue containing ten elements and perform delete and insert operation using array.
14. To sort the given set of number using insertion sort.
15. To sort the given set of number using bubble sort.
16. To sort the given set of number using merge sort.
17. To sort the given set of number using shell sort.
18. To sort the given set of number using quick sort.
19. Mini Projects: (Real Time Application)
    i) Create an application for Shopkeeper to maintain his stock using stack operations(It should contain login and password for shop admin)
    ii) Create an application for passengers to register their Ticket using queue operation
    iii) Develop an simple application for a salesman to find the minimum path to reach his destination using Travelling salesman algorithm

**SOFTWARE**

- Turbo C/C++

**Course Outcome:**

- On completion of the following units of syllabus contents, the students must be able to

| | |
|---|---|
| CO1 | Understand the use of arrays |
| CO2 | Use of arrays and pointers. |
| CO3 | Ability to describe stack, queue and linked list operation. |
| CO4 | Ability to have knowledge of tree and graphs concepts. |
| CO5 | Ability to summarize searching and sorting techniques |

## 4E4303-JAVA PROGRAMMING PRACTICAL

| Course | Instructions | | | Examinations | | | |
|---|---|---|---|---|---|---|---|
| | Hours/week | Hours/ | Credits | Marks | | | Duration |
| 4D4303 | 3 | 45 | 3 | Internal | External | Total | 3 Hrs |
| | | | | 25 | 75 | 100 | |

**Course objectives :**

- To know different kinds of applications developed using Java
- To understand the Java API and using to solve problems
- To develop OO applications
- To know multi threaded application development

| SCHEME OF EVALUATION | |
|---|---|
| Part A Program | 20 |
| Part A Output | 20 |
| Part B Program | 30 |
| Part B Output | 20 |
| Viva | 10 |
| Total | 100 |

**LIST OF EXPERIMENTS**

**PART-A**

**11.** Write a Java program to display all commands line arguments.

**12.** Write a program to find out sum of digits of given numbers

**13.** Write a program to display multiplication table

**14.** Write a program to display all prime numbers in a given range of numbers

**15.** Write a program to display all perfect numbers between 1 to 1000

**16.** Write a program to create an array of integers and accept a number. Check whether it exits or not and throw your own exception with appropriate error message

**17.** Write a program to implement stack using Vector class.

**18.** Write a program to execute any given windows application using switch case ( Use Runtime class & Process class)

**19.** Write a program to get a file name at run time and check for its existence check whether it is a directory or normal file. If it is a normal file display its size attributes of the file.

**20.** Write a program to list all the files in a directory depending upon given Pattern.

**21.** Write a program to copy a file to another file using java.io package Classes

**22.** . Write a program to get a file at runtime and display the number of lines, Words and characters in that file.

***23.*** *Write a program for single and multi threading.*

***24.*** *Synchronising of objects*

**PART-B**

**AWT applications:**

**25.** Create a Frame with two labels. At runtime display x and y co-ordinates of mouse pointer in the Labels.

**26.** Create a Frame and Checkbox group with five Checkboxes with labels as Red, Green, Blue, Yellow and White. At run time change the background color of Frame with appropriate selection of Checkbox.

**27.** Create a Frame with a Choice and label. Add 5 items in the Choice. Display the selected item of Choice in the Label

**28.** Create a Frame with 3 Scrollbars. Change the background color of the Frame using RGB function with values of scrolls

**29.** Create a Notepad Application using AWT controls

***Applet :***

**30.** Create an Applet to calculate Simple and Compound interest by passing parameters through HTML file.

**31.** Create an applet for simple calculator to perform Addition, subtraction, Multiplication and Division using Button, label and Text field

**32.** Draw a bar chart for the following details using Applets.

**HARDWARE REQUIREMENT**

- Desktop Computers – 60 Nos
- Printer – 1 No

**SOFTWARE REQUIREMNT**

- JDK 6.0 or above
- Any Text Editor
- (or) Netbeans IDE

**Course Outcome:**

| | |
|---|---|
| CO1 | Skilled in developing Console applications |
| CO2 | Using Java API to develop complex applications |
| CO3 | GUI based application to solve real time problems. |
| CO4 | Skilled Applet programming and using it |

## 4E4210 - WEB PROGRAMMING PRACTICAL

| Course code | Instructions | | | Examinations | | | |
|---|---|---|---|---|---|---|---|
| 4E4210 | Hours/week | Hours/ Term | Credits | Marks | | | Duration |
| | 4 | 60 | 2 | Internal | External | Total | 3 Hrs |
| | | | | 25 | 75 | 100 | |

**OBJECTIVES:**

- Create web pages using simple HTML tags
- Create web pages using HTML5 and advanced HTML tags.
- Create web pages with CSS3
- Create simple Java script codes.
- Design web pages using JSP and HTML codes.
- Use of CSS to develop rich Web applications
- Create Web applications using Bootstrap

**Course Outcome:**

After learning the course the students should be able to:

| | |
|---|---|
| CO1 | Develop Wep pages using HTML 5 and CSS. |
| CO2 | Create Dynamic Web pages with javascript. |
| CO3 | Acquire Knowledge of Design Web page design using JQuery |
| CO4 | Acquire Knowledge of Design Web page design using Bootstrap |

| SCHEME OF EVALUATION | |
|---|---|
| Aim | 10 |
| Procedure / Program | 35 |
| Execution | 35 |
| Result | 10 |
| Viva | 10 |
| Total | 100 |

**LIST OF EXPERIMENTS:**

1. Design Class Time Table Using Table tag in HTML
2. Write a HTML Program for Nested Frame.
3. Create On Line application form using form tag in HTML

4. Write a HTML Program for Ordered List, Unorder List, Definition List.
5. Design a HTML page describing your profile in one paragraph. Design in such a way hat ithas a heading, a horizontal rule, three links and your photo. Also, write three HTMLdocuments for the links. Include facilities for forward, backward and HOME
6. Design a Web page for Online Book Store using HTML & CSS
7. Create Webpage for Our college using HTML5&CSS3
8. Perform Form validation using HTML5 and CSS3
9. Create Webpage with audio and Video Elements
10. Create Timer using Javascript and apply it in a webpage
11. Write a java script program to change text into Uppercase
12. Write a java Script program for calculator Operations
13. Create Web page for Online EB Bill payment System using HTML5 ans CSS3 and perform it operations using Javascript
14. Create Web page for Online payment System using HTML5 ans CSS3 and perform it operations using Javascript
15. Write a JQuery Program for animation
16. Write a JQuery Program for Toggle Operation
17. Write a JQuery Program for fadein and fadeout.
18. Write a JQuery Program for Hide Elements(text and image)
19. Create Web page for On Line Ticket Reservation System using Bootstrap
20. Create Web page for Our College Activities using Bootstrap

**HARDWARE REQUIREMENT**

- Desktop Computers – 36 Nos
- Printer – 1 No

**SOFTWARE REQUIREMNT**

- Visual Studio,Browsers(Internet Explorer version 8 & above, Mozila Firefox, Google Chrome)

**Course Outcome:**

After learning the course the students should be able to:

| | |
|---|---|
| CO1 | Able to develop Wep pages using HTML 5 and CSS. |
| CO2 | Able to Create Dynamic Web pages with javascript. |
| CO3 | Design Web page design using JQuery |
| CO4 | Design Web page design using Bootstrap |

## 4E4401- LIFE AND EMPLOYABILITY SKILLS PRACTICAL

| Course code | Instructions | | | Examinations | | | |
|---|---|---|---|---|---|---|---|
| | Hours/week | Hours/Term | Credits | Marks | | | Duration |
| | | | | Internal | External | Total | |
| 4E4401 | 4 | 60 | 2 | 25 | 75 | 100 | 3 Hrs |

| Sl. No. | Section | No. of Hours |
|---|---|---|
| 1 | **Part – A**<br>Communication | **30** |
| 2 | **Part – B**<br>Entrepreneurship, Project Preparation, Productivity, Occupational Safety, Health, Hazard, Quality Tools & Labour Welfare | **20** |
| 3 | **Part – C**<br>Environment, Global Warming, Pollution | |

**TOTAL 60**

### RATIONALE

Against the backdrop of the needs of the Industries, as wells as based on fulfilling the expectations of the Industries, the Diploma Level students have to be trained directly and indirectly in toning up their competency levels. Proficiency in Communication only, equips them with confidence and capacity to cope with the employment. Hence, there is a necessity to focus on these in the curriculum. At the end of the Course, the student is better equipped to express himself in oral and written communication effectively.

### SPECIFIC INSTRUCTIONAL OBJECTIVES

1. Emphasize and Enhance Speaking Skills
2. Increase Ability to Express Views & Opinions
3. Develop and Enhance Employability Skills
4. Induce Entrepreneurship and Plan for the Future
5. Expose & Induce Life Skills for Effective Managerial Ability

| Unit | Topics | Activity | Hours |
|---|---|---|---|
| 1 | Communication, Listening, Training, Facing Interviews, Behavioural Skills | -- instant sentence making – say expressions/phrases--self-introduction/another higher official in company – describe/explain product – frame questions based on patterns – make sentences based on patterns | 30 |

| | | | |
|---|---|---|---|
| 2 | Entrepreneurship, Project Preparation, Marketing Analysis, Support & Procurement | -- prepare an outline of a project to obtain loan from bank in becoming an entrepreneur – prepare a resume | 10 |
| 3 | Productivity – comparison with developed countries, Quality Tools, Circles, Consciousness, Management, House Keepin | -- search in the website<br>-- prepare a presentation<br>– discuss & interact | 05 |
| 4 | Occupational Safety, Health Hazard, Accident & Safety, First-Aid,Labour Welfare Legislation,<br>Welfare Acts | -- search in the website<br>-- prepare a presentation<br>– discuss & interact | 05 |
| 5 | Environment, Global Warming, Pollution | -- taking down notes / hints – answering questions<br>-- fill in blanks the exact words heard | 10 |

**LEARNING STRUCTURE** **100 Marks**

-- Focus more on Speaking & Listening Skills
-- Attention less on Reading & Writing Skills
-- Apply the skills in fulfilling the Objectives on Focused Topics

**a) Listening** **25 Marks**

1. Deductive Reasoning Skills (taking down notes/hints) 10
2. Cognitive Skills (answering questions) 10
3. Retention Skills (filling in blanks with exact words heard) 05

**b) Speaking Extempore/ Prepared** **30 Marks**

1. Personality/Psychological Skills (instant sentence making) 05
2. Pleasing & Amiable Skills (say in phrases/expressions) 05
3. Assertive Skills (introducing oneself/others) 05
4. Expressive Skills (describe/explain things) 05
5. Fluency/Compatibility Skills (dialogue) 05
6. Leadership/Team Spirit Skills (group discussion) 05

**c) Writing & Reading** **20 Marks**

1. Creative & Reasoning Skills (frame questions on patterns) 05
2. Creative & Composing Skills (make sentences on patterns) 05
3. Attitude & Aim Skills (prepare resume) 05
4. Entrepreneurship Skills (prepare outline of a project) 05

**d) Continuous Assessment (Internal Marks)** **25 Marks**

(search,read, write down, speak, listen, interact & discuss)

1. Cognitive Skills (Google search on focused topics)

2. Presentation Skills& Interactive Skills (after listening, discuss)

**Note down and present in the Record Note on any 5 topics 10 Marks**
**Other activities recorded in the Record note 10 Marks**
**Attendance 05 Marks**
**INTERNAL MARKS 25 MARKS**
**EXTERNAL MARKS AT END EXAMINATION 75 MARKS**

## MODEL QUESTION

**Time: 3 Hours** **Maximum Marks: 75**

**A. LISTENING 25 Marks**

1. Listen to the content and take down notes/hints 10
2. Listen to the content and answer the following questions. 10
3. Listen to the content and fill in the blanks the exact words heard. 05

**B. SPEAKING 30 Marks**

1. Say in a sentence instantly on hearing the word(5 words, one after another). 05
2. Say any five expressions commonly used in communication. 05
3. Imagine, a consultant has come to your department.
   Introduce him to your subordinates. 05
4. Explain/describe the product you are about to launch in the market. 05
5. Speak with your immediate boss about the progress you have made. 05
6. Discuss within the group on the topic of focus in the syllabus. 05

**C. WRITING & READING 20 Marks**

1. Frame new questions from the pattern given by changing sets of words with your own. 05

| | | | | |
|---|---|---|---|---|
| a. | When | do | you | return? |
| b. | How | is | his performance? | |
| c. | Where | has | the manager | gone? |
| d. | What | is | the progress | today? |
| e. | Why | are | the machines | not functioning? |

2. Make sentences from the pattern given by changing sets of words with your own. 05

| | | | | | |
|---|---|---|---|---|---|
| a. | The workers | are | on strike | | |
| b. | The labourers | are paid | well | in this factory | |
| c. | There | is | a rest room | for the workers | |
| d. | These | are | the new products | launched | by our company |
| e. | Almost everyone | come | to the company | on motorbikes | |

3. Prepare a resume for the post of Department Manager. 05
4. Prepare an outline of a project to obtain a loan. (Provide headings and subheadings) 05

**I. Guidelines for setting the question paper:**

**A. LISTENING :**

ONLY TOPICS related to

POLLUTION /
ENVIRONMENT /
GLOBAL WARMING are to be taken.

These topics are common for all the three types of evaluation.

**B. SPEAKING :**

1. WORDS of common usage
2. Fragments – expression of politeness, courtesy, cordiality
3. Introduce yourself as an engineer with designation or
   Introduce the official visiting your company/department
4. Describe/Explain the product/machine/department
5. Dialogue must be with someone in the place of work.
6. Group of six/eight
   Discuss the focused topic prescribed in syllabus

**C. WRITING & READING:**

1. Provide five different structures.
   Students are to substitute at least one with some other word/words
2. Provide five different structures.
   Students are to substitute at least one with some other word/words
3. Provide some post related to industries.
4. Outline of the project (skeleton/structure)
   Only the various headings and subheadings
   Content is not needed

**II. Guidelines for recording the material on the Focused Topics in the Record note.**

Write in the record note, on any five topics, from the list of topics given below. 10 Marks
(5 topics x 10 marks = 50 marks. Thus, the Average of 5 topics is 10 Marks)

1. Productivity in Industries – Comparison with developed countries
2. Quality Tools, Quality Circles and Quality Consciousness
3. Effective Management
4. House Keeping in Industries
5. Occupational Safety and Hazard
6. Occupational Accident and First Aid
7. Labour Welfare Legislations
8. Labour Welfare Acts and Rights
9. Entrepreneurship
10. Marketing Analysis, Support and Procurement

**LABORATORY REQUIREMENT:**

1. An echo-free room
2. Necessary furniture and comfortable chairs
3. A minimum of two Computers with internet access
4. A minimum of two different English dailies
5. A minimum of Three Mikes with and without cords
6. Colour Television (minimum size – 29")
7. DVD/VCD Player with Home Theatre speakers
8. Smart board
9. Projector

**Suggested Reading:**

1. Production and Operations Management by S.N. Chary, TMH
2. Essentials of Management by Koontz &Weihrich, TMH
3. Modern Production / Operations Management by E.S. Buffa and R.K. Sarin, John Wiley &Sons
4. Production Systems: Planning, Analysis and Control by J.L.Riggs, 3rd ed., Wiley.
5. Productions and Operations Management by A.Muhlemann, J.Oakland and K.Lockyer, Macmillan
6. Operations Research - An Introduction by H.A.Taha, Prentice Hall of India
7. Operations Research by J.K.Sharma, Macmillan
8. Business Correspondence & Report Writing by R.C. Sharma and K.Mohan, TMH
9. How to prepare for Group Discussion & Interview (With Audio Cassette) by Prasad, TMH
10. Spoken English – A self-learning guide to conversation practice (with Cassette)
11. Introduction to Environmental Engineering by Mackenzie, L. Davis and A. David, Cornwell, McgrawHill, 3rd Ed.
12. Environmental Engineering by Peary, Rowe and Tchobanoglous, McgrawHill
13. Total Quality Management – An Introductory Text by Paul James, Prentice Hall
14. Quality Control and Applications by Housen&Ghose
15. Industrial Engineering Management by O.P. Khanna

# V- TERM

# V – TERM

## 4E5210-RDBMS

| Course Code | Instruction | | Credits | Examination | | | |
|---|---|---|---|---|---|---|---|
| | Hours/ week | Hours/ Term | | Marks | | | Duration |
| | | | | Internal | External | Total | |
| 4E5210 | 5 | 75 | 5 | 25 | 75 | 100 | 3 Hours |

UNITS AND ALLOCATION OF HOURS

| UNIT No. | TOPIC | No. of Hours |
|---|---|---|
| I | Database Systems and Data modeling | 14 |
| II | MySQL Administration & Database Design | 15 |
| III | MySQL Performance Tuning | 11 |
| IV | Storage Engines, Stored Program concept , Optimization & API's | 14 |
| V | Data warehousing & Introduction to Big data | 11 |
| | TEST AND REVISION | 10 |
| | TOTAL | 75 |

**RATIONALE**

The Database Management system is a collection of programs that enables to store, modify and extract information from a database. The primary resource that fuels knowledge power is the database. Organizations are employing mechanisms to effectively manage and utilize the data stored in the database. Relational Database management System has been developed to harness the information stored in the database.

The major objectives of this subject is to provide a strong formal foundation in Database Concepts, technology and practice to the students to enhance them into well informed application developers. After learning this subject, the students will be able to understand the designing of RDBMS and can use any RDBMS package as a backend for developing database applications.

**OBJECTIVES :**

On completion subject, the students must be able to

- Define data, database, database Management systems and data base models.
- Compare file processing and database system. Study about architecture of DBMS.
- Understand the concept of Data warehousing , Big Data and client/Server Technology
- State CODD's Rules.
- Explain normalization and explain different types of Normal Forms.
- Create Normalized Database structure files .
- Perform all database DDL, DML, DCL, and all related commands. Create and use Triggers., Understanding Data warehousing, Big data and NoSQL

## 4E5210-RDBMS

**UNIT - I Database Systems and Data modeling**

1.1 Database systems: Database Management System – Characteristics of Database Components of Database - Functions of Database - Understanding database model- Evolution – Types of database models: Hierarchical Database Model, Network Database Model, Relational Database Model.

1.2 Types of Databases: Transactional Databases, Decision Support Databases and Hybrid Databases – Open Source databases

1.3 Relational data model: CODD's rules – Components of RDBMS - Table structure - Records ,rows, tuples , attributes. - Keys : Primary, Foreign , Composite, unique keys – Meta Data – Data Dictionary. - Data Integrity - Data Constraints and validation : Types of Constraints Difference between SQL and MYSQL

1.4 ER Diagram and Normalization: Methodologies of Designing Database- Entities-Relationships (1:1, 1 : many and many : many) - ER Diagram – Samples . Normalization : Benefits – Normal Forms - 1st Normal Form, 2nd Normal Form , 3rd Normal Form

1.5 Database Administration : Server/client And Distributed concept: DBA Tasks – DBA Tools/utilities – Data Base Maintenance – Backup and Recovery.

**UNIT-II MySQL Administration & Database Design**

2.1 Installation of MySQL:Features of MySQL- Download, Installing, Starting & Stopping connections to the MySQL server – Accessing MySQL – Command Line, Web Interface (PHP Myadmin) and Desktop Tools (MySQL workbench).

2.2 **Working with MySQL Databases :** Creating (CREATE cmd), selecting (USE cmd) and describing database (DESC cmd)- SHOW cmd - backing up databases.

2.3 **Introduction to MySQL :** MySQL data types –Data Definition Commands: creating, altering, renaming, copying and deleting tables - temporary tables – Data manipulation commands : Insert, update & deleting rows. Data retrieval commands. MySQL Operators and Expressions : Types of operators –Arithmetic, comparison & logical operators - Pattern matching - Import and Export of data

2.4 **Built-in Functions:** Single row functions - Aggregate functions – Conversion functions

2.5 **Querying the table:** Selecting rows using Where , Order by , group by & Having clauses. Sub-queries – operators used in sub-queries - correlated sub-queries.

2.6 **Flow control :** IF(), IF NULL(),CASE,LOOP,LEAVE,ITERATE,REPEAT,WHILE

**UNIT- III MySQL Performance Tuning**

3.1 **Indexes and sequences:** Creating index– primary key (single & multiple field) & foreign key, unique key, composite keys, full text indexing, leftmost indexing - dropping index.- Sequences: creating, altering and deleting sequences.

3.2 **Performing multiple table retrieval using Joins & Unions:** Joins – definition – aliasing – Types of Joins: natural join, inner join, self-join, left join, right join. Unions: Definition – Types – Union, Union ALL, Union Distinct – order by and LIMIT handling.

3.3 **Views:** Introduction – Advantages of Views- creating Views, Updating the Views, Deleting the Views.

3.4 **User & Transaction management:** creating users, deleting users, renaming users, grant & revoke commands - Transactions – committing & rollback transactions – save points.

**UNIT- IV Storage Engines, Stored Program concept , Optimization & API's**

4.1 Storage Engines: MySQL Storage engines-Choosing the right engine - Types of torage engines - MyISAM, InnoDB & Memory – Features – Advantages and disadvantages of storage engines .

4.2 Stored Procedures & Functions: Definition - Creating stored Procedures – Invoking - Dropping procedures -Creating and calling stored functions – Deleting stored functions - Advantages.

4.3 MySQL trigger & Cursor : Use of trigger - Creating triggers - Types of trigger – Deleting triggers – Cursor – creation – deletion.

4.4 MySQL Optimizations: Query optimization using EXPLAIN command.

4.5 MySQL and web: Need for own MySQL programs – MySQL's Application Programming Interfaces

**UNIT - V Data warehousing & Introduction to Big data**

5.1 **Data warehousing and mining :** Functions of Warehouse – Architecture – Applications – Data mining concepts.- Advantages. Mining techniques Association, classification and clustering.

5.2 **Big Data :** Definition – Characteristics – Various Technologies used - Applications - Overview of NoSQL : Difference between RDBMS and NoSQL – Tools used in Big Data, Scalability, Understanding storage architecture .

5.3 **Types of Data stores in NoSQL:** Column oriented data store, Document Store, Key value Store & Graph store - create, access, update and delete data - Querying NoSQL Stores. Using NoSQL in the cloud - Amazon Simple DB

**TEXT BOOK**

1. MySQL Paul DuBios Addison Wesley (Fourth Edition)
2. Database System Concepts Silber Schatz A. and Korth H McGraw Hill Education (India) Pvt Limited, Sixth Edition
3. Murach's MySQL Joel Murach Shroff / Murach(2012)
4. NO SQL Distilled PRAMOD J. SADALAGE MARTIN FOWLER Addison Wesley (First Edition)

# 4E5304 - OPEN SOURCE SOFTWARE

| Course Code | Instruction | | Credits | Examination | | | |
|---|---|---|---|---|---|---|---|
| | Hours/ week | Hours/ Term | | Marks | | | Duration |
| | | | | Internal | External | Total | |
| 4E5304 | 6 | 90 | 6 | 25 | 75 | 100 | 3 Hours |

## RATIONALE

The main aim of this subject is to enable the students to know the basic concepts of open source software and tools. The students will learn about the principles of open source software, web servers, databases, operating systems, programming languages and application development.

## OBJECTIVES

- On completion of the following units of syllabus contents, the students must be able to
- Understand the need, advantages and disadvantages of Open Source software.
- Understand the general concepts and modes of Linux Operating System.
- Understand the advanced concepts like Scheduling, Time Accounting, Personalities and
- Cloning.
- Understand Linux Networking.
- Know the basic concepts of Open Source Database.
- Know how to connect MYSQL database and closing connection.
- Write Simple MYSQL Programs.
- Creating database and tables in MYSQL.
- Manipulate database tables in MYSQL.
- Understand the concepts of Record Selection technologies
- Install and Configure of PHP on Windows.
- Understand the basic concepts of PHP.
- Understand the String and Array concepts in PHP.
- List the advanced features of PHP.
- Discuss the Memory Management, Parameter Handling and Variables in PHP.
- Understand how to access a database using PHP
- Discuss about the advanced Database techniques.
- Discuss about the ApacheWeb Server and Configuring the server.
- Explain the History and Architecture of Eclipse IDE Platform.
- Understand the basics of Python
- Knowing the building blocks of python language
- Knowing the development process of a Python program,
- Understanding file handling using python

| UNITS - ALLOCATION OF HOURS AND MARKS | | | |
|---|---|---|---|
| **UNIT NO.** | **TOPICS** | **NO. OF HOURS** | **MARKS** |
| I | OVERVIEW OF OPEN SOURCE SOFTWARE | 12 | 20 |
| II | OPEN SOURCE PROGRAMMING LANGUAGE – PHP | 12 | 20 |
| III | OPEN SOURCE PROGRAMMING LANGUAGE – ADVANCED PHP CONCEPTS | 16 | 20 |
| IV | OPEN SOURCE DATABASE - MYSQL | 15 | 20 |
| V | PYTHON | 15 | 20 |
| | TEST & REVISION | 10 | |
| | TOTAL | 80 | 100 |

# 4E5304 - OPEN SOURCE SOFTWARE

**UNIT -1**

1.1Introduction **:** Need of Open Sources – Advantages of Open Sources – Applications – FOSS – FOSS usage – Free Software Movement, global and Indian. Application of Open Sources - Government Policy toward OpenSource ( E- Governance)

1.2 Open source software operating systems – LINUX – features of linux – linux architecture -

1.3 Eclipse IDE Platform - Apache Web server – Working with web server – Configuring and using apache web server

**UNIT -2**

2.1 Introduction: What is PHP? - Basic Syntax of PHP - programming in web environment - Common PHP Script Elements - Using Variables - Constants –Data types - Operators ; Statements - Working With Arrays –Using Functions – String Manipulation and Regular Expression

2.2 File and Directory Handling - Including Files - File Access

2.3 Working With Forms -Processing Forms -Form Validation

**UNIT – 3**

3.1 Introduction to advanced PHP concept Simple programs Using PHP - Class,Object,Member Variable,Member function,Inheritance,Polymorphism,Overloading,Data Abstraction, Encapsulation,Constructor,Destructor

3.2 Php cookies – sessions – File uploading – Sending E-mails

3.3 Php Frame works – Framework types – Design pattern – Model view control

**UNIT – 4**

4.1 Basic features of Python: Overview – Installing – Running in windows/Linux - Variables and Strings: Data types - Operators – Decision Control – Conditional Statements - Loops – Example Programs

4.2 Sequences: Lists: Introduction –Fixed size lists and arrays – Lists and Loops – Assignment and references –Identity and equality – Sorted lists –

4.3 Tuples: Tuples and string formatting – Sets – Set Funcations - String functions

4.4 Dictionaries : Introduction – Combining two dictionaries with UPDATE – Making copies – Persistent variables – Internal Dictionaries

**UNIT – 5**

5.1 File Handling -Exception – Handling exception - Functions – call by reference – call by value

5.2 Regular Expression – Match function – Search Function – Search and Replace Function – Regular Expression Patterns

5.3 Python GUI Programing using Tkinter – GUI controls – Standard attributes – GUI Methods - sample GUI programs

5.4 Python Networking – Socket modules – Server, Client socket methods – General socket methods – Sample network programs

## Text Books:

| Sl.No. | Title | Author | Publisher |
|---|---|---|---|
| 1. | Learning to Program | Alan Gauld | A free Python web-book |
| 2. | MySQL Bible | Steve Suchring | John Wiley sons 2002 |
| 3. | Programming PHP | Rasmus Lerdorf and Levin Tatroe | O'Reilly Publications2002 2002 |

**Course Outcome**

| **Course outcome** | **Details** |
|---|---|
| **CO 1** | Understand the opensource software purpose and its various types |
| **CO 2** | Understand the basic concepts of the php script programming |
| **CO 3** | Understand the advanced concepts like oop, cookies, files.etc..of the php script programming |
| **CO 4** | Understand the basic of basics of the python programming |
| **CO 5** | Understand the basic of the python programming |

## 4E5305-COMPONENT BASED TECHNOLOGY

| Course Code | Instruction | | Credits | Examination | | | |
|---|---|---|---|---|---|---|---|
| | Hours/week | Hours/Term | | Marks | | | Duration |
| | | | | Internal | External | Total | |
| 4E5305 | 6 | 90 | 6 | 25 | 75 | 100 | 3 HRS |

**RATIONALE**

.NET Framework is changing the way developers write applications. .NET Framework provides a number of components to create many types of applications including those for consoles, Windows, mobile units and the web. Using .NET framework the data can be made available anytime, anywhere and on any device. This subject introduces the basics of .NET Framework. Writing applications on C#.Net is covered in this course. Concepts of developing Window applications using C#.NET are discussed. This course helps to use ADO.NET to write the applications to connect with the back end database. The subject also enables the users to know the concepts of XML and the XML web services.

**Course Objectives:**

| | |
|---|---|
| CO1 | On completion of the following units of syllabus contents, the students must be able to List the major elements of the .NET Framework and describe some of the majorenhancements to the new version of C#. |
| CO2 | Create applications by using Microsoft Windows Forms. |
| CO3 | Create applications that use ADO.NET. |
| CO4 | Creating ASP.Net applications using standard .net controls. |
| CO5 | Develop Window applications using XML as back end database |

| UNITS - ALLOCATION OF HOURS AND MARKS | | | |
|---|---|---|---|
| **UNIT No.** | **TOPICS** | **No. OF HOURS** | **MARKS** |
| I | INTRODUCTION TO .NET &C# | 15 | 20 |
| II | WINDOW APPLICATION USING WINDOW FORMS | 15 | 20 |
| III | ASP.NET | 16 | 20 |
| IV | APPLICATIONDEVELOPMENTUSINGADO.NET | 16 | 20 |
| V | XML AND WEB SERVICES | 16 | 20 |
| | TEST & REVISION | 12 | |
| | TOTAL | 90 | 100 |

## 4E5305-COMPONENT BASED TECHNOLOGY

**UNIT-I**

**1.1.Introduction to .NET:** Dot Net Architecture – Managed Code and the CLR –Intermediate Language, Metadata and JIT Compilation–Automatic Memory Management.

**1.2.Introduction to.NET framework:** Common Type System(CTS) – Common Language Specification (CLS) – Assembly –Namespace.

**1.3. C# Fundamentals:**

Characteristics & Application of C#-Identifiers and Keywords-Data Types-Variables and Constants-Single dimensional and Multi dimensional Array-Operators-Expression-Type Conversion- Operator Precedence and Associativity

**1.4. Decision Making & Looping:**

If,IfElse,NestedIf,Else If Ladder,Switch,?: Operator-While,do,for,foreach,Jumps in Loops

**1.5. Oops in C#:**

Basic Principles of Object Oriented Programming-Classes&Objects-Inheritance-Interfaces-Structures-Namespaces.

**1.6.Errors and Exception Handling:**

Introduction-Types of Errors-Exceptions

**UNIT-II**

**2.1.Windows programming–Creating windows Forms–**Working with Toolbox Controls– Button, Check Box, Combo Box, Label, List Box, Radio Button, Text Box, Group Boxes, Picture Box

**2.2.Advanced Controls & Events:** Timer , Progress Bar, Month Calendar , ToolTips, Tab Controls, Panels -Events–Click, Close, Deactivate, Load, MouseMove, MouseDown, MouseUp, Keypress ,KeyDown, KeyUp.

**2.3.Multiple Document Interface (MDI) Forms –** Creating MDI Applications –Creating MDI Child Windows –Arranging MDI Child Windows

**2.4.Menus and Dialog Boxes –** Creating menus – Menu items – Creating Submenus , Menu Shortcuts, Context menu –Using dialog boxes –show Dialog() Method

**UNIT-III**

**3.1 ASP.NET :**

IIS-Deployment of Website-Start,Stop,Pause Website-Web Forms-Web Services-ASP.NET Features

**3.2.Web Form Architecture:**

Page Class-Web Forms Life Cycle-Web Forms Event Model-Code-Behind

**3.2 Creating Web Controls:**

Standard Controls-Navigation Controls-Validation Controls-Login Controls-Web parts Controls – List Controls –User Controls-Adv Controls-Adding web controls to a Page.

**UNIT-IV**

**4.1 Features of ADO.NET:**

Architecture of ADO.NET – ADO.NET providers – Connection – Command – Data Adapter – Dataset.

**4.2. Accessing Data with ADO.NET:**

Connecting to Data Source, Accessing Data with Data set and Data Reader - Create an ADO.NET application - Using Stored Procedures-Data Grid, Grid view form view &Details view

**UNIT-V**

**5.1. INTRODUCTION**

Role Of XML - XML and The Web - XML Language Basics - SOAP - Web Services - Revolutions Of XML - Service Oriented Architecture (SOA).

**5.2. XML TECHNOLOGY**

XML - Name Spaces - Structuring With Schemas and DTD - Presentation Techniques - Transformation - XML Infrastructure.

**5.3. SOAP**

Overview Of SOAP - HTTP - XML-RPC - SOAP: Protocol - Message Structure - Intermediaries - Actors - Design Patterns And Faults - SOAP With Attachments.

**5.4. WEB SERVICES**

Overview - Architecture - Key Technologies - UDDI - WSDL - ebXML - SOAP And Web Services In E-Com - Overview Of .NET And J2EE.

**TEXT BOOK**

| Sl.No. | Title | Author | Publisher |
|---|---|---|---|
| 1. | Web Technologies | Achyut S Godbole and Atul Kahate | Tata McGraw-Hill Education |
| 2. | Programming In C# | Balagurusamy | McGrawHill Publications |
| 3. | Comdex.NET Programming Course Kit | VIKAS GUPTA | DreamTech |
| 4. | Applications of .NET Technology | ISRD Group | TMGH Education |

## 4E5211 - COMPUTER NETWORKS

| Course Code | Instruction | | Credits | Examination | | | |
|---|---|---|---|---|---|---|---|
| | Hours/ week | Hours/ Term | | Marks | | | Duration |
| | | | | Internal | External | Total | |
| **4E5211** | 5 | 75 | 5 | 25 | 75 | 100 | 3 Hours |

**OBJECTIVES:**

**The student should be made to:**

1. Understand the concept of computer networks, Internet and types of Transmission Media.
2. Be familiar with the components required to build different types of networks , OSI Model and TCP/IP model
3. Be exposed to the required functionality at each layer
4. Learn how the data is transferred between the computers over the network.
5. Fundamentals of Cryptography and network security

| UNITS - ALLOCATION OF HOURS AND MARKS | | | |
|---|---|---|---|
| **UNIT NO.** | **TOPICS** | **NO. OF HOURS** | **MARKS** |
| I | DATA COMMUNICATION | 12 | 20 |
| II | NETWORK MODELS | 16 | 20 |
| III | DATA COMMUNICATION TECHNIQUES AND DATA LINK CONTROL | 12 | 20 |
| IV | NETWORK LAYER & APPLICATION LAYER | 14 | 20 |
| V | CRYPTOGRAPHY & NETWORK SECURITY | 16 | 20 |
| | TEST & REVISION | 10 | |
| | TOTAL | 80 | 100 |

## 4E5211 - COMPUTER NETWORKS

**UNIT I**

**DATA COMMUNICATIONS (16 hours) [ Ferozan –CH 1 & CH 7] (12 hours)**

1.1 Data communication Components – Data representation: Text, Number, Images, Audio and Videos - Data flow: Simplex, Half and Full Duplex

1.2 Physical Structures: Types of Connections: Physical Topologies: Point to Point , Multipoint – Categories of Topologies : Bus, Star, Ring, Mesh –Network Models-Categories of Networks: LAN, WAN, MAN, CAN Interconnection of Networks: Internetwork - THE INTERNET : History , Internet Today-Protocols and Standards

1.3 Transmission Media – GUIDED MEDIA: Twisted-Pair Cable, Coaxial Cable, Fiber-Optic Cable - UNGUIDED MEDIA: WIRELESS : Radio Waves, Microwaves, Infrared. Network devices: Features and Concepts of Switches – Routers (Wired and Wireless) –Gateways.

**UNIT II**

**Network models [Forouzan – CH 2 , 8, 13] (16 hours)**

2.1 Network models: Layered tasks – OSI model – seven layers –layered architecture – Peer-to-peer processes– Interfaces between layers - Layers in OSI model – Layers and responsibilities : Physical layer – Data link layer –Network layer – Transport layer –Session layer – Presentation layer – Application layer

2.2 TCP/IP protocol suite: TCP/IP Vs OSI– Network layer protocols– Transport layer protocols– TCP, UDP . Addressing : Physical address– Logical address –Port address – specific addresses.

2.3 Ethernet – Types of Ethernet (Fast Ethernet, gigabit Ethernet) : Frame Format, Frame Length – FDDI: Frame format – Advantages and disadvantages of FDDI. Switching: Definition – Circuit switching – Packet switching – Message switching.

**UNIT III**

**Data Communication Techniques And Data Link Control [ Section 3.1 & 3.2 - William Stalling – CH 6 & 7] [Section 3.3 – Forouzan CH 12] (12 hours)**

3.1. Asynchronous and Synchronous Transmission - Types of Errors - -Error Detection: Parity Check, Cyclic Redundancy Check (Modulo 2 Arithmetic) - Error Correction: Block Code Principles.

3.2 Flow Control : Stop-and-Wait Flow Control, Sliding-Window Flow Control - Error Control: Stop-and-Wait ARQ, Go-Back-N ARQ , - High-Level Data Link Control (HDLC) : Basic Characteristics

3.3 Multiple Access – RANDOMACCESS – ALOHA, CSMA, CSMA/CD, CSMA/CA

**UNIT IV**

**Network Layer & Application Layer** [**Forouzan - CH 19, 21, 25 to 27**] **(14 hours)**

4.1 Logical Addressing -IPv4 addresses:Address space, Notation, classful addressing, classless addressing - Network address translation. - IPv6 : Structure, AddressSpace.

4.2 Address mapping: Logical to physical address ARP - Mapping Physical to logical address : BOOTP, RARP, DHCP (Basic treatment only).

4.3 Domain Name Space – DDNS – TELNET – EMAIL – File transfer WWW – HTTP – SNMP

**UNIT V – Cryptography & Network Security [Forouzan - CH 30 & 31] (16 hours)**

5.1 Cryptography Introduction: Definition – Two Categories : Symmetric· Key Cryptography, Asymmetric-Key Cryptography – Three Types of Keys: secret key, public key, and private key – Symmetric· Key Cryptography : Traditional Ciphers – Substitution Cipher – Transposition Ciphers.

5.2 Data Encryption Standard (DES) – Advanced Encryption Standard (AES)

5.1 Security Services - Message Confidentiality : Confidentiality with Symmetric-Key Cryptography, Confidentiality with Asymmetric-Key Cryptography - Message Integrity: Document and Fingerprint, Message and Message Digest, Creating and Checking the Digest.

*5.2 E-commerce – Electronic fund transfer, digital signature, OTP, Captcha , two way authentication, other related security measures*

**Course Outcomes:** At the end of the course the student will be able to:

| | |
|---|---|
| CO1 | To understand and identify the components required to build different types of networks. |
| CO2 | Be familiar with terminology and concepts of OSI, TCP/IP models and Addressing. |
| CO3 | To explain how a collision occurs and how to solve it. |
| CO4 | To determine proper usage of the IP address, subnet mask and default gateway in a routed network. |
| CO5 | Be familiar with Basic concept of Cryptography techniques and security. |

**TEXT BOOK**

| Sl.No. | Title | Author | Publisher |
|---|---|---|---|
| 1. | Data Communication and Networking , Fourth Edition | Behrouz A.Forouzan | Mc-GrawHill |
| 2. | Data and computer Communication , Eight Edition | William Stallings | Prentice Hall India |
| 3. | TCP/IP Protocol Suite, Fourth Edition | Behrouz A. Forouzan | Mc-GrawHill |

**Reference Books**

1. James F. Kurose and Keith W. Ross, "Computer Networking: A Top-Down Approach Featuring the Internet", Pearson Education, Fifth Edition, New Delhi 2009.

**1.** Andrew S. Tanenbaum, "Computer Networks", Fourth Edition. Prentice Hall, New Delhi, 2002.

## 4E5212 - RDBMS LABORATORY

| Course Code | Instruction | | Credits | Examination | | | |
|---|---|---|---|---|---|---|---|
| | Hours/ week | Hours/ Term | | Marks | | | Duration |
| | | | | Internal | External | Total | |
| 4E5212 | 4 | 60 | 2 | 25 | 75 | 100 | 3 Hours |

**OBJECTIVES:**

On completion subject, the students must be able to

- Define data , database , database Management systems and data base models.
- Compare file processing and database system.
- Study about architecture of DBMS.
- Understand the concept of Data warehousing , Big Data and client/Server Technology
- State CODD's Rules.
- Explain normalization and explain different types of Normal Forms.
- Create Normalized Database structure files .
- Perform all database DDL, DML, DCL, and all related commands.
- Write Logical and Conditional statement for Database Query.
- Write procedures and functions .
- Create and use Triggers.
- Understanding Data warehousing & Introduction to Big data and NoSQL

| SCHEME OF EVALUATION | |
|---|---|
| Aim | 10 |
| Procedure / Program | 50 |
| Execution | 20 |
| Result | 10 |
| Viva | 10 |
| Total | 100 |

### LAB EXERCISES

1) Install, configure and connect to MySQL server and MySQL workbench in Windows. Create a database, backup and restore the database.

2) Create a simple database for Social Networking Platform with the following entities.

a. users - table

id - auto increment, primary key field username - varchar (60)
email - varchar(255) address - varchar(150) dob - timestamp is_active - TINY INT
registered_on - timestamp last_logged_on - timestamp

b. friends - table_name

id - auto increment, primary key field user_id - unsigned INT, NOT NULL friend_name - varchar(60)

c. users_profiles

id - user_id location

Perform the following operations on above entities.

i) Create table with fields of appropriate datatypes.
ii) Verify the table created using DESCRIBE command
iii) Insert 10 users and some friendship data in friends table
iv) Add a 'gender' field of type CHAR(1). Allow NULL values for this field. v) Rename friends table to users_friends
vi) Modify the dob field type to date_of_birth. vii) Remove the field is_active
viii) Drop the table users_profiles

3) Perform the following operations on database created in Ex.no.2 using SELECT command.

i) Fetch the most recent 5 registered users. ii) Fetch all the friends of user_id user x
iii) Fetch all the users who are above 21 years old.
iv) Find the count of users who signed-up with gmail Id. (ie. users' email ends with @gmail.com)
v) Fetch all the users who registered last month.
vi) Fetch all users of 'Chennai' location .
vii) Find actively monthly and weekly users count. ie. Count of users who have logged-in in the last 15 days.
viii) Find how many users who have not mentioned their gender.

4) a) Create a database ' Polytechnic_College ' .Create 2 users namely 'Staff' and 'student'.

- Grant all privileges to the user 'Staff 'and grant only 'create' privilege to 'student' user and verify the same .
- Revoke all privileges to the 2 users and verify the same.

b) Implement the following transaction control statements i) Commit ii) Rollback iii) Save point

5) Create a table 'author' with the following structure author_id author_name address mobile book_title, pages published_on.

***real time example bank money transaction***

i) Insert 4 books published by 3 authors each. (12 records) ii) Fetch all the rows and observe how the data duplicated. iii) Apply 1st and 2nd normal forms to fix it.

6) Create table, "mail" with the following fields

```
t  DATETIME,  # when message was sent
srcuser VARCHAR(8), # sender (source user and host)
srchost VARCHAR(20),
dstuser VARCHAR(8), # recipient (destination user and host)
dsthost VARCHAR(20),
size BIGINT,  # message size in bytes
```

i) Sort the mail with the largest mail being first. ii) List the mails that is over 25 MB
iii) Remove the duplicate rows from result set.
iv)Execute a 'SELECT' query and store its result in a user defined variable. Use another ‘SELECT' to display the value of the variable.

7) Create two tables with the following structure.

a) Requests table
request_id - UNSIGNED, INT, AUTO INCREMENT, PRIMARY KEY
from_id - INT
to_id - INT

b) requests_log table

request_id - FOREIGN KEY refers to request_id field of requests table request_status - enum("PENDING", "APPROVED", "REJECTED")

Create a view combining both tables to display all the requests along with their most recent status for the requests.

8) Create a library Table with proper fields. Create another table called Library1 and insert rows from Library table.

Hint:
CREATE TABLE new_table LIKE original_table;
INSERT INTO new_table SELECT * FROM original_table;

9) Create a table to store the details of a customer in a Bank. Do some transactions like withdrawal, deposit. Find the Balance amount(Credit Limit).Based on customer’s credit limit, write a program using IF or CASE flow control statements to find the customer levels namely SILVER, GOLD or PLATINUM.

If the Credit limit is
- greater than 50K, then the customer level is PLATINUM
- less than 50K and greater than 10K, then the customer level is GOLD
- less than 10K, then the customer level is SILVER

10) Create two tables with the following structure.

a) users - table name

user_id - UNSIGNED, INT, AUTO INCREMENT, PRIMARY KEY
username - VARCHAR (60) password - VARCHAR (128) email - VARCHAR (255)

b) users_profiles

user_id - FOREIGN KEY refers to user_id field of user table first_name - VARCHAR(60)
last_name - VARCHAR(60)
mobile - VARCHAR(15)

i) SELECT all the users along with their profile details. (Hint: Use INNER JOIN)
ii) SELECT the users who do not have profiles (Hint: USE LEFT JOIN and exclude the rows generated with NULL values from joining table)

11) Create an employee database and create a stored procedure that accepts employee_Id as input and returns complete details of employee as output.

12) Create two tables with the following structure

Authors

author_id - INT
name VARCHAR (60)
titles_count INT -- holds the total number numbers of titles authored

Titles

author_id - INT
Name VARCHAR (512) -- name of the title

a. Create a trigger to update the titles count field of respective row in authors table each time a title gets inserted into titles table.

b. Create a log table with the following structure

author_id - INT
Name VARCHAR (512) -- name of the title
Status VARCHAR(25) --- ADDITION,DELETION,UPDATION

and insert an entry in that table each time the tile is added, deleted or updated. Use a trigger to accomplish this.

13) Create a table containing phone number, user name, address of the phone user. Write a function to search the address using phone number.

14) Create a table to store the salary details of the employees in a company. Declare the cursor id to contain employee number, employee name and net salary. Use cursor to update the employee.

15) Create a table 'stock' to contains the itemcode, itemname, current stock, date of last purchase. Write a stored procedure to seek for an item using itemcode and delete it, if the date of last purchase is before one year from the current date. If not, update the current stock.

**HARDWARE REQUIREMENT**

- Desktop Computers – 36 Nos
- Printer – 1 No

**SOFTWARE REQUIREMNT**

- Oracle 10 G

## 4E5306 - OPEN SOURCE SOFTWARE PRACTICAL

| Course Code | Instruction | | Credits | Examination | | | |
|---|---|---|---|---|---|---|---|
| | Hours/ week | Hours/ Term | | Marks | | | Duration |
| | | | | Internal | External | Total | |
| 4E5306 | 4 | 60 | 2 | 25 | 75 | 100 | 3 Hours |

**OBJECTIVES**

On completion of the following exercises, the students must be able to

- Write PHP script using various php concepts for developing simple web pages.
- Create data base and tables using MySql.
- Install WAMP Web server

| SCHEME OF EVALUATION | |
|---|---|
| Aim | 10 |
| Procedure / Program | 35 |
| Execution | 35 |
| Result | 10 |
| Viva | 10 |
| Total | 100 |

**LIST OF EXPERIMENTS:**

**LIST OF EXPERIMENTS:**

**PHP**

1. Write a program to create Student registration form
2. Write a program to perform EB bill calculation
3. Write a program to perform Student grade manipulation
4. Write a program To process array
5. Write a program to perform String operations in PHP
6. Write a program to create Book master form
7. Write a program to perform Form validation – Railway ticket reservation
8. Write a program to perform Date and time operations in PHP
9. Write a program to identify the web browser
10. Demonstrate the Database – Insert operation
11. Demonstrate the Database – Delete operation
12. Demonstrate the Database – Select operation
13. Demonstrate the Database - Update operation
14. Demonstrate the concept of PHP cookies
15. Demonstrate the concept of File uploading
16. Demonstrate the concept of Sending E-mails
17. Demonstrate the concept of Frameworks

**PYTHON**

18. Write the Programs using Conditional and looping statements
19. Demonstrate the File handling operation
20. Demonstrate the Exception handling

**HARDWARE REQUIREMENT**
Desktop Computers – 36 Nos, Printer – 1 No
**SOFTWARE REQUIREMNT**
Lamp server or wamp server.

**Course Outcome**

| Course outcome | Details |
|---|---|
| **CO 1** | Understand the programming of the php by implementing the concepts like form validation, conditional statements, array, string, date & time, session, mysql data manipulation |
| **CO 2** | Understand the concepts of record selection, date & time functions, string, group by functions in MYSQL |
| **CO 3** | Understand the concepts of the file, looping & conditional statements and exception handling in PYTHON |

## 4E5307- COMPONENT BASED TECHNOLOGY PRACTICAL

| Course code | Instructions | | | Examinations | | | |
|---|---|---|---|---|---|---|---|
| | Hours/week | Hours/ Term | Credits | Marks | | | Duration |
| 4E5307 | 4 | 64 | 2 | Internal | External | Total | 3 Hrs |
| | | | | 25 | 75 | 100 | |

**OBJECTIVES:**

On completion of the following exercises, the students must be able to

- To Create web pages using simple ASP.NET
- Obtain knowledge of C#.NET.
- Obtain Knowledge of Developing Database Applications using ADO.NET
- To Develop web applications using .NET

**Course Outcome:**

After learning the course the students should be able to:

| | |
|---|---|
| CO1 | Learn C#.NET |
| CO2 | To Develop Windows Application |
| CO3 | Acquire Knowledge of Design Web Application using ASP.NET. |
| CO4 | Create Web Applications with database using ADO.NET |
| CO5 | Learn XML and Its usage in Web applications |

| SCHEME OF EVALUATION | |
|---|---|
| Aim | 10 |
| Procedure / Program | 35 |
| Execution | 35 |
| Result | 10 |
| Viva | 10 |
| Total | 100 |

## 4E5307- COMPONENT BASED TECHNOLOGY PRACTICAL

**LIST OF EXPERIMENTS:**

1. Create a sample Webpage for Our Institution using HTML5&CSS3
2. Perform form validation using HTML5 & CSS3
3. Write a Program in C# to check whether the number is Palindrome or not.
4. Write a Program in C# for Stack Operations
5. Create Online feedback Form using ASP.NET controls
6. Develop an Application for calculating factorial of a given number using C# and ASP.NET controls.
7. Develop Calculator Application using C# and ASP.NET controls
8. Write a Program that gets and validates user input such as the user name, mode of payment, appropriate credit card using Validation Controls in ASP.NET
9. Create ASP.NET Web page that Helps the College Administrator to know the cost of maintaining college playground using C# & SQL Server.
10. Create ASP.NET Web page for Online Electronic Bill Payment System using C# and SQL Server.
11. Create Employee pay slip and Perform Edit, Insert, Delete Operations using Details view.
12. Create Student attendance Report and Perform Edit, Insert, Delete Operations using Grid view.
13. Create ASP.NET Web page for Student Mark Analysis System using C# and Oracle .
14. Create ASP.NET Web page for Ticket Reservation System using C# and Oracle
15. Create Online Registration form using ASP.NET and Ms-Access database.
16. Develop a Window application to read employee records from Database and generate XML document containing employee records
17. Develop a Window application to read students records from Database using ADO.NET and generate XML document containing students records
18. Create an any one application Using (ASP.NET, ADO.NET, C# )

    i)Hospital Management

    ii)Ticket Reservation

    iii)Library Management

    iv)ATM

v)Online Shopping

vi)Internal Mark Assessment

**HARDWARE REQUIREMENT**

 Desktop Computers – 36 Nos

 Printer – 1 No

**SOFTWARE REQUIREMNT**

 Visual Studio, Browsers(Internet Explorer version 8 & above, Mozila Firefox, Google Chrome)

# VI - TERM

# VI - TERM

## 4E6308 - COMPUTER HARDWARE AND SERVICING

| Course Code | Instruction | | Credits | Examination | | | |
|---|---|---|---|---|---|---|---|
| | Hours/ week | Hours/ Term | | Marks | | | Duration |
| | | | | Internal | External | Total | |
| 4E6308 | 6 | 90 | 6 | 25 | 75 | 100 | 3 Hours |

**Course Objective :**

The student will be able to:

1. To train students in the area of Assembling of Computer
2. Troubleshooting, Installation of Software and Peripherals.
3. To Train students in the Cellular phone servicing.

| UNITS - ALLOCATION OF HOURS AND MARKS | | | |
|---|---|---|---|
| UNIT NO. | TOPICS | NO. OF HOURS | MARKS |
| I | MOTHERBOARD COMPONENTS | 15 | 20 |
| II | MEMORY AND I/O DEVICES | 15 | 20 |
| III | DISPLAY, POWER SUPPLY and BIOS | 15 | 20 |
| IV | MAINTENANCE AND TROUBLESHOOTING OF DESKTOP & LAPTOP COMPUTERS | 17 | 20 |
| V | MOBILE PHONE SERVICING | 18 | 20 |
| | TEST & REVISION | 10 | |
| | TOTAL | 90 | 100 |

## 4E6308 - COMPUTER HARDWARE AND SERVICING

**UNIT – I**

**MOTHERBOARD COMPONENTS** **15 Hours**

1.1 Motherboard components: Processor sockets/slots – Memory sockets –Chipsets – Cache– BIOS – Clock generator – RTC – Super I/O Controller –Power connector – Battery –keyboard/Mouse Connectors – Jumpers – Ports and Headers – Pin Connectors - Motherboard Form factor - Hardware, Software and Firmware.

1.2 Mother Board: Architecture and block diagram

1.3 Processors: Introduction –Core2 Duo processor, Quad core processor, Core i3, i5, i7 series, AMD A10 series, Xeon Processor.- *New Generation processors*

1.4 Chipsets: Chipset basics - North / South Bridge architecture and Hub architecture.

1.5 Bus Standards: Overview and features of PCI,PCI Express, AGP, USB -Versions, & Processor Bus.

**UNIT – II**

**MEMORY AND I/O DEVICES** **15 Hours**

2.1 Primary and Secondary Memory: Introduction - Memory speed - Access time - Wait states. Main Memory – RAM-Versions, ROM - Memory errors. Cache – L1 & L2. Hard Disk: Introduction – Construction – Working Principle – File Systems – Formatting and Troubleshooting.

2.2 Removable Storage and Special Devices: DVD-ROM – Recordable DVD -Rewritable DVD. Blu-ray: Introduction - Blu-ray Disc Parameters - Recording and Playback Principles. Special drives: External drives, Memory stick, USB flash drive, Solid state drive.

2.3 Keyboard and Mouse: Keyboard: Interfacing and Signals (USB, Wireless), Types of keys, Keyboard Matrix, Key bouncing, Types of keyboard (Simple, Mechanical). Mouse: Optical mouse operation – Optical mouse cleaning – Troubleshooting flowchart for a mouse.

2.4 Printers and Scanners: Printer: Introduction – Types of printers – Dot Matrix, Inkjet, Laser, Thermal, MFP printer (Multi Function Printer) - Operation and Troubleshooting. Scanner: Introduction, Scanner mechanism, working principle – Types of Scanners (Barcode, Handheld, Flatbed) – Preventive maintenance and Troubleshooting.

**UNIT– III**

**DISPLAY, POWER SUPPLY and BIOS** **15 Hours**

3.1 Displays and Graphic Cards: Displays: LCD Principles – Plasma Displays –TFT Displays - LED Displays. Graphic Cards: Video capture card.

3.2 SMPS: Block diagram – Basic Principles and Operations – O/P Voltage –Cable color code – Connectors and Power Good – Common Failures (No circuit diagram to be discussed)

3.3 Bios: Bios functions – Cold and Warm booting – BIOS error codes – BIOS interrupts – BIOS advanced setup. Upgrading BIOS, Flash BIOS-setup. Identification of different BIOS (AMI, AWARD BIOS).
3.4 POST: Error, Beep Codes, Error messages, Post – Faults related to Hardware.

**UNIT – IV**
**MAINTENANCE AND TROUBLESHOOTING OF DESKTOP & LAPTOP COMPUTERS 17 Hours**

4.1 Laptop: Difference between laptop and desktop- Types of laptop – Block diagram – working principles–configuring laptops and power settings - SMD components, ESD and precautions
4.2 Laptop components: Adapter – Types, Battery –Types and basic problems, RAM– types, CPU – types, Laptop Mother Board - block diagram, Laptop Keyboard.
4.3 Installation and Troubleshooting: Formatting, Partitioning and Installation of OS – Trouble Shooting Laptop and Desktop computer problems.
4.4 Preventive Maintenance and Upgrading: Preventive Maintenance: Tools required – active and passive maintenance – Types of Diagnostics software –Preventive Maintenance Schedule. Upgrading of Systems: Motherboard, Memory, CPU, Graphics Card, BIOS up gradation and Updating of System & Application software

**UNIT – V**
**MOBILE PHONE SERVICING 18 Hours**

5.1 Mobile phone components: Basics of mobile communication, Components: battery-antenna-ear piece- microphone -speaker-buzzer-LCD- keyboard. Basic circuit board components – Names and functions of different ICs used in mobile phones.
5.2 Tools & Instruments used in mobile servicing: Mobile servicing kit --soldering and de-soldering components using different soldering tools - Use of multi-meter and battery booster.
5.3 Installation & Troubleshooting: Assembling and disassembling of different types of mobile phones – Installation of OS - Fault finding & troubleshootingJumper techniques and solutions.
5.4 Software: Flashing- Formatting- Unlocking -Use of secret codes Downloading- Routing.
5.5 Diagnostic Software and Viruses: Mobile Viruses – Precautions – Antivirus Software

**Course Outcome:**
After learning the course the students should be able to:

| | |
|---|---|
| CO1 | Identified the different components in computer and laptop. |
| CO2 | Assembled & Dissembled the computers installing the peripherals devices |
| CO3 | Maintenance & formatting the computers |
| CO4 | Install different software of computers and Protect the computer from virus |

| | |
|---|---|
| CO5 | Rectify the cellular phone problems |

**REFERENCES**


| Sl.No | Title | Author | Publication |
|---|---|---|---|
| 1. | Computer Installation and Servicing | D.Balasubramanian | TataMc-Graw Hill, New Delhi Second Edition 2010 |
| 2. | PC Repair and Maintenance | Joel Rosenthal | Fire wall Media, New Delhi, First Edition, 2007 |
| 3. | Modern Computer Hardware Course | Manahar Lotai, Pradeep Niar, Payal Lotia | BPB Publication, New Delhi, Edition 2011 |
| 4. | Troubleshooting, Maintaining and Repairing PCs | Stephen J.Bigelow | TMH, New Delhi, Fifth Edition |
| 5. | PC Hardware in a nutshell | Robert Bruce Thompson. | O'Reilly Media Third Indian Reprint 2008. |
| 6. | The Laptop Repair Workbook: An Introduction to Troubleshooting and Repairing Laptop Computers. | Morris Rosenthal | Foner books First Edition 2008 |
| 7. | The Cell Phone Handbook, | P.J. Stetz and Penelope Stetz | FindTech Ltd Second Edition |
| 8. | Advanced Mobile Repairing, | Pandit Sanjib | BPB Publication, New Delhi First Edition 2010 |

## 4E6309 - MOBILE COMPUTING

| Course Code | Instruction | | Credits | Examination | | | |
|---|---|---|---|---|---|---|---|
| | Hours/ week | Hours/ Term | | Marks | | | Duration |
| | | | | Internal | External | Total | |
| 4E6309 | 5 | 75 | 5 | 25 | 75 | 100 | 3 Hours |

**RATIONALE**

Wireless and mobile computing provides the detailed description of wireless cellular Industry and the industries that produce product that provide wireless extensions to wired IEEE 802.x data networks and wireless connectivity to the internet. It also includes GSM and CDMA cellular systems ,2G,3G cellular System and IEEE standards based wireless LANs . This course is illuminating the principles, commonalities, key differences and specific implementation issues associated with virtually every leading wireless system. Due to the developments of smart phones in mobile phone technology , it is necessary to introduce mobile application development for open source based mobile operating system like Android development by Google.

**OBJECTIVES**

On completion subject, the students must be able to

- Learn mobile Computing Principles and Architecture
- Understand GSM and GPRS Networks
- Understand Bluetooth , SMS,working principles and architecture
- Understand WiFi and WiMax working principles and architecture
- Understand Mobile Computing , Mobile application development environment
- Learn Android SDK and eclipse ,Learn application development for Android based smart phones

| UNITS - ALLOCATION OF HOURS AND MARKS | | | |
|---|---|---|---|
| UNIT NO. | TOPICS | NO. OF HOURS | MARKS |
| I | INTRODUCTION TO MOBILE COMPUTING | 15 | 20 |
| II | EMERGING TECHNOLOGIES | 15 | 20 |
| III | INTRODUCTION TO ANDROID PROGRAMMING | 10 | 20 |
| IV | VIEWS AND INTENTS | 15 | 20 |
| V | DATA PERSISTENCE AND ANDROID SERVICES | 15 | 20 |
| | TEST & REVISION | 10 | |
| | TOTAL | 80 | 100 |

## 4E6309 - MOBILE COMPUTING

**UNIT -I Introduction to Mobile Computing , WiFi , Bluetooth**

1.1 Introduction : Distributed computing

1.2 Evolution of Mobile Computing – Important terminologies – Mobile Computing functions – Mobile computing Devices – Networks: Wired , Wireless , Adhoc - Comparison of wired and wireless mechanism - Various types of wireless communication technologies used in Mobiles, Antennas

1.3 Architecture : Architecture of Mobile Computing – 3- Tier Architecture – Presentation( Tier-1), Application ( Tier -2), Data ( Tier – 3)

1.4 Mobile computing through Telephony: Evolution through telephony

1.5 Wireless LAN: Introduction - Applications of WLAN – Infrared versus Radio transmission – Features of WI-FI and WI-MAX – Bluetooth : Introduction and application

**UNIT-II Introduction to GSM , SMS ,GPRS , Mobile OS**

2.1 Global System for Mobile Communication ( GSM): Introduction – GSM Architecture – GSM Entities ( Basics only) – Introduction to CDMA

2.2 Global System for Mobile Communication ( GSM): Introduction – GSM Architecture – GSM Entities ( Basics only) – Introduction to CDMA

2.3 General Packet Radio Service (GPRS): Introduction – GPRS Packet data Network : Applications for GPRS : Generic Applications, GPRS Specific Applications – Limitations of GPRS – Features of 3G and 4G Data Service

2.4 Mobile Operating Systems : Evaluation of Mobile Operating System-Handset Manufactures and their Mobile OS- Mobile OS and their features. Linux Kernel based Mobile OS

**UNIT-III Introduction to ANDROID**

3.1 ANDROID : Android Versions – Features of Android – Architecture of Android – Android Market – Android Runtime (Dalvik Virtual Machine)

3.2 ANDROID SDK & ADT : Android SDK – Android Development Tool (ADT) – Installing and configuring Android – Android Virtual Device (AVD)

3.3 ACTIVITIES & INTENTS : Understanding Activites – Linking activites and indents – Calling built-in applications using intents – Fragments Displaying Notifications

3.4 User Interface : Views and Viewgroups – Layouts – Display Orientation – Action Bar – Listening for UI Notifications

**UNIT-IV VIEWs**

4.1 Basic Views : Textview, Button, Image Button, EditText, CheckBox, ToggleButton, RadioButton and RadioGroup Views, ProgressBar View, Auto Complete Text View

4.2 Advanced Views : Time Picker View and Date Picker View – List Views – Image View – Menus – Analog and Digital View – Dialog Boxes

4.3 Displaying Pictures & Menus with Views: Image View – Gallery View – ImageSwitcher – GridView - Creating the Helper Methods – Options Menu – Context Menu

4.4 SMS, Phone: Sending SMS – Receiving SMS – Making phone call

**UNIT V Location Based Service and SQLite**

5.1 Location Based Services : Obtaining the Maps API Key- Displaying the Map – Zoom Control – Navigating to a specific location – Adding Marker – Geo Coding and reverse Geo coding

5.2 Content Provider : Sharing data – view contacts – Add contacts – Modify contacts – Delete Contacts

5.3 Storage : Store and Retire data's in Internal and External Storage – SQLite - Creating and using databases

5.4 Android Service : Consuming Web service using HTTP , downloading binary Data – Downloading Text Content – Accessing Web Service

**TEXT BOOK**

| Sl.No. | Title | Author | Publiher |
|---|---|---|---|
| 1. | Beginning Android 4 Application Development | Wei-Meng Lee | Wiley India Edition |
| 2. | Android Apps for Absolute Beginners | Jackson | Apress |
| 3 | Mobile Computing | Computing Asoke K Talukder, Hasan Ahmed, Roopa R Yavagal | TMGH |
| 4 | Mobile communications | Jochen schiller | Pearson Education, |

## 4E6213-SOFTWARE ENGINEERING

| Subject | Instructions | | Examination | | | Duration |
|---|---|---|---|---|---|---|
| | Hours / Week | Hours / Semester | Internal Assessment | Board Examination | Total | |
| 4E6213 | 5 | 75 | 25 | 75 | 100 | 3 Hrs |

### TOPICS AND ALLOCATION OF HOURS

| Unit No | Topic | No of |
|---|---|---|
| I | INTRODUCTION TO SOFTWARE ENGINEERING | **10** |
| II | SOFTWARE DESIGN AND PLANNING | **10** |
| III | SOFTWARE MAINTENANCE AND RISK MANAGEMENT | **10** |
| IV | SOFTWARE TESTING | **10** |
| V | SOFTWARE RELIABILTY AND QUALITY ASSURANCE | **10** |
| TEST AND REVISION | | **10** |
| TOTAL | | 60 |

### RATIONALE

Software Engineering deals with reliability and quality assurance of the software under development. It provides framework for development of quality software product. The course enables the students to write specifications for software system understand the importance of good software, design and develop test plans from design specifications. The course also covers other important aspects of software Engineering such as software lifecycle, requirement analysis and documentation, characteristics of good design, design techniques, testing, software implementation and maintenance etc.

### OBJECTIVES

On completion subject, the students must be able to

- Define Software Engineering.
- Understand the characteristics of Software Engineering.

- Explain different software development models.
- Learn about the phases of software development cycle.
- Understand the significance of requirement analysis.
- Know various tools and techniques used for requirement analysis.
- Understand architectural and modular design.
- Understand the different types of project metrics.
- Understand different software estimation techniques.
- Describe CASE.
- Explain about software maintenance.
- Need for software maintenance.
- Identify and mange risks.
- Know the different scheduling methods.
- Define the basic terms used in testing terminology.
- Describe black box and white box testing.
- Describe testing tools.
- Understand the concepts of Software quality and quality assurance.
- Know the concepts of software reliability and software quality standards.
- Define software re-engineering.
- Differentiate forward engineering from re-engineering.

## 4E6213-SOFTWARE ENGINEERING

### UNIT I

1.1 **Basics of Software Engineering** : Need for Software Engineering – Definition – Software Characteristics – Software Myths – Program versus Software Products

1.2. **Software Development Life Cycle Models**: Introduction –- Waterfall Model – Prototyping model – Spiral Model – Iterative Enhancement model - RAD model – Object Oriented Model - Advantages and Disadvantages of above models – Comparison of various models.

1.3 **Software Requirement Analysis ( SRS)** : Value of good SRS – Requirement Process – Requirement Specification – Desirable characteristics of an SRS – Components of an SRS – Structures of a requirements documents - Problems in SRS – Requirements gathering.

1.4. **Project scheduling** : Introduction – Factors affecting the task set for the project – scheduling methods – Work breakdown structure – Flow graph – Gant chart - PERT

### UNIT II

2.1.**Software Design** : Definition of software design – Objectives of software design – Process of software design – Architectural design – Modular design – Structure chart – Coupling and Cohesion – Different types – Interface design – Design of Human Computer Interface

2.2. **CODING:** Information Hiding –Programmingstyle –Internal documentation – Monitoring and Control for coding – Structured.

2.3. **Software Planning**: Software metrics - Definition – Types of metrics – Product and Project metrics – Function point and feature point metrics – Software project estimation – Steps for estimation – Reason for poor and inaccurate estimation – Project estimation guidelines – Models for estimation – COCOMO Model – Automated tools for estimation.

2.4. **CASE** : CASE and its scope – Architecture of CASE environment – Building blocks for CASE – CASE support in software Life cycle – Objectives of CASE – Characteristics of CASE tools – List of CASE tools – Categories, advantages and advantages of CASE tools.

### UNIT III

3.1. **Software Testing** : Introduction to testing – Testing principles – Testing objectives – Test Oracles - Basic terms used in testing – Fault – Error – Failure - Test cases – Black box and white box testing – Advantages and disadvantages of above testing – Methods for Block box testing strategies – Methods for white box testing strategies – Testing activities – Test plan.

3.2. **Levels of testing**: Unit testing - Integration tests – System testing – Types.

3.3. **Software Testing strategies**: Static testing strategies – Formal technical reviews – Code walkthrough – Code inspection - Debugging – Definition – Characteristics of bugs – Life cycle of a Debugging task – Debugging approaches.

3.4 **Software Testing Tools**: Need for tools – Classification of tools – Functional/Regression Testing tools – Performance/Load Testing Tools – Testing process management Tools – Benefits of tools – Risk Associated with tools – Selecting tools – Introducing the tool in the testing process - Different categories of tools – Examples for commercial software testing tool.

3.5 **Code of Ethics for Software Professionals**: Human Ethics – Professional Ethics – Ethical issues in Software Engineering – Code of Ethics and professional Practice: Software Engineering code of ethics and professional Practice – Ethical issues: Right versus Wrong

**UNIT IV**

4.1. **Software Quality Assurance** : Verification and validation – SQA - Objectives and Goals – SQA plan - Definition of software quality – Classification of software qualities - Software quality attributes – Important qualities of software products - Importance of software quality – SEI – CMM - Five levels -

4.2. **ISO 9000** – Need for ISO Certification – Benefits of ISO 9000 certification – Limitation of ISO 9000 certification – Uses of ISO - Salient features of ISO 9000 Requirements – Introduction to ISO 9126

4.3 **Software Reliability** : Definition – Reliability terminologies – Classification of failures – Reliability metrics – Reliability growth modeling - Reliability measurement process

**Unit V**

5.1**. Software Maintenance**: Software as an evolution entity – Software configuration management activities – Change control process – Software version control – Software configuration management – Need for maintenance– Categories of maintenance – Maintenance cost – Factors affecting the effort

5.2: **Risk management** : Definition of risk – Basics for different types of software risks – Monitoring of risks – Risk management – Risk avoidance – Risk detection – Risk control – Risk recovery – Sources of risks – Types of risks

5.3. **Reverse Software Engineering**: Definition – Purpose - Reverse engineering Process – Reverse engineering tasks – Characteristics and application areas of reverse

engineering – Software re-engineering – Principle – Re- engineering process – Difference between forward engineering and re-engineering.

**REFERENCES**

| S. No | TITLE | AUTHOR | PUBLISHER | Year of Publishing / Edition |
|---|---|---|---|---|
| 1. | Software Engineering | Ian Sommerville | Pearson Education | Sixth Edition |
| 2. | Fundamentals of Software Engineering | Rajib Mall | PHI Learning Pvt Limited, New Delhi | 28th Printing – August 2011 |
| 3. | Software Engineering | Bharat Bhusan Agarwal, Sumit Prakash Tayal | Firewall Media, New Delhi | Second Edition 2008 |
| 4. | Software Testing | K.Mustafa and R.A.Khan | Narosa Publishing House, New Delhi | Reprint 2009 |
| 5. | Software Quality | R.A. Khan, K.Mustafa and SI | Narosa Publishing House, New Delhi | Reprint 2008 |
| 8. | Software Engineering | Stephen Schach | TMGH Education Pv Ltd, New Delhi | Eight Reprint 2011 |
| 7. | Software Engineering fundamentals | Ali Behforooz and Fredick J Hudson | Oxford University press, | 2005 |
| 8. | Software Testing Principles and Practices | Srnivasan desikan, Gopalswamy Ramesh | Pearson | First Edition |
| 9. | Suftware Testing Concepts and Tools | Nageshwara Rao Pusulri | DreamTeach | First Edition |
| 10. | Software Engineering Concepts and application | Subhasjit Dattun | OXFORD University Press | 2010 |
| 11. | Software Engineering | Rohit Khurana | Vikas Publishing | Second Edition |

**COURSE OUTCOMES:**

At the end of the course, the student should be able to

| | |
|---|---|
| CO1 | Identify the key activities in managing a software project. |
| CO2 | Compare different process models. |
| CO3 | Concepts of requirements engineering and Analysis Modeling. |
| CO4 | Apply systematic procedure for software design and deployment. |
| CO5 | Compare and contrast the various testing and maintenance. |

## 4E6310.1 - CLOUD COMPUTING

| Course Code | Instruction | | Credits | Examination | | | |
|---|---|---|---|---|---|---|---|
| | Hours/ week | Hours/ Term | | Marks | | | Duration |
| | | | | Internal | External | Total | |
| 4E6310.1 | 6 | 90 | 6 | 25 | 75 | 100 | 3 Hours |

**Course Objective :**

The student will be able to:

1. To understand the principles and paradigm of Cloud Computing
2. To understand the Service Model with reference to Cloud Computing
3. To appreciate the role of Virtualization Technologies
4. Ability to design and deploy Cloud Infrastructure
5. Understand cloud security issues and solutions

| UNITS - ALLOCATION OF HOURS AND MARKS | | | |
|---|---|---|---|
| UNIT NO | TOPICS | NO. OF HOURS | MARKS |
| I | CLOUD COMPUTING BASICS | 16 | 20 |
| II | CLOUD COMPUTING ARCHITECTURE & SERVICES | 16 | 20 |
| III | VIRTUALIZATION | 16 | 20 |
| IV | COLLABORATING WITH CLOUD | 16 | 20 |
| V | SECURITY IN THE CLOUD | 16 | 20 |
| | TEST & REVISION | 10 | |
| | TOTAL | 90 | 100 |

## 4E6310.1 - CLOUD COMPUTING

**UNIT I CLOUD COMPUTING BASICS [Book 1] (16 hours)**

1.1 Cloud computing overview – Origins of Cloud computing – Cloud components - Essential characteristics – on-demand self-service , Broad network access , Location independent resource pooling , Rapid elasticity , measured service
1.2 Architectural influences – High-performance computing , utility and enterprise grid computing , Autonomic computing , Service consolidation , Horizontal scaling Web services ,High scalability architecture.
1.3 Cloud scenarios **[ Book 2]** – Benefits - scalability , simplicity , vendors ,security. Limitations – Sensitive information , Application development – Security concerns - privacy concern with a third party , security level of third party , security benefits. Regularity issues – Government policies

**UNIT II CLOUD COMPUTING ARCHITECTURE & SERVICES [ Book 1] (16 hours)**

2.1 Cloud architecture: Cloud delivery model – SPI framework , SPI evolution , SPI vs. traditional IT Model.
2.2 Software as a Service (SaaS): SaaS service providers – Web Services – Web 2.0 – Web Operating system -Google App Engine, Salesforce.com and google platfrom – benefits – Operational benefits, Economic benefits – Evaluating SaaS
2.3 Platform as a Service ( PaaS ): Cloud Plat form & Management – Computation & Storage - PaaS service providers – Right Scale – Salesforce.com – Rackspace – Force.com – services and benefits.
2.4 Infrastructure as a Service ( IaaS): IaaS service providers –Amazon EC2 , GoGrid – Microsoft soft implementation and support – Amazon EC service level agreement – recent developments – benefits.
2.5 Cloud deployment model : Public clouds – private clouds – community clouds - hybrid clouds - Advantages of Cloud computing.

**UNIT III VIRTUALIZATION [Book 2 & 4] (16 hours)**

3.1 Virtualization : Virtualization and cloud computing - Need of virtualization – cost , administration , fast deployment , reduce infrastructure cost – limitations
3.2 Types of hardware virtualization: Full virtualization , partial virtualization, para Virtualization.
3.3 Desktop virtualization – Software virtualization – Memory virtualization – storage virtualization – data virtualization – network virtualization.
3.4 Microsoft Implementation – Microsoft Hyper V – VMware features and infrastructure – Virtual Box - Thin client

**UNIT IV COLLABORATING WITH CLOUD [Book 5] (16 hours)**

4.1 Collaborating on Calendars, Schedules and Task Management – Collaborating on Event Management, Contact Management, and Project Management.

4.2. Collaborating on Word Processing ,Databases Storing and Sharing Files- Collaborating via Web-Based Communication Tools – Evaluating Web Mail Services

1.3.Collaborating via Social Networks – Collaborating via Blogs and Wikis. - *Cloud federation.*

**UNIT V SECURITY IN THE CLOUD (16 hours)**

5.1 Understanding Cloud Security - Securing the Cloud - Security service boundary: CSA Cloud Reference Model - Securing Data – Brokered cloud storage access - Storage location and tenancy – Encryption [Book 3]

5.2 Cloud Computing Security Challenges - Security Policy Implementation - Policy Types - Virtualization Security Management - Virtual Threats [Book 1]

**Course Outcome:**

After learning the course the students should be able to:

| | |
|---|---|
| CO1 | Compare the strengths and limitations of cloud computing |
| CO2 | Identify the architecture, infrastructure and delivery models of cloud computing |
| CO3 | Apply suitable virtualization concept. |
| CO4 | Address the core issues of cloud computing such as security, privacy and interoperability |
| CO5 | Design Cloud Services and Set a private cloud |

**TEXT BOOK**

| Sl.No. | Title | Author | Publisher |
|---|---|---|---|
| 1 | Cloud Security -A Comprehensive Guide to Secure Cloud Computing | Ronald L. Krutz,Russell Dean Vines | Wiley Publishing, Inc |
| 2 | Cloud Computing: A Practical Approach | Anthony T. Velte,Toby J. Velte, R. Elsenpeter | McGraw-Hill Companies |
| 3. | Cloud Computing Bible | Barrie Sosinsky | Wiley Publishing, Inc |
| 4 | Mastering Cloud Computing Foundations and Applications Programming | Rajkumar buyya,Christian Vecchiola, S. ThamaraiSelvi | Morgan Kaufmann is an imprint of Elsevier |
| 5 | Cloud Computing: Web Based Applications that Change the Way You Work and Collaborate Online, | Miller Michael | Pearson Education India. |

## 4E6310.2- ENTERPRISE PROGRAMMING WITH JAVA

| Course Code | Instruction | | Credits | Examination | | | |
|---|---|---|---|---|---|---|---|
| | Hours/ week | Hours/ Term | | Marks | | | Duration |
| | | | | Internal | External | Total | |
| 4E6310.2 | 5 | 75 | 5 | 25 | 75 | 100 | 3 Hours |

**Course Objectives:**

- Create network based applications.
- Create business applications.
- Implement Server side programming.
- Develop dynamic software components and database application.
- Design and develop powerful GUI based components.
- Create Animation using Applet, Thread and AWT controls.

| UNITS - ALLOCATION OF HOURS AND MARKS | | | |
|---|---|---|---|
| **UNIT NO.** | **TOPICS** | **NO. OF HOURS** | **MARKS** |
| I | Networking | 12 | 20 |
| II | Database application development | 10 | 20 |
| III | Swings | 10 | 20 |
| IV | Servlets | 10 | 20 |
| V | Java beans and RMI | 10 | 20 |
| | TEST & REVISION | 12 | |
| | TOTAL | 64 | 100 |

## 4E6310.2- ENTERPRISE PROGRAMMING WITH JAVA

**UNIT I NETWORKING**

1.1 **Networking Basics** : Networking Classes & Interfaces - InetAddress – factory methods

1.2 **TCP/IP Client sockets** – URL – URLConnection – HttpURLConnection – URI

1.3 **TCP/IP Server sockets**: Socket overview

1.4 **Datagrams** – DatagramSocket – Datagrampacket

**UNIT II DATABASE APPLICATION DEVELOPMENT**

**2.1 JDBC:** Java Data Base Client/ Server - Java as a Database front end . Database client/server methodology Two-Tier Database Design Three-Tier Database Design

**2.2** The JDBC API – Connection, DatabaseMetaData, PreparedStatement, ResultSet, ResultSetMetaData, Statement The API Components.

**2.3 Limitations Using JDBC**(Applications vs. Applets), Security Considerations,

**2.4** A JDBC Database Example JDBC Drivers ,JDBC-ODBC Bridge Current JDBC Drivers

**UNIT III Swing**

**3.1 Swing :** origin of Swing – Key features- MVC Connection

**3.2 Components & Containers:** Top level containers Japplet, Icons and Labels ,Text Fields, Buttons Combo Boxes, , Scroll Panes.- Event handling.

**3.3** Exploring Swing: JTrees, JTables, JTabbedPanes, JScrollPane

**UNIT IV SERVLETS**

4.1 Servlets Background, The Life Cycle Of a Servlet - Java Servlet Development Kit JSDK - The Simple Servlet - Using Tomcat for Servlet development,

4.2 Servlet API - javax Servlet Package - Reading Servlet Parameters - Reading Initialization Parameters. javax. Servlet. http package, Handling HTTP Requests and responses

4.3 Using Cookies, Session Tracking, Security Issues

**UNIT V Java Beans & RMI**

**5.1 Java Beans: W**hat is a java Bean? – Advantages of java Bean – Introspection – Bound and constrained properties – persistence – customizers – Java beans API – Example

**5.2 RMI**

**Textbook:**

| Sl.No. | Title | Author | Publisher |
|---|---|---|---|
| 1 | Java – The complete reference<br>9th Edition | Herbert Schildt | McGraw Hill |

| | | | |
|---|---|---|---|
| 2 | Programming with Java – A Primer 4th edition | E Balagurusamy | Tata McGraw Hill |

## 4E6311 - COMPUTER SERVICING AND NETWORK PRACTICAL

| Course Code | Instruction | | Credits | Examination | | | |
|---|---|---|---|---|---|---|---|
| | Hours/ week | Hours/ Term | | Marks | | | Duration |
| | | | | Internal | External | Total | |
| 4E6311 | 4 | 60 | 2 | 25 | 75 | 100 | 3 Hours |

**Course Objective :**

The student will be able to:

1. To study the various components and Assemble and disassemble of Computer/Laptop
2. Hands on training in Troubleshooting, Installation of Software and Peripherals.
3. Hands on Training in the Cellular phone servicing.
4. To form a networking in a campus.

| SCHEME OF EVALUATION | |
|---|---|
| Procedure – One Question from PART - A | 20 |
| Procedure – One Question from PART - B | 20 |
| Executing Exercise (PART – A) | 15 |
| Executing Exercise (PART – B) | 15 |
| Result (PART – A) | 10 |
| Result (PART – B) | 10 |
| VIVA - VOCE | 10 |
| TOTAL | 100 |

### LAB EXERCISES

### PART A - COMPUTER SERVICING AND NETWORK PRACTICALS

**I. Computer Servicing**

**1. Identification of system layout (Study Exercise)**

a) Front panel indicators & switches and front side & rear side connectors.

b) Familiarize the computer system Layout: Marking positions of SMPS, Motherboard, HDD, DVD and add on cards.

c) Configure bios setup program and troubleshoot the typical problems using BIOS utility.

**2. HARD DISK**

a) Install Hard Disk.

b) Configure CMOS-Setup.

c) Partition and Format Hard Disk.

d) Identify Master /Slave / IDE Devices.

e) Practice with scan disk, disk cleanup, disk De-fragmentation, Virus Detecting and Rectifying Software.

**3**. DVD & Blu-Ray Disc

a) Install and Configure a DVD Writer & Blu-ray Disc Writer.

b) Recording a Blank DVD & Blu-ray Disc.

4. Printer Installation and Servicing

a) Install and configure Dot matrix printer and Laser printer.

b) Troubleshoot the above printers

5. To study the voltage level of SMPS.

6. Laptop disassembling and assembling – and identifying the components and ports

7. Trouble shooting the system and laptop using error code and diagnostic board [to be added]

8. Assemble a system with add on cards and check the working condition of the system and install Dual OS with application software and antivirus.

**II. Cellular Servicing**

**9. Identification of mobile phone components (Study Exercise)**

a) Basic mobile phone components.

b) Familiarizing the basic circuit board components: Marking position of different IC and Switches in the Network and Power sections of the PCB.

**10 .Assembling and Disassembling of Mobile Phones**

a) Assembling and Disassembling of Mobile Phones.

b) Fault finding and troubleshooting of Ear piece, Microphone, Keypad and Display Sections of Mobile Phones.

**11. Flashing, Unlocking and Formatting memory cards in Mobile phones.**

**III. Networking**

**12. Do the following cabling works in a network**

a) Cable Crimpling b) Standard Cabling c) Cross Cabling d) I/O Connector Crimping

e) Testing the Crimped cable using a Cable tester

**13. IP Addressing & Tracing**

a) Configure Host IP, Subnet Mask and Default Gateway in a system in LAN (TCP/IP Configuration).

b) Configure Internet connection and use IPCONFIG, PING / Tracert and Netstat utilities to Debug the Network issues.

**15. Network Devices**

a) Install and configure Network Devices: HUB, Switch and Routers

b) Install and Configure Wired and Wireless NIC and transfer files between systems

c) *Firewall Basic configuration*

d) Transfer files between systems in LAN using FTP Configuration. Install a printer in LAN and share it in the network.

**PART B – SYSTEM ADMINISTRATION PRACTICAL**

16. Installation of Windows 2008 / 2013 Server.
17. Installation and configuration of DHCP Server.
18. Installation and configuration of Mail Server.
19. a) Installation of Red Hat Linux using Graphical mode.
    b) Installation of Red Hat Linux using VMware.
20. a) Configuring and troubleshooting of /etc/grub.conf
    b) Configuring and trouble shooting of /etc/passwd

Note:

The students must and should install software's. After the demonstration, the same is uninstalled. Each batch has to learn to install and use the tools.

**REQUIREMENTS**

**Hardware Requirements :**

| | |
|---|---|
| Desktop Systems | 30 Nos |
| Hard disk drive | 06 Nos |
| DVD, Blu-ray Drive | 06 Nos |
| Blank DVD , Blu-ray Disc | 20 Nos |
| Head cleaning CD | 02 Nos |
| Dot matrix Printer | 02 Nos |
| Laser Printer | 02 Nos |
| Server | 01 No |
| Mobile phones | 06 Nos |

**Network Requirements:**

| | |
|---|---|
| Crimping Tool | 06 Nos |
| Screwdriver set | 06 Nos |
| Network Cables | |
| Modem | 02 Nos |
| Hub | 01 No |

| | |
|---|---|
| Router | 01 No |
| Switch | 02 Nos |

**Software Requirements:**

Windows OS
Windows Server 2008 / 2013 and LINUX.
Antivirus software.
DVD and Blu-ray Burning S/W.
Mobile Phone Flashing S/W

**Course Outcome:**

After learning the course the students should be able to:

| | |
|---|---|
| CO1 | Familiarize the layout of SMPS, various types of motherboard and Disk Drives. |
| CO2 | Printer Installation and Troubleshooting |
| CO3 | Assemble PC system/Laptop, configure the BIOS setups, checking the working condition and Installation of Dual OS in a system. |
| CO4 | Assemble and disassemble of cellular phone. |
| CO5 | Compare performance of various types networks, Configure Internet connection and use utilities to debug the network issue. |

## 4E6312 - MOBILE COMPUTING LABORATORY

| Course code | Instructions | | | Examinations | | | |
|---|---|---|---|---|---|---|---|
| 4E6312 | Hours/week | Hours/ Term | Credits | Marks | | | Duration |
| | | | | Internal | External | Total | |
| | 4 | 60 | 2 | 25 | 75 | 100 | 3 Hrs |

**OBJECTIVE:**

The Mobile Computing Lab studies design principles and evaluation methodologies for understanding and building systems support mechanisms for mobile computing systems including mobile ad hoc and sensor networks for achieveing the goal of anytime, anywhere computing in wireless mobile environments. The primary research focuses of the Mobile Computing Lab are in mobility management, data and service management, security and dependability aspects in mobile computing environments.

| SCHEME OF EVALUATION | |
|---|---|
| Aim | 10 |
| Procedure / Program | 35 |
| Execution | 35 |
| Result | 10 |
| Viva | 10 |
| Total | 100 |

**LIST OF EXPERIMENTS:**

1. Write a program to demonstrate activity (Application Life Cycle)
2. Write a program to demonstrate different types of layouts
3. Write a program to implement simple calculator using text view, edit view, option button and button

4. Write a program to demonstrate auto complete text
5. Write a program to demonstrate list view
6. Write a program to demonstrate alert dialog box
7. Write a program to demonstrate photo gallery
8. Write a program to demonstrate Date picker and time picker
9. Develop an simple application with context menu and option menu
10. Develop an application for fixed dialing and call phone dialer to make a call
11. Develop an application to send SMS
12. Write a program to view, edit contact
13. Write a program to send e-mail
14. Write a program to demonstrate a service
15. Write a program to demonstrate web view to display web site
16. Write a program to display map of given location/position using map view
17. Write a program to demonstrate the application of intent class
18. Write a program to create a text file in a internal memory
19. Write a program to create a text file in a external memory

**HARDWARE REQUIREMENT**

- Desktop Computers – 36 Nos
- Printer – 1 No

**SOFTWARE REQUIREMNT**

1.Net beans/Eclipse / Android Studio
2.Android SDK
3.Android ATD
4.JDK 6.0 or above

## 4E6402 - PROJECT WORK and ENTREPRENEURSHIP MANAGEMENT

### TEACHING AND SCHEME OF EXAMINATION

| Course code | Instructions | | | Examinations | | | |
|---|---|---|---|---|---|---|---|
| | Hours/week | Hours/ Term | Credits | Marks | | | Duration |
| | | | | Internal | External | Total | |
| 4E6402 | 4 | 60 | 2 | 25 | 75 | 100 | 3 Hrs |

**RATIONALE:**

Project Work aims at developing innovative skills in the students whereby they apply the knowledge and skills gained through the course by undertaking a project. The individual students have different aptitudes and strengths. Project work, therefore, should match the strengths of students.The primary emphasis of the project work is to understand and gain the knowledge of the principles of software engineering practices, so as to participate and manage a large software engineering projects in future.

**OBJECTIVES:**

- Implement the theoretical and practical knowledge gained through the curriculum into an application suitable for a real practical working environment preferably in an industrial environment
- Develop software packages or applications to implement the actual needs of the community.
- Get exposure on industrial environment and its work ethics.
- Understand what is entrepreneurship and how to become an entrepreneur.
- Learn and understand the gap between the technological knowledge acquired through curriculum and the actual industrial need and to compensate it by acquiring additional knowledge as required.
- Carry out cooperative learning through synchronous guided discussions within the class in key dates, asynchronous document sharing and discussions, as well as to prepare collaborative edition of the final project report.
- Expose students to the field of computing and to gain experience in software design.

| SCHEME OF EVALUATION | |
|---|---|
| Written Test | 30 |
| Project Demo | 40 |
| Project Report | 20 |

| | |
|---|---|
| Viva | 10 |
| Total | 100 |

**SUGGESTIVE AREAS OF PROJECT WORK:**

- Database Management Systems
- Computer Networks
- Software Engineering and Software Development
- Web page Designing with responsive
- Digital Image Processing
- Computer Graphics and Animation
- Multimedia Systems
- Artificial Intelligence
- Internet and e-commerce
- Computer Security and Cryptography
- Mobile Application using Android Programming
- Web Application using PHP programming
- Cloud Computing based project
- Datamining based project – opining mining, social network analysis
- Improving existing systems / equipments.

**ENTERPRENEURSHIP**

| UNITS - ALLOCATION OF HOURS AND MARKS | | | |
|---|---|---|---|
| **UNIT NO.** | **TOPICS** | **NO. OF HOURS** | **MARKS** |
| I | BASICS OF ENTERPRENEURSHIP AND SMALL BUSINESS ENTERPRISE | 10 | 20 |
| II | ENTERPRISE AND ENTREPRENEURSHIP DEVELOPMENT | 10 | 20 |
| III | INSTITUTION SUPPORTING ENTERPRISES | 10 | 20 |
| IV | ESTABLISHING SMALL BUSINESS ENTERPRISE | 12 | 20 |
| V | FINANCIAL AND HUMAN RESOURCES MANAGEMENT | 12 | 20 |
| | TEST & REVISION | 10 | |
| | TOTAL | 64 | 100 |

## DETAILED SYLLABUS

### Unit I BASICS OF ENTERPRENEURSHIP AND SMALL BUSINESS ENTERPRISE

Specific Objectives:

Students will be able to,

- Learn Entrepreneurship.
- State the need of Entrepreneurship development.

**Contents:**

• Concept of Enterprise, Small Business Enterprise, Entrepreneurship, Entrepreneurship Development.

- MSME

• Need of Entrepreneurship Development-

Growth of small scale industries and its role in economic development, Govt. Policy in development of SSI, recent industrial policy

### Unit IIENTERPRISE AND ENTREPRENEURSHIP DEVELOPMENT

Specific Objectives:

Students will be able to,

- State the need of Entrepreneurship development.
- Classify enterprises
- Prepare Profile of successful entrepreneur

**Contents:**

• Characteristics of entrepreneur, classification of entrepreneurs based on functional characteristics

• Integrated model of Entrepreneurial development and Profile of successful entrepreneurs.

### Unit III INSTITUTION SUPPORTING ENTERPRISES

Specific Objectives:

Students will be able to,

- Outline role of various agencies supporting Entrepreneurship development.
- Shortlist suitable financing agenciesfor financial assistance.
- Describe venture capital for establishing an enterprise.

**Contents:**

• Central level institutions- SSI board, KVIC, SIDO, NPC, NSIC, NISIET, NIESBUD, IIE, EDI,

• State level institutions- DI'S,DIC,SFC'S,SIDC'S,SSIDC'S

• Others- NABARD, Industry associations, NGOs and Research and Development labs

• Concept of Venture capitals.

### Unit IV Establishing Small Business Enterprise

Specific Objectives:

Students will be able to,

- Identify business opportunity considering bcal needs.
- Select product/service for the enterprise.
- Prepare draft for project report.
- Outline for registration process.

**Contents:**

- Identifying the business opportunities in civil engineering field
- Steps involved in establishing an enterprise-selection of a project-product/service selection, location selection, project feasibility study, business plan preparation, proforma for project report preparation
- Deciding the constitution of enterprise-sole proprietorship, partnership, corporation, cooperatives and franchising
- Registration-provisional and permanent, arrange for land, machinery and infrastructure.

**Unit V FINANCIAL AND HUMAN RESOURCES MANAGEMENT**

Specific Objectives:

Students will be able to,

- Estimate working capital for a small enterprise.
- Outline aspects of human resource development
- Enlist Laws related to environment and pollution control

**Contents:**

- Functions of financial management, Estimating working capital
- Functions of human resource development, aspects of human resource development
- Laws related to environment and pollution control

**List of Assignments:**

1. Identification of key traits for an entrepreneur (by administering self assessment questionnaire on students to identify strengths and weaknesses)
2. Preparation of profile of successful entrepreneur
3. Visit to a small civil Engineering business enterprise to interview the entrepreneur, study his business journey and prepare profile.
4. Prepare a draft of project report for a small Civil Engineering enterprise.
5. Prepare a chart showing various agencies to be contacted for starting an enterprise.

**REFERENCE BOOKS:**

| Sl. No. | Name of the Book | Author | Publisher |
|---|---|---|---|
| 1 | Entrepreneurship and Small Business Management | P. M. Charantimath | Pearson Education, New Delhi |
| 2 | India land of a Billion Entrepreneurs | Upendra Kachru | Pearson Education, New Delhi |
| 3 | Entrepreneurship Development | CPSC, Manila | Tata Mcgraw-Hill Publishing Company Limited, New Delhi |
| 4 | Entrepreneurship - Successfully Launching New Ventures | Bruce R.Barringer R.Daunce Ireland | Pearson Education, New Delhi |
| 5 | Entrepreneurship | Robert Hisrich M.P.Peter D.A.Shephard | Tata Mcgraw-Hill Publishing Company Limited, New Delhi |

# Non – Credit Courses

## NC . 1. Course Name: System administration

**Course objectives:**

- Use multiple computer system platforms, and understand the advantages of each.
- Install and administer network services.
- Protect and secure users' information on computer systems.
- Use the command line interface for system administration.
- Demonstrate strategies for planning/designing systems.
- Install and manage disks and file systems.
- Enable above learning outcomes in Windows and Linux environments.

| **Course code** | **Instructions** | | | **Examination** | | |
|---|---|---|---|---|---|---|
| NC1 | Tutorial: 20 | Hands on:30 | Total: 50 | | | |

1. System Startup and Operation
2. Disk Partitioning and OS & Filesystem Installation
3. Filesystem and Device Manipulation
4. Process and Log Analysis
5. Startup Scripts and Configuration Files
6. User/Group Security and Permissions
7. Print Spooling, File Formats and Media Access
8. Backup
9. Scheduling Maintenance Functions
10. Firewalls, Security and Privacy
11. DNS Service: Concepts and Client Resolver
12. DNS Service: Configuration
13. File and Print Service: Concepts and Operation
14. File and Print Service: Configuration and Cross-Platform Issues

**Software requirement:**

- **Windows 7 client OS**
- **Windows 2008 server**
- **RHEL 6 client / Server**
- **Fedora /Ubuntu /Cent Linux distributions**

## NC.2. Course Name: Graphics deign

**Course objectives:**

By studying Graphic Design students will have a wider horizon in the field of art and will ƒ

- Demonstrate artistic growth by executing a variety of images/ text as images, traditional and contemporary techniques that solve complex design problems using creative thinking and analytical skills. ƒ
- Develop and demonstrate their understanding and skillful use of the elements and principles of visual design (1. conceptual element, 2. visual element, 3. relational element & 4. practical or functional element.) ƒ
- Gain skill to use the digital tools as a powerful means of communication for creation, modification & presentation.
- Study the works of contemporary artists, designers as well as the masters in the field and discuss and enrich their vocabulary of design. ƒ
- Learn ways to apply aesthetic sensibilities into their works and explore ways to balance between formal theories with practical applications.

| **Course code** | **Instructions** | | | **Examination** | | |
|---|---|---|---|---|---|---|
| NC2 | Tutorial: 20 | Hands on:30 | Total: 50 | | | |

**Basic Design**

a. Elements of Design: Understanding of characteristics of different elements & their inter-relationship with elements to elements and elements to the format.

b. Colour: Sensitivity towards the use of colors and color combination to enhance the communication and to perceive things and differentiate elements from the background.C

c. Principles: Understanding the most essential aspect of design, Unity, to achieve through different principles like Harmony, Rhythm, and Perspective etc. and create different compositions.

**Using Photoshop**

1. Minimal Calendar design
2. Logo design
3. Resume design
4. Magazine cover design
5. Branding design
6. Ad design
7. Creative design
8. Flyer design

**Using Adobe In design**

1. Introduction to Advertising

- History
- Overview

2. Advertising
3. Client Branding
    - Logo
    - ID Pkg
    - B/W Ad
    - Full Color Ad
    - Web Page
    - Billboard
    - Take-away attribute

**Software requirement:**

- **Photoshop**
- **In design**
- **Illustrator**

# MODEL QUESTION PAPER

**SESHASAYEE INSTITUTE OF TECHNOLOGY:: TRICHY -10.**

**Model Question Paper**

**E – Scheme**

**[Note: Compulsory questions : Part A No. :8 & Part B No. : 16]**

**Term : III Computer Engineering** Time : 3 Hours

Course: **DIGITAL ELECTRONICS** Max. Mark: 75

**PART – A**

**Answer any FIVE from the following ( 5 x 2 =10)**

1. Define ohms' law
2. What is the electrical unit for current,voltage,power and energy?
3. What are the types of semiconductors?
4. What are the types of rectifies?
5. What are the various types of configurations of bipolar junction transistor?
6. What are the various types of basic logic gates?
7. What is arithmetic circuit?
8. Define the asynchronous counter.

**PART – B**

**Answer any FIVE from the following : ( 5 x 3 =15)**

9. Explain about the kirchoff's law.
10. Brief the series, parallel resonance problem.
11. Explain about the PN junction diode.
12. Compare the input impedence, output impedence, voltage gain in different configurations.
13. Brief about the different numbering systems.
14. Brief the working principle of the RS flip-flop.
15. Brief the working principle of the mod5 counter.
16. Explain about the types of modes of operations in shift register.

**PART – C**

**Answer all the questions by choosing either (a),(b) or (c) of each question : (5x10 =50)**

**17.**a. Explain about the Thevenin's theorem

Or

b. Explain the block diagram of the SMPS.

18.a. Explain about the working principle of semiconductor diode and VI Characterisitics.

Or

b. Explain about the working principle of Bridge rectifier.

19.a. Explain the working principle of base-emitter junction and base-collector junction.

Or

b. Explain the working principle of photo transistor.

20.a. Explain the working principle of the multiplexer.

Or

b. Explain the working principle of universal logic gates.

21.a. Explain the working principle of the synchronous counter.

Or

b. Explain about the working principle of the analog to digital convertor.

**SESHASAYEE INSTITUTE OF TECHNOLOGY:: TRICHY -10.**

**Model Question Paper**

**E – Scheme**

**[Note: Compulsory questions : Part A No. :8 & Part B No. : 16]**

**Term : III Computer Engineering** Time : 3 Hours

Course: **Operating System** Max. Mark: 75

**PART – A**

**Answer any FIVE from the following ( 5 x 2 =10)**

1. Define operating system
2. What are the components available in operating system?
3. What is the objective of scheduling?
4. Define race condition
5. What is virtual memory?
6. Expand SAN, NAS
7. Expand FSF/GNU.
8. List the different types of file system supported in Linux.

**PART – B**

**Answer any FIVE from the following : ( 5 x 3 =15)**

9. Explain clustered operating system
10. Write any three scheduling criteria
11. Briefly write about semaphore
12. Discuss the FIFO method of page replacement.
13. List the disadvantages of paging.
14. What is RAID? What are the uses of it?
15. Differentiate Linux and Unix
16. List the security features available in Windows 7

**PART – C**

**Answer all the questions by choosing either (a),(b) or (c) of each question : (5x10 =50)**

17.

A). Briefly explain the generation of operating system

B). Explain different system Calls

OR

C ) Discuss the sequence of Booting and the sequence in detail.

18)

A). With neat sketch, discuss PCB.

B). Explain round robin scheduling algorithm with an example

(OR)

C). Describe the characteristics of deadlock. What are the methods available to prevent a deadlock? Explain

19)

A) Compare Logical and physical address space.

B) What is paging? Explain the principle of paging .

OR

C) What is virtual memory? Discuss the demand paged memory allocation in detail.

20)

A) List all the mass storage devices and write brief note on them.

B) Explain the importance of cryptography in security.

OR

C) Explain the following disc scheduling methods and compare them: FDFS, SSTF.

21)

A) Explain virtual file system in Linux

B) List the characteristics of Android operating system

OR

C) With neat sketch explain the architecture of Linux.

**SESHASAYEE INSTITUTE OF TECHNOLOGY:: TRICHY -10.**

**Model Question Paper**

**E – Scheme**

**[Note: Compulsory questions : Part A No. :8 & Part B No. : 16]**

**Term : III Computer Engineering** Time : 3 Hours

Course: **Programming with C++** Max. Mark: 75

**PART – A**

**Answer any FIVE from the following ( 5 x 2 =10)**

1. What is a program?
2. What is an algorithm?
3. What is meant by encapsulation?
4. What is a local variable (or) auto variable?
5. What is function overloading?
6. What is friend function?
7. What is the use of delete operator?
8. How will you initialize a pointer variable?

**PART – B**

**Answer any FIVE from the following : ( 5 x 3 =15)**

9. Explain the use of compiler and interpreter.
10. List the limitations of flowchart.
11. What is built-in function? Give example.
12. Differentiate call by value and call by reference?
13. Explain default function argument.
14. List the access specifiers and explain their uses.
15. Explain the purpose of constructor and destructor of a class.
16. What is a pure virtual function? Give the syntax of it.

**PART – C**

**Answer all the questions by choosing either (a),(b) or (c) of each question : (5x10 =50)**

17.

A) Draw the various flow chart symbol and explain

B) Discuss the characteristics of programming languages.

OR

C ) List the different categories of operators and explain any two category in detail.

18)

A) Write the syntax of switch..case and explain with suitable example

B) Write the syntax of do..while loop statement and explain the various parts of it

(OR)

C) Write a program to find the sum and average of an array of 10 marks using for loop.

19)

A) Explain the concept of function overloading with example

B)Compare Procedure oriented programming with Object oriented programming

OR

C) List and explain the characteristics of Object oriented programming.

20)

A) What is inheritance? Discuss the different types of inheritance

B) Explain the concept of operator overloading.

OR

C) What is meant by derived class constructor? Give an example.

21)

A) Write notes on arrays and pointers

B) Explain the concept of dynamic binding using virtual function

OR

C) List the classes used for file handling operation and explain. Also discuss the different modes of file operation

**SESHASAYEE INSTITUTE OF TECHNOLOGY:: TRICHY -10.**

**Model Question Paper**

**E – Scheme**

**[Note: Compulsory questions : Part A No. :8 & Part B No. : 16]**

**Term : IV Computer Engineering** Time : 3 Hours

Course: **Data Structures** Max. Mark: 75

**PART – A**

**Answer any FIVE from the following ( 5 x 2 =10)**

1.What is data structure?
2. What is Order of Magnitude?
3. What is stack?
4. Define Doubly linked list?
5. What is tree traversal? Give its types.
6.Difference between hash search and searching
7. What is shortest path algorithm?
8. Define Directed graph.**PART – B**

**Answer any FIVE from the following : ( 5 x 3 =15)**

9.What is a program?
10.What are list operations?
11.Define complete binary tree.
12.Define AVL tree.
13.What is meant by path and degree of node?
14.Define Sorting.
15.What is directed and undirected graph?
16.What is sequential file organization?

**PART – C**

**Answer all the questions by choosing either (a),(b) or (c) of each question : (5x10 =50)**

**17.**a.Explain about the implementation of algorithm and judgment of algorithm.

Or

b.Explain the evaluation of postfix expression using stack.

18.a.Explain about the insertion in double linked list.

Or

b.Explain queue operations and algorithm with example.

19.a.Describe inorder and preorder traversal.

Or

b. What is hashing? What are the different methods of hashing functions?

20.a. Explain merge sort with algorithm.

Or

b.Explain AVL tree representation and rotation in tree

21. a.Explain Adjacency graph representation with example.

or

b. Explain various file organization techniques.

.....

**SESHASAYEE INSTITUTE OF TECHNOLOGY:: TRICHY -10.**

**Model Question Paper**

**E – Scheme**

**[Note: Compulsory questions : Part A No. :8 & Part B No. : 16]**

**Term : IV Computer Engineering** Time : 3 Hours

Course: **Object oriented programming with JAVA** Max. Mark: 75

**PART – A**

**Answer any FIVE from the following ( 5 x 2 =10)**

1. Expand JDK and API
2. What are the types of comments in a java program?
3. What is meant by type casting?
4. What is an interface? Give example.
5. What is the use of sleep() method in Thread?
6. What are the two types of streams in Java. Give example for each type.
7. List any two AWT containers.
8. How will you embed an applet in HTML file?

**PART – B**

**Answer any FIVE from the following : ( 5 x 3 =15)**

9. Explain any 3 characteristics OOP.
10. List and explain the types of Java program
11. Write the procedure of creating a dynamic array using vector and adding elements to it.
12. How will you define a sub class in Java? Write the syntax.
13. Write the syntax of try and catch statements.
14. What is a Thread? How will you start a thread?
15. What is meant by deadlock in Thread scheduling?
16. What is meant event driven programming? Explain.

**PART – C**

**Answer all the questions by choosing either (a),(b) or (c) of each question : (5x10 =50)**

17.

A). Explain in detail about the various paradigms used in programming.

B). How a java program is created and executed? Explain in detail

OR

C). List the features of java and discuss each of them.

18)

A). Explain the various control statements in java

B). Write a program to find the smallest elements in an array.

or

C). Explain about Wrapper classes in Java with suitable examples.

19)

A) Write the procedure of creating a package with example.

B) List the different types of errors and give example for each one and explain

OR

C) List all the exception handling statements and explain each one.

20)

A) List the two different methods of creating a Thread with their syntax.

B) List any two bytestream classes and explain their usage.

OR

C) Draw the block diagram of the Life cycle of a Thread. Explain the methods supported by a thread .

21)

A) List any graphics methods and explain with their prototypes.

B) What is a Layout manager? Explain any one manager with a diagram.

OR

C) Draw the block diagram of the life cycle of an applet and explain using an example.

**SESHASAYEE INSTITUTE OF TECHNOLOGY:: TRICHY -10.**

**Model Question Paper**

**E – Scheme**

**[Note: Compulsory questions : Part A No. :8 & Part B No. : 16]**

**Term : IV Computer Engineering** Time : 3 Hours

Course: **Web Programming** Max. Mark: 75

**PART – A**

**Answer any FIVE from the following ( 5 x 2 =10)**

1. Define Internet.
2. What are the types of list in HTML?
3.Define CSS
4.What is Font size Kerning?
5. What are the types of datatypes in javascript?
6. What is mean by Event handler?
7.What is JQuery?
8.Why we go for Bootstrap?

**PART – B**

**Answer any FIVE from the following : ( 5 x 3 =15)**

9. Briefly explain Packet switching.
10.What are the new elements in HTML5
11. Differentiate CSS Class and ID.
12. Write javascript program for Alert Box.
13. Why we need for scripting languages?
14.Write the Syntax for JQuery Load Method?
15.What are the Advantages of Bootstrap?
16.What is the use of Grid System in Bootstrap?

**PART – C**

**Answer all the questions by choosing either (a),(b) or (c) of each question : (5x10 =50)**

17.a)Explain Table tag in HTML.(5)
b)Explain Video tag in HTML5.(5)

[OR]

c)Explain nested frame.(5)
d)Explain Canvas tag in HTML5(5)

18.a)Explain the CSS Property for formatting text.(05)
b)Explain Inline Stylesheet(5)

[OR]

c)Explain the CSS Property for formatting background.(05)
d)Explain form property in CSS(05)

19.a)Explain Location Object in Javascript(5)
b)Write a java script program for Break and continue statements.(5)

[OR]

c)Explain any two of Operators in Javascript(05)
d)Write a Javascript Program for Conform box(5)

20.a)Explain JQuery SET method(5)
b)Explain JQuery Ad Method(5)

[OR]

c)Explain JQuery Plugin(5)
d)Explain JQuery Load Method(5)

21.a)Explain Tables in Bootstrap(5)
b)How to Hiding content based on resolution.(5)

[OR]

c)Explain Bootstrap Typography(5)
d)How to create Navigation Bar&Breadcrumb using Bootstrap(5)

**SESHASAYEE INSTITUTE OF TECHNOLOGY:: TRICHY -10.**

**Model Question Paper**

**E – Scheme**

**[Note: Compulsory questions : Part A No. :8 & Part B No. : 16]**

**Term : V Computer Engineering** Time : 3 Hours

Course: **RDBMS** Max. Mark: 75

**SESHASAYEE INSTITUTE OF TECHNOLOGY:: TRICHY -10.**

**Model Question Paper**

**E – Scheme**

**[Note: Compulsory questions : Part A No. :8 & Part B No. : 16]**

**Term : V Computer Engineering** Time : 3 Hours

Course: **Open Source Software** Max. Mark: 75

**PART – A**

**Answer any FIVE from the following ( 5 x 2 =10)**

1. Define open source software.
2. State the difference between the open source software and licensed software.
3. What are the advantages of open source software ?
4. What are the uses of webservers.
5. Write any two operations of file handling ?
6. What are the different types of conditional statements in PYTHON ?
7. What is Tuples in PYTHON ?
8. What is data dictionary ?

**PART – B**

**Answer any FIVE from the following : ( 5 x 3 =15)**

9. Explain about the various applications of open source software.
10. Brief the features of the LINUX.
11. Explain about the various data types in PHP.
12. Write a program to read the content of a file using PHP.
13. Write a program to send an e-mail using PHP.
14. Explain the various operations in LIST in PYTHON.
15. Brief the functions in PYTHON.
16. Explain about the types CLIENT socket methods in PYTHON.

**PART – C**

**Answer all the questions by choosing either (a),(b) or (c) of each question : (5x10 =50)**

**17.**a. What are the needs and advantages of open source.

Or

b. Explain the history of FOSS.

18.a. Explain the various conditional statements in PHP with example.

Or

b. Explain the form validations in PHP with example.

19.a. Explain about the Object oriented programming concepts in PHP.

Or

b. Explain about the frameworks in PHP.

20.a. Explain the various operations of sets and dictionary in PYTHON.

Or

b. Explain the various conditional and looping statements in PYTHON.

21.a. Explain the exceptional handling in PYTHON with example.

Or

b. Explain about the various GUI controls in PYTHON.

**SESHASAYEE INSTITUTE OF TECHNOLOGY:: TRICHY -10.**

**Model Question Paper**

**E – Scheme**

**[Note: Compulsory questions : Part A No. :8 & Part B No. : 16]**

**Term : V Computer Engineering** Time : 3 Hours

Course: **Component Based Technology** Max. Mark: 75

**PART – A**

**Answer any FIVE from the following ( 5 x 2 =10)**

1. Define CLR.
2. What are the data types in C#.NET?
3. Define MDI?
4. Define IIS?
5. What are the web controls in ASP.NET?
6. What is the use of Connection in ADO.NET.
7. Define SOAP.
8. What is the use of DTD.

**PART – B**

**Answer any FIVE from the following : ( 5 x 3 =15)**

9. Explain Else if Ladder in C#.NET.
10. What is Exception?What are the types of Error?
11. What are the Features of ASP.NET.
12. What is the use of Login controls in ASP.NET.
13. Explain Command Object in ADO.NET.
14. Why we go for Data Reader. Explain with Example.
15. How to Present XML Document.
16. Define WSDL

**PART – C**

**Answer all the questions by choosing either (a),(b) or (c) of each question : (5x10 =50)**

17.a)Explain Architecture of .NET.(05)
b)Explain any two Operators in C#.NET.(05)

[OR]

b)Explain Type Conversion in C#.NET.(5)
c)Explain Foreach Looping Statement in C#.NET.(5)

18.a)Explain Timer and Tool tips Controls(5)
b)How to create MDI Child windows.(5)

[OR]

c)How to creating Menus(5)
d)Explain the use of Show Dialog() Method with Example.

19.a)How to Deploy a website.(5)
b)Explain Navigation Controls ASP.NET(5)

[OR]

c)Explain Validation Controls in ASP.NET.(5)
d)Explain webpart Controls in ASP.NET(5)

20.a)Explain Architecture of ADO.NET.(5)
b)How to access data using Data set(5)

[OR]

c)Explain Grid View with Example(5).
d)How we use Stored Procedures.Explain with example.(5)

21.a)Explain Service Oriented Architecture(5)
b)Explain DTD

[OR]

c)Explain SOAP Protocol(5)
d)Explain Key technologies in Web Services

**SESHASAYEE INSTITUTE OF TECHNOLOGY:: TRICHY -10.**

**Model Question Paper**

**E – Scheme**

**[Note: Compulsory questions : Part A No. :8 & Part B No. : 16]**

**Term : V Computer Engineering** Time : 3 Hours

Course: **Computer Networks** Max. Mark: 75

**PART – A**

**Answer any FIVE from the following ( 5 x 2 =10)**

1. Define data communication.
2. What are the elements of data communication?
3. What are the three protocols used for noisy channels?
4. What are the various types of connecting devices?
6. What are the common notations used for address?
7. What is Generic Domains?
8. What is DNS?

**PART – B**

**Answer any FIVE from the following : ( 5 x 3 =15)**

9. What are the three criteria necessary for an effective and efficient network?
10. Mention the different physical media?
11. Group the OSI layers by function?
12. What are the responsibilities of data link layer?
13. What are the responsibilities of Network Layer?
14. Define HTTP.
15. Define Cryptography.
16. Define authentication and encryption.

**PART – C**

**Answer all the questions by choosing either (a),(b) or (c) of each question : (5x10 =50)**

17.

a) Define computer networks? Discuss various types of networks topologies in computer network.

OR

b) Explain the following:-a) LAN b) WAN

c) Explain the following: i ) Guided media ii) unguided media

18.

a) What is OSI Model? Explain the functions and protocols and services of each layer with neat diagram?

OR

b) What is TCP/IP Model? Explain the functions and protocols and services of each layer?

c) Explain the TCP frame format with diagram.

19.

a) Explain the Data flow and Error Control techniques .

OR

b) Compare the maximum window size in go-back-N and selective-repeat ARQs.
c) Explain the various Random access methods.

20.

a) What is IP addressing? How it is classified?
b) What is IPv6? Explain its advantages over IPv4.

OR

c) Explain the following : i) Telnet ii) DNS iii) HTTP iv) SMTP v) POP3 vi) FTP

21.

a) Explain the following: i) Cryptography ii) Plaintext and Cipher text iii) key.
b) Explain Advanced Encryption Standard (AES).

OR

c) Describe Confidentiality with Symmetric-Key Cryptography and Asymmetric-Key Cryptography.

**SESHASAYEE INSTITUTE OF TECHNOLOGY:: TRICHY -10.**

**Model Question Paper**

**E – Scheme**

**[Note: Compulsory questions : Part A No. :8 & Part B No. : 16]**

**Term : VI Computer Engineering** Time : 3 Hours

Course: **Computer Hardware and Servicing** Max. Mark: 75

**PART – A**

**Answer any FIVE from the following ( 5 x 2 =10)**

1. What is Firmware?
2. What is the purpose of power good signal in SMPS-
3. What is the North Bridge?
4. What is the purpose of the CMOS battery?
5. What is meant by SATA?
6. How does the cache memory improve system performance-
7. Mention the types of hard disk drive interfaces.
8. What is a mobile phone?

**PART – B**

**Answer any FIVE from the following : ( 5 x 3 =15)**

9. Explain USB Port (Universal Serial Bus).
10. Differentiate input and output devices
11. Give the specifications of dot matrix, Laser printer and inkjet printer
12. Write a note on computer maintenance.
13. Explain steps to install broadband router.
14. Write a note on Computer virus.
15. List the types of adapters used in Laptop.
16. What is a form factor?

**PART – C**

**Answer all the questions by choosing either (a),(b) or (c) of each question : (5x10 =50)**

17.

d) With a neat block diagram explain the architecture of a mother board.

e) How does BIOS works with the computer's hardware when the computer is turned on?

OR

f) Explain the features of following bus standards

I) EISA II) PCI

d) Explain about Chipset and its architecture with neat diagram.

18.

d) Briefly explain about the different Bus standards in detail

OR

e) What are the different types of RAMs? State the features of each.

f) Briefly explain Hard disk drive and write about the troubleshooting of Hard disk drive

19.

d) Briefly explain the operation and different file formats of a scanner.
e) Briefly explain the basic principle of operation of a laser printer.

OR

f) Describe the principle of operation of MODEM.
g) Describe BIOS and POST Error Codes.

20.

d) Draw a block diagram of SMPS and explain its operation.
e) Briefly explain the BIOS configuration and function.

OR

f) Explain the working of CRT controller with a neat sketch. Also Compare CRT and LED monitor.

21.

a) Explain the Basic circuit board components of mobile phone with neat diagram

OR

b) List out the Tools for Mobile Phone Repair and explain each one of it.
c) Explain the Software Faults of mobile phone servicing.

**SESHASAYEE INSTITUTE OF TECHNOLOGY:: TRICHY -10.**

**Model Question Paper**

**E – Scheme**

**[Note: Compulsory questions : Part A No. :8 & Part B No. : 16]**

**Term : VI Computer Engineering** Time : 3 Hours

Course: **Mobile Computing** Max. Mark: 75

**SESHASAYEE INSTITUTE OF TECHNOLOGY:: TRICHY -10.**

**Model Question Paper**

**E – Scheme**

**[Note: Compulsory questions : Part A No. :8 & Part B No. : 16]**

**Term : VI Computer Engineering** Time : 3 Hours

Course: **Software Engineering** Max. Mark: 75

**SESHASAYEE INSTITUTE OF TECHNOLOGY:: TRICHY -10.**

**Model Question Paper**

**E – Scheme**

**[Note: Compulsory questions : Part A No. :8 & Part B No. : 16]**

**Term : VI Computer Engineering** Time : 3 Hours

Course: **Cloud Computing** Max. Mark: 75

**PART – A**

**Answer any FIVE from the following ( 5 x 2 =10)**

1. What is public cloud?
2. What is the use of service provider?
3. List the companies who offer cloud service development?
4. What is a Hypervisor?
5. What is Virtual Center?
6. Give the various schedules in Collaborating on schedule.
7. How Web-Based Word Processing Works?
8. How secure is cloud computing?

**PART – B**

**Answer any FIVE from the following : ( 5 x 3 =15)**

9. Define cloud computing?
10. What are the advantages of "Software As A Service" (SaaS)?
11. What is Hyper-V?
12. What is Virtualization?
13. What types of calendars can you create with Google Calendar?
14. How Online Databases Work?
15. What are the tools provided by Cvent's Event Management system?
16. What is Cloud Security Alliance?

**PART – C**

**Answer all the questions by choosing either (a),(b) or (c) of each question : (5x10 =50)**

17.

A). Explain the basic origins of the cloud computing with neat block diagram.

B). Describe about the web services.

OR

C). Why is Cloud Computing important? And give the advantage and disadvantage.

18)

A). Explain briefly about the Cloud computing Architecture

OR

B). Explain briefly about the Cloud service development

C). Explain how Cloud Computing is used by Google, Microsoft, Amazon, Salesforce.com

19)

a) What are the different types of virtualization?

OR

b) Explain desktop virtualization.

c) What is the difference between Hyper-V and Virtual Server?

20)

a) Discuss about Collaborating on calendars, Schedules and task management.

b) Explain collaborating on event management and collaborating on contact management.

OR

c) Explain in detail about collaborating on word processing, spreadsheets and databases.

21)

a). Explain the Security challenges in cloud computing in detail?

OR

b). Explain the CSA Cloud Reference Model in detail.

c). Explain the Security service boundary with neat diagram.

# Equivalent of DOTE – M – Scheme and SIT – E – Scheme Syllabus

| **M – Scheme** | | | | **E - Scheme** | | |
|---|---|---|---|---|---|---|
| **III - Term** | | | | **III - Term** | | |
| **Course Code** | **Course Name** | **Remarks** | | **Course Code** | **Course Name** | **Remarks** |
| 35231 | Basics of Electrical & Electronics Engineering | | | | Digital Electronics | ***Addition:*** 1. *Unit 1: Linear power supply, SMPS and UPS.* *Remaining units are equivalent to D Scheme* |
| 35232 | Operating Systems | | | | Operating System | *All units are Restructured* ***Addition:*** 1. *Unit 5 : Latest OS added.* |
| 35233 | C Programming | | | | Programming with C++ | *Equivalent to D - Scheme* |
| 30001 | Computer Applications Practical | | | | Multimedia Practical | ***Addition:*** 1. *3DS MAX, Video & Sound Editing* |
| 35234 | Electrical & Electronics Practical | | | | Digital Electronics Practical | ***Addition:*** 1. *Multiplexer & De multiplexer circuits* |
| 35236 | C Programming Practical | | | | C++ Programming Practical | *Equivalent to D - Scheme* |
| 35235 | Linux Practical | | | | Linux Practical | *Equivalent to D - Scheme* |
| **IV - Term** | | | | **IV - Term** | | |
| 35244 | Data Structures using C | | | | Data Structures | *All units are Restructured* ***Addition:*** 1. *Unit 5 : File Structures* |
| 35243 | Object Oriented Programming with Java | | | | Object Oriented Programming With Java | *Equivalent to D - Scheme* |
| 35242 | Computer Networks and Security | | | | Web Programming | ***Addition:*** 1. *Unit 1: HTML, HTML5,* |

| | | | | | | |
|---|---|---|---|---|---|---|
| | | | | | | *CSS*<br>2. *Unit 2: Javascript, JQuery, Bootstrap* |
| 35241 | Computer Architecture | | | | | |
| 35246 | Data Structures using C Practical | | | | Data Structures Practical | *Equivalent to D - Scheme* |
| 35245 | Java Programming Practical | | | | Java Programming Practical | *Equivalent to D - Scheme* |
| 30002 | Life and Employability Skill Practical | | | | Web Programming Practical | *All exercises are restructured.* |
| | | | | | Life and Employability Skill Practical | ***Equivalent to DOTE*** |
| **V - Term** | | | | **V - Term** | | |
| 35252 | Relational Database and Management Systems | | | | RDBMS | *All units are Restructured*<br>***Addition:***<br>*Unit 5 : Big Data introduced* |
| 35251 | Web Programming | | | | Open Source Software | ***Addition:***<br>1. *Advance PHP*<br>2. *Python* |
| 5253 | Component Based Technology | | | | Component Based Technology | *Newly Introduced with Dotnet Technology and Web Services* |
| ELECTIVE - I – THEORY | | | | | Computer Networks | 1. *Unit 1 to 4 is modified and merged of unit 1 to 5 of D - Scheme*<br>2. *Unit 5 is changed by Network Security* |
| 35271<br>35272 | a. Cloud Computing<br>b. Software Engineering | | | | | |
| 35256 | Relational Database and Management Systems Practical | | | | RDBMS Lab | *All exercises are restructured with new concepts.* |
| 35255 | Web Programming Practical | | | | Open Source Software Practical | *All exercises are restructured with new concepts..* |
| 35257 | Component Based | | | | Component Based | *All exercises are restructured* |

| | | | | | | |
|---|---|---|---|---|---|---|
| | Technology Practical | | | | Technology Practical | *with new concepts..* |
| **VI - Term** | | | | **VI - Term** | | |
| 35261 | Computer Hardware and Servicing | | | | Computer Hardware and Servicing | *1. Shifted from V- Term of D - Scheme*<br>*2. Unit 1 to 4 is modified with new series of Computer Hardware.*<br>*3. Unit 5 is changed as mobile phone servicing* |
| 35262 | Mobile Computing | | | | Mobile Computing | |
| | | | | | Software Engineering | ***Newly Introduced*** |
| ELECTIVE –II THEORY | | | | | **Elective:**<br>1.Cloud Computing<br>2. Enterprise Programming With Java | *1.1.Unit 1,2,3, & 5 Equivalent to D- Scheme*<br>*1.2.. Unit 4: Changed as Cloud Management instead of SAN*<br>*2.1.Equivalent to D Scheme* |
| 35281 | a. Multimedia Systems | | | | | |
| 35282 | b. Open Source Software | | | | | |
| 35264 | Computer Servicing and Network Practical | | | | Computer Servicing And Network Laboratory | *1. Mobile phone servicing added* |
| 35265 | Mobile Computing Practical | | | | Mobile computing Practical | *All exercises are restructured with new concepts.* |
| ELECTIVE – II -PRACTICAL | | | | | | |
| 35283 | a. Multimedia Systems Practical | | | | | |
| 35284 | b. Open Source Software Practical | | | | | |
| 35267 | Project work | | | | Project Work & Entrepreneurship | |

*The End*