

# COMPUTER ENGINEERING DETAILED CONTENTS OF VARIOUS SUBJECTS THIRD YEAR

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## COMPUTER TROUBLESHOOTING & MAINTENANCE

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### Rationale

This subject gives the knowledge and competency to diagnose the faults for trouble shooting for systematic repair and maintenance of computer and its peripherals

### Detailed Contents

#### 1. Concept of servicing & maintenance

Reliability of electronic equipment, MTBF, MTTR, availability of an equipment  
Preventive maintenance & need of preventive maintenance. Factors affecting the performance of computer. Preparation of preventive maintenance schedule.  
Preventive maintenance requirement of a subsystem & auxiliary sub system.

#### 2. Breakdown maintenance; scope of field servicing, analysis of customer call reports in locating faults.

#### 3. Fault location & its identification: Various methods of locating faults like visual inspection, layman checks, diagnostic software, error logging & its use. Symptoms & remedies for common faults in peripherals like printers, monitors, FDD, HDD, mouse & associated interfaces of PC based systems.

#### 4. Symptoms & remedies for common faults in peripherals like printers, monitors, FDD, HDD, Mouse; Motherboard and Supporting Cards.

#### 5. Power supply -Linear power supply & switch mode power supply. Significance of power good signal, block diagram & trouble shooting of switch mode power supply.

#### 6. Viruses, their types of detection / prevention / removal using vaccines. Familiarization with PC tools & Norton utilities & their applications.

### LIST OF PRACTICAL

#### 1. Running diagnostics.

#### 2. Assembling & disassembling of computer systems.

#### 3. Virus detection & elimination.

#### 4. Troubleshooting and maintenance

- Monitor
- FDD
- HDD
- Printers
- Mouse
- Keyboard
- CDROM/DVD
- SMPS



## Computer Networks

L	T	P
3	1	3

### Rationale

The future of computer technology in computer networks. Global connectivity can be achieved through computer networks.

### Detailed contents

#### 1. Introduction

Network needs & goals, Application of networks, network topologies, need of protocol, protocols and interfaces, networks services and service access points.

#### 2. OSI reference model, TCP/IP reference model, Comparison between OSI & TCP/IP reference model

#### 3. Transmission media – analog transmission media, digital transmission media, switching techniques.

#### 4. Data link layer – functions, protocols – stop & wait, sliding window.

#### 5. IEEE standards – 802.3, 802.4, 802.5, fast Ethernet, FDDI, fiber Optics.

#### 6. Network Layer – functions, routing algorithms, inter-networking. Familiarization with repeater, hubs, switch, bridge, routers, and gateways.

#### 7. Transport Layer-Functions and services, transport service primitive, sockets, elements of transport protocols, UDP

#### 8. Broad Band network – ISDN, ATM, Introduction to VSAT, ADSL.

#### 9. Network security – Levels of security, introduction to cryptography, Data Encryption Standard (DES), public key cryptography, firewalls.

### List of Practical

#### 1. Identification of various networks components

- Connections, BNC, RJ-45, I/O Box, Rosette box, Crimping tools.
- Cables, Co-axial, twisted pair, UTP, fiber Optics.
- NIC (Network interface card)
- Switch, Hub, Router.

#### 2. Sketch wiring diagram of network considering a computer lab of 20 systems

#### 3. Interfacing with the network card (Ethernet)

#### 4. Preparing of network cables-cross cables, straight cables

#### 5. Use of protocols in establishing LAN viz TCP/IP, NETBUL

#### 6. Installation of networks (Peer to Peer networking client server interconnection)

#### 7. Use/Installation of Proxy server

#### 8. Trouble shooting of networks

### Reference Books

1. Data communication networks-A.Forouzan
2. Computer Networks-Tannenbaum
3. Computer Network and Distributed processing-James Martin
4. Computer communication network (ISTE)-A. Shanmugam, S. Rajeev



## PROGRAMMING IN JAVA

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### 1 Introduction to Java

- The Basics of Java-A brief history of Java, The Java, Architecture, Java Features, Importance of Java to the Internet. Java Applets and Applications, Fundamentals of Object Oriented Programming, Concepts of OOP, Benefits of OOP, Java and C++, Java Environment, Java Development Kit, Application programming Interface (API), Getting started with JDK, Java program structure, Using Java with Other Tools

### 2. Language Basics

- Java tokens, Java character set, Keywords, Identifiers, Literals, Separators, Constants, Variables, Data types, Type Casting, Constants, Variables and their Scope, Operators and Expressions, Arithmetic Operators, Relational & Conditional Operators, Logical Operators, Assignment Operators, Increment & Decrement, Bitwise Operators, Special Operators, Precedence of Operators, Control Flow statements-If & If else statements, switch Statement, for loop, while do loop, Branching.

### 3 Objects and Classes in Java

- Introduction to classes, Defining a class. Creating objects, Methods, Constructors and Access Specifies, Application of Constructor. Parameterized Constructors, Overloading Methods and Constructors, Access control Modifiers: Public, Private, and Protected, Static, Final and Abstract Modifiers, Inheritance and Method Overriding. Inheritance basics, Method overriding.

### 4 Arrays, Strings and Vectors

- Arrays, One-dimensional array, Multidimensional array, Strings, String class, Working with Strings, String Buffer class, Vector and wrapper class, Vector Constructors, Working with vector methods, Wrapper Class.

### 5 Packages and Interfaces

- Using Java Interfaces, Defining an Interface, Implementing an Interface, Extending an Interface, Using Java Packages, Defining a Package, Brief discussion on CLASSPATH, Access Protection, Importing a package, Java API Package,

### 6 Exception handling

- Introduction to Exception Handling, Why use Exception. Handling, Fundamentals of Exception Handling, Exceptions & their types, Common Exceptions, Using Exception Handling, Using try and catch, Multiple Catch Statements, Nested try Statements, Methods available to Exceptions, Throwing your own Exception.

### 7 Applet programming

- Writing Applets, The Basics of Applets, Life Cycle of an Applet, Painting the Applet, The Applet Tag, Security Restrictions when using Applets, Taking Advantage of the Applet API, Finding and Loading Data Files, Displaying Short Status Strings, Displaying Documents in the Browser, Playing Sounds, Defining and Using Applet Parameters.



**The Graphics Class, java.awt.Graphics, Uses of class java.awt.Graphics, Custom Painting, Drawing Lines, Drawing Rectangles, Drawing Ellipses and Circles, Drawing Arcs, Drawing Polygons**

**Practicals :-** Exercise based on above theory concepts.

### **Reference Books**

1. Programming in Java- Dr.Amita Dev, ISTE Publication
2. Mastering Java 2 - John Zukowski
3. Programming In Java - E.Balaguruswamy
4. The Complete Reference Java 2-Herbert Schildt



## ENTREPRENEURSHIP DEVELOPMENT AND MANAGEMENT

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### RATIONALE

Creating awareness regarding entrepreneurial traits entrepreneurial support system opportunity identification project report preparation & understanding of legal & managerial aspects can be helpful in motivating technical student to start their own small scale business/enterprise.

### DETAILED CONTENTS

- (1) Entrepreneurship
  - Concept/Meaning
  - Need
  - Competencies/qualities of an entrepreneur
- (2) Entrepreneurial Support System
  - District industry centers (DICs)
  - Commercial banks
  - State Financial Corporation
  - Small industries Service institutes (SISIs), Small industries development bank of India (SIDBI), National bank of agriculture and rural development (NABARD), National Small industries corporation (NSIC) and other relevant institution/organizations at state level.
- (3) Market survey and opportunity identification (business planning)
  - How to start a small scale industry.
  - Procedures for registration of small scale industry.
  - List of items reserved for exclusive manufacture in small scale industry
  - Assessment of demand and supply in potential areas of growth.
  - Understanding business opportunity
  - Considerations in product selection.
  - Data collection for setting up small ventures.
- (4) Project Report Preparation
  - Preliminary project Report
  - Techno-Economic feasibility report
  - Project Viability
- (5) Business Organizations
  - Salient features of sole proprietary ship
  - Partnership private and public limited companies
  - Cooperative societies and public sector
  - Role of public and private sectors in growth of economy and their social obligations towards society
  - Monopoly and price restrictions.
- (6) Managerial aspects of small business
  - Principles of management (definition, functions of management viz. planning, organization, coordination and control.)
  - Operational aspects of production



- Inventory management
- Basic principles of financial management
- Marketing techniques
- Personnel management
- Importance of communication in business

**(7) Legal aspects of small business**

- Elementary knowledge of income tax, sales tax, patent rules, excise duty.
- Factory act and payment of wages act

**(8) Environmental Considerations**

- Concept of ecology & environment
- Factors contributing to air, water, Noise pollution
- Air, Water & noise pollution standards & control

**(9) Industrial Safety and House Keeping**

- Magnitude and cost of accident
- Causes of accidents
- Job safety analysis
- Safety planning and its implementation safety education instructions and visual aids
- Obligatory provisions
- First aid
- Investigations of accidents
- Fire fighting, BIS. Standards
- Security watch and ward.

**(10) Miscellaneous**

- Human relations & performance in organization
- Industrial relation & Disputes
- Relations with subordinates, peers & superiors
- Leadership
- Labour Welfare
- Workers participation in management

**(11) Motivation**

- Factors determining motivation
- Characteristics of motivation
- Methods of improving Motivation
- Incentives- pay, promotion, rewards

**REFERENCE BOOKS**

1. A handbook of Entrenpurship-BS Rathore and Dr. J.S. Saini
2. Environmental Development by CB Gupta and P. Srinivasan
3. Environmental and pollution awareness Sharma BR
4. Total quality management-Dr. D.D. Sharma



## COMPUTER WORKSHOP-III

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### RATIONALE

This course will enable the students to understand the basics of internet and various applications of internet like e-mail, FTP, Telnet, Newsgroups and video conferencing. In addition, this course develops competency amongst the students to design professional with sites and interactive web pages.

.Net is an upcoming technology so the teacher should take pain in making the students conversant with this. The demonstration should be given using .NET software for describing the various features of .NET technology.

### DETAILED CONTENTS

#### 1. Developing Portals using HTML

Basic structure of HTML, designing a web page, inserting links images, horizontal rules, comments. Formatting text, title, headings, colors, fonts, sizes, simple tables and forms.

HTML tags, hyperlinks, Adding graphics and images, image maps, image files. Using tables, forms, style sheets and frames and DHTML.

#### 2. Using Front Page

Front page editor, Front page explore

#### 3 .NET -evolution

Need and prospective in current scenario, .NET framework over view Structural diagram.

#### 4 .NET framework Base classes

User and program interface, windows forms, web forms, console applications

#### 5.XML

An overview of XML, use of XML, integrity of XML with databases, XML as the .NET Meta languages

#### 6. Visual Studio .NET

Common IDE for all languages, the common language specification, all .NET languages, management of multiple language, projects

#### 7.Language changes

Visual basic, C++, C#+, overview of C#, data types in C#, control flow in C#, C# classes

### LIST OF PRACTICALS

1. Installing of .NET
2. Exploring the various features of .NET
3. Ability to work and start various tasks and features of .NET framework
4. Able to work and develop program in Visual basic .NET
5. To explore in detail Visual studio.NET
6. Exercises based on HTML, DHTML & XML
  - Creating Web pages using HTML



- Creating web pages using front page
- Demonstration of e-commerce transaction
- Create a Homepage with frames, animation, background sound and hyperlinks
- Designing simple server side program which accept some request form the client and respond
- Develop interface with database (MS-Access etc) for online retrieval and storage of data through HTML form.
- Hosting a webpage.

## REFERENCE BOOKS

1. HTML - 4 for World Wide Web - Castro Addison Wesley (Singapore) Pvt Ltd. New Delhi
2. HTML 4.0 Unleashed by Rick Dranell: Tech Media Publications
3. Dynamic Web Publishing - Unleashed Tech Media
4. Web Development with Visual Basic with CD ROM by Chapman, Prentice Hall of India, New Delhi
5. The XML handbook-Charles E. Goldfalb, Paul Prescod
6. Introducing .NET by James Conard, Patrick Renger, Birn Eranics, Jay Elynn Wron Publications.