

B.Sc. – I SEMESTER: 2011 Onwards

SUBJECT: COMPUTER MAINTENANCE

INTRODUCTION TO COMPUTER HARDWARE AND COMPONENTS

Max Marks: 70

UNIT-I **18 Lectures**

ELECTRONIC COMPONENTS

Resistors, Capacitors, Inductors, Transformers, Relays and Switches: Their Types, Cables and Connectors used in a Desktop Computer, CMOS Batteries, PCB, Fuses (Basic Principle, Symbols, Technical Specifications and Significance).

TEST AND MEASURING INSTRUMENTS

Block Diagram, Working Principles and User Guidelines for CRO, Multimeter and Function Generator.

UNIT-II **18 Lectures**

INTRODUCTION TO COMPUTERS

Evolution of Computers, their classification and generations, Introduction to Architecture of Computers. Organization of PC (Block Diagram level) Motherboard, Supporting Cards, Keyboard, Display, Power Supply, Disk Drives and BIOS, Bootstrapping.

SOFTWARE

Computer Software, Relationship between Hardware and Software; System Software, Application Software, Device Drivers.

UNIT – III **18 Lectures**

INPUT AND OUTPUT DEVICES

Punch Cards, Working principle and types of: Keyboard, Joystick, Mouse.

Monitors: CRT, LCD/TFT, Printer: Dot Matrix, Inkjet, Laser, Plotters, Light Pen, OMR.

Scanners: Principle Design, Working and Types: Hand Held, Flat Bed, Modems.

Central Processing Unit, Processor Speed, cache Memory.

UNIT IV **18 Lectures**

MEMORIES

Units of storage bit/byte, KB, MB, GB, TB. RAM: Static and Dynamic, ROM, PROM, EPROM, EEPROM, Mass storage Media, Flash Drives, Commonly used chips, Memory Management : Segmentation/Partitioning, Parity checking.

HARD DISK DRIVE

Operational principle, Hard Disk Drive Components: Disk Platter, Read/Write Head, Hard Disk Features: Form Factor, Storage Capacity, Disk Geometry, Logical Working of a Hard Disk Drive: Absolute Sector and Relative Sector, Partition, Logical Structure of a Hard Disk Drive: Master Boot Record, DOS Boot Record, FAT, Root Directory, Data Area. Disk formatting, Data Integrity.

UNIT V **18 Lectures**

OPERATING SYSTEM

Introduction, Functions of OS, Types of OS: Time Sharing, Multiprogramming, Multitasking, Multi-user OS.

INTRODUCTION TO DOS

Terminology of MS-DOS files, Types of Files, directory (root, single, multi, current), Relative and Absolute Path, booting of a system, self test, port, IO.SYS, MSDOS.SYS, internal and external commands with syntax like: date, Type, CD, Copy, MD, RD, Format, FDISK, Pack, ATTRIB, CHKDISK, MKDIR, CLS, DEBUG, RENAME, TIME.

Books for Study:

1. Sahdev S. K., Electronic Principle, Dhanpat Rai & Sons

2. Gupta and Kumar, Hand Book of Electronics, Pragati Prakashan
3. Sawhney A. K., Testing and Measuring Instruments, Dhanpat Rai & Sons
4. Rajaraman V., Fundamentals of Computer, Prentice Hall of India Pvt. Ltd.
5. Manhar Lotia, Pradeep Nair, Bijal Lotia, Modern All About Hard Disk.
6. Peter Norton's Complete Guide to DOS 6.22, Techmedia Publications.
7. Dhamdhare D.M., Systems Programming and Operating Systems, Tata Mc Graw hill Publishers

Reference Books:

1. Electronics and Digital Electronics, By – Herbert Donald, McGraw Hill Inc.
2. Peter Norton, Introduction to Computers, Tata Mc Graw Hill Publishers
3. Scott Muller, Sopen E., Upgradation and Repairing of IBM PC, Techmedia

B.Sc. – I SEMESTER: 2011 Onwards

SUBJECT: COMPUTER MAINTENANCE

PRACTICAL

Scheme of Practicals:

A student is required to do atleast 6 experiments in one semester. The scheme of practical examination will be as follows:

1. One experiment of three hours duration.

2. Marks:

Experiment	30
Sessional	10
Viva	10

Total Marks 50

List of Practicals:

1. Measurement of frequency using CRO with the help of Lissajou's figures.
2. Identification and Study of Pinout diagram of various cables and connectors used in a PC.
3. To explain and execute any five DOS internal commands.
4. To explain and execute any five DOS external commands.

5. Study of Device Manger in a PC.
6. Installation of printer and CD/DVD Reader/Writer.
7. Formatting and Partitioning of Hard Disk.
8. To study assembling and dissembling of the computer system.

(Or any other experiments of similar standard.)

B.Sc. – II SEMESTER: 2011 Onwards

COMPUTER MAINTENANCE

DIGITAL CIRCUITS AND OPERATING SYSTEMS AND INTRODUICION TO C

Max Marks: 70

UNIT – I

18 Lectures

LOGIC GATES

AND, OR, NAND, NOR, NOT, EX-OR - Symbol, Truth Table, Transistorized Circuit

LOGIC FAMILIES

RTL, DTL, TTL, ECL, CMOS logic families. Parameters: speed, power consumption packing density, fan-in and fan-out, voltage level, compatibility, noise margin level.

COMBINATIONAL LOGIC CIRCUITS Multiplexers, De-multiplexers, ICs from TTL, ECL and CMOS families.

FLIP FLOPS RS, D Type, JK and JK-MS Flip flop, Clocked and edge triggered flip-flops

UNIT –II

18 Lectures

SHIFT REGISTERS AND COUNTERS Parallel/serial in/out shift registers, Ring counter, Asynchronous and Synchronous counters.

CONVERSION ADCs and DACs: D/A conversion, Weighted Register method, R-2R ladder method factors involved in D/A conversion. A/D conversion Parallel comparator, Successive approximation.

Unit III

WINDOWS System Requirements, Configuring the Desktop Environment, Creating User and User Environment, Customizing Windows with control panel, Using Essential Accessories: System tools- Disk Cleanup, Disk defragmenter, System Registry, Registry Restoration, System File Checker.

INTRODUCTION TO NETWORKING

Introduction to LAN, LAN topologies, their advantages and disadvantages, Introduction to OSI and TCP/IP Model, Hostname and IP Address, PING.

UNIT-IV

INTRODUCTION TO UNIX UNIX Architecture (Kernel and Shell), Features of UNIX, UNIX system (Multiprogramming, Time Sharing, Multi tasking), UNIX file system, types of files, mounting and unmounting file systems, important UNIX directories.

Vi Editor, Types of Shell, Shell as Command interpreter, simple directory and file commands, piping, batch processing, filters and regular Expressions (wc, head, tail, cut, tr, grep, sed)

UNIT - V

C LANGUAGE

18 Lectures

Introduction to C language, form free, escape sequences – new line, back space, tab, clrscr etc. Data types-integer, float, character, long, void, double, long double. Operators (unary, binary, ternary) arithmetic, modulo, relational, logical, comma, assignment, ternary. Expression-arithmetic, relational, precedence of Operators, Elementary Programming in C language, developing small programs in C.

Books for Study:

1. Navneet Gokhle V.M., Kale R. G., Digital and Analogue Techniques, Kitab Mehal
2. Gaur R. K., Digital Electronics and microcomputers, Dhanpai Rai and Sons
3. Windows XP Professional, BPB Publications, New Delhi.
4. Thomas, Introduction to Local Area Networking, BPB Publications, New Delhi.
5. Sumitabha Das, Your UNIX: The Ultimate Guide, Tata Mc Graw Hill Ltd.
6. Yashwant Kanetkar, Let Us C, BPB Publications.

Reference Books:

1. Malvino and Leach, Digital Principles and applications, Tata mc Graw Hill.
2. Linux Bible 2005 By – Negus Christopher, John Wiley & Sons.
3. Dortch, ABC of Local Area Networking, BPB Publications, New Delhi.

B.Sc. – II SEMESTER: 2011 Onwards

COMPUTER MAINTENANCE

PRACTICALS

Note: Preferably 7 (seven) experiments should be done. Any other experiments of similar standard may also be set.

The scheme of examination will be as follows:

1. One experiment of three hours duration.
2. Marks:

Experiment	: 30
Sessional	: 10
Viva-voce	: 10
- Total Marks : 50**

List of Practicals:

1. To study RS and D flip flop (using TTL ICs.)
 2. To study JK flip flop.
 3. To study ADC and DAC.
 4. To write a program in C language for calculating the resonance frequency of LCR circuit; $f=1/2\pi\sqrt{LC}$.
 5. To write and run a program in C for checking whether a given number is even or odd.
 6. Disk Clean up and Disk Defragmentation.
 7. To study mounting and unmounting of drives and folders in Linux.
 8. To write small shell scripts in Linux.
- (Or any other experiment of similar standard.)

B.Sc. – III Semester

Subject: Computer Maintenance

MICROPROCESSOR, INTERFACING, DATA TRANSFER AND COMMUNICATION

M.M.: 85

UNIT-I

18 Lectures

INTRODUCTION TO MICROPROCESSOR INTEL 8086

Microprocessor: register organization, architecture and pin description; Instruction set: Data Transfer, Arithmetic, Logical and Branching instructions; Addressing modes: immediate, direct, register, register indirect, indexed, register relative, based indexed.

INTEL PROCESSORS

Introduction to various Intel Processors: 80286, 80386, 80486, Pentium and Pentium Pro: Architecture and Comparison

UNIT-II

18 Lectures

INTERRUPTS

Interrupts structure of 8086; Interrupts: interrupt cycle, non-maskable, maskable interrupt; DOS interrupts: INT 21H and various function calls; BIOS interrupts: INT 17H and various function calls

DIGITAL INTERFACING

Programmable parallel ports and handshake input/output using IC INTEL 8255, interfacing displays and keyboards with Intel 8279.

UNIT III

18 Lectures

ASSEMBLER: Distinction between system software and application software; Elements for assembly language programming; A simple assembler: Design of Two Pass Assembler.

ASSEMBLY LANGUAGE PROGRAMMING

Methods of writing an assembly language program: Introduction to MASM; Example of small programs such as addition, subtraction, multiplication and division of 8 and 16 bit numbers, summation of a series, largest/smallest number using different functions of DOS interrupts INT 21H.

UNIT IV

18 Lectures

ANALOG INTERFACING AND INDUSTRIAL CONTROL

D/A Converter Operation, Interfacing and Applications; A/D Converter Specifications, types and interfacing, Stepper motor interfacing; Microcomputer based scale; Microcomputer-Based Industrial Process-Control System and Instruments.

MULTIPLE MICROPROCESSOR SYSTEM AND BUSES

DMA data transfer: Basic DMA Definitions, Intel 8237 DMA Controller: Circuit Connections and Operation, A DMA Transfer and Timing Diagram, Interfacing and refreshing dynamic RAM.

UNIT V

18 Lectures

DATA COMMUNICATION - I

Asynchronous serial data communication (Intel 8251 chip study), Serial data transmission methods and standards: RS-232 C Serial Data Standard, RS-422A, RS-423A and RS-449; Introduction to modem modulation: Frequency Shift Keying Modulation, Phase Shift Modulation variations.

DATA COMMUNICATION - II

CODECs, TDM and PCM, ISDN, Fiber Optic Data Communication, Synchronous serial data communication and protocol using 8251 chip, HDLC and SDLC protocols. Priority Interrupt Controller Intel 8259A: Overview and System Connections.

Books for Study:

1. Microprocessors and Interfacing : Douglas V. Hall
Prgramming and Hardware
2. Microprocessors Comprehensive Studies : Naresh Grover
3. Advanced Microprocessors and Peripherals : A. K. Ray
K. M. Bhurchandi

Reference Books:

1. The Intel Microprocessor 8086,8088... Architecture : Barry. B. Brey
Programming and Interfacing
2. Microprocessor X86 Programming : K. R. Venugopal
Raj Kumar

B.Sc. – III Semester

Computer Maintenance

List of Practicals

Note: Preferably 7 (seven) experiments should be done. Any other experiments of similar standard may also be set.

The scheme of examination will be as follows:

7. One experiment of three hours duration.
8. Marks:
Experiment : 30
Sessional : 10
Viva-voce : 10

Total Marks : 50

1. To write and execute a program in assembly language of Intel 8086 for addition, subtraction, multiplication and division of two 8-bit numbers.
2. To write and execute a program in assembly language of Intel 8086 for summation of a given series.
3. To write and execute a program in assembly language of Intel 8086 for finding the largest number in a given series.
4. Study of TDM-PCM.

5. Study of Direct Memory Access Controller (DMAC-Intel 8257)
6. Study of Programmable Interrupt Controller Intel 8259.
7. Assembly Language Programming using call procedure
8. Assembly language Programming using Macro

B.Sc. – IV Semester

Computer Maintenance

SYSTEM SOFTWARE AND C++ PROGRAMMING

M.M.: 85

UNIT I

18 Lectures

HARD Disk PARTITIONING AND FORMATTING: Hard disk partitioning using FDISK, Disk Manager and Partition Magic, Disk Formatting: Low level and high level, File Systems: FAT and NTFS; Study of CMOS Setup: Various Options and their controls.

Low Level Programming

Call Procedures, Pseudo Op Codes, and Stack Operations: PUSH and POP Operations; Flag Registers and Branching Operations; Macro: Writing Macros, Passing Parameters to a Macro, Programming Examples using macros.

UNIT – II

18 Lectures

LEXICAL AND PARSER ANALYSIS: Lexical analysis, Parser for address expression and Symbol table, Linkers and Loaders, Separate compilation and Linking, Loading, Linking and Relocation, Program Relocatability, Overlays.

COMPILER DESIGNING: Design of a compiler, Main parts of compiler and their functions, Lexical analyzer, Parser Analyzer (Syntax and Semantic Analysis), Symbols table Manager, Intermediate Code Generator, Code Optimization, Code generator; Introduction to Lexical Errors, Logical Errors, Semantic Error, Syntax Error.

UNIT III

18 Lectures

SOFTWARE TOOLS: Software Tools for program development: Design and coding, entry and editing, testing and debugging, A brief overview: text editors, design of an editor, Programming Debug monitors, Methods of debugging an assembly language program using debug monitors.

System Tools

Disk Defragmenter, Disk Clean Up; Registry Scan, Back Up and Restore; Administrative Tools, Task manager, Performance Monitor, Event Viewer, Scheduled tasks.

Algorithm and Flowchart

Algorithm Design – Algorithm, Characteristics of a Good Algorithm, Flow chart design, flowchart symbols, Rules for making a flow chart, Advantages of flowchart; algorithms and flowcharts: summation of first fifty natural numbers and finding largest number; Features of a good program.

UNIT IV

18 Lectures

C++ Overview

C++ Characteristics, Object-Oriented Terminology, Object-Oriented Paradigm, Variables, Data Types, Operators, Keywords and Arithmetic Expressions, Variable declaration, C++ Statement, Input and Output Functions, Writing a C++ Program.

Selection and Looping Statements

Selection Statement (If-Then-Else), Multiple Selection (Switch-Case Statement), Looping Statements – Types of Looping Statements (Entry Control Loop and Exit Control Loop): for, while and do while.

UNIT V

18 Lectures

Variables, Functions and Pointers

Local and Global Variables, Scope of a variable, Storage class of a variable. Functions: Types of Functions: User Defined Function, Standard Function, Recursive Function, Pointers: Declaration, Pointer Arithmetic, Static vs. Dynamic Memory Allocation.

Arrays and File Handling

Arrays: Single Dimensions & Multidimensional Array, Processing of Arrays using loop: Bubble Sorting, Selection Sorting, Quick Sorting, Insertion Sorting, Deletion and Insertion of an element in an array; Structures, Arrays of structures, File Handling in C++, File Opening Modules, Opening and Closing a file, writing in a file and reading from a file.

Books for study:

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| 1. Compilers: Principles, Techniques, and Tools | : Alfred. V. Aho
Ravi Sethi
Jeffrey. D. Ullman |
| 2. System Programming and Operating Systems | : D. M. Dhamdhare |
| 3. C++ Programming | : E. Balaguruswami |
| 4. Let Us C++ | : Yashwant Kanitkar |
| 4. Modern All About Hard Disk Drive | : Manhar Loita, Pradeep
Nair,
Bijal Lotia |
| 5. How to Design Programs - An Introduction to Programming and Computing | : M. Felleisen |

Reference Books:

- | | |
|---------------------------------------|------------------------|
| 1. The C++ Programming Language | : Bjarne Stroustrup |
| 2. Object-oriented Programming in C++ | : Robert Lafore |

B.Sc. – IV Semester

Computer Maintenance

List of Practicals:

Note: Preferably 7 (seven) experiments should be done. Any other experiments of similar standard may also be set.

The scheme of examination will be as follows:

1. One experiment of three hours duration.

2. Marks:

Experiment : 30

Sessional : 10

Viva-voce : 10

Total Marks : 50

1. To write and run a program in C++ for finding the greatest number out of two.
2. To write a program in C++ for finding the factorial of a given number using function and recursive function.
3. To write and run a program in C++ for addition of two 3 X 3 matrices.
4. To write and run a program in C++ for file handling.
5. Study of debug monitor and its commands.
6. Study of CMOS setups and its various options.
7. To study the formatting of computer hard disk using FDISK command.
8. Study of system tools.

B.Sc. - V Semester

Computer Maintenance

Advance Peripherals, PC Maintenance and Trouble Shooting

Max. Marks: 85

Unit I - Microprocessor Types & Specifications

18 Lectures

Processor Packaging Styles; Processor Socket and Slot Types; Generations of Processors (up to eighth generation processors); Intel Compatible Processors; AMD and Cyrix Processors.

CPU Operating Voltages, Heating and Cooling Problems, Heat Sinks; Processor Troubleshooting techniques.

Power Supply and Chassis

Primary Functions and Operation, Power Supply Form Factors, Motherboard Power Connectors, Peripheral Power Connectors, Power Supply Specifications and Ratings, Power Supply Safety Certifications, Power Supply Troubleshooting :Overloaded Power Supplies, Inadequate Cooling, Specialized Test Equipment

Unit II

18 Lectures

Motherboard and Buses

Motherboard Form Factors: PC and XT, AT, LPX, ATX, and ITX; Mother Board Components: Processor Sockets/slots, Chipsets: INTEL 845 and 850 Families; SIS Chipset; North/South bridge architecture; Processor Bus, Motherboard Selection Criteria.

Motherboard Bus Organization: System Bus Types, Functions and Features; PCI Buses.

The ATA/IDE Interface

Overview of IDE, ATA Standards, ATA Features: ATA I/O Connector, ATA I/O Cable, ATA Signals, Dual Drive Configuration, Serial ATA, ATA Raid.

Unit III

18 Lectures

MEMORY

Memory Basics, Cache Memory, RAM Types, Memory Modules: SIMM, DIMM, RIMM, Physical RAM Capacity and Organization, Conventional Memory, Extended Memory. Troubleshooting Memory.

Flash Memory Devices and DVD

Types of Flash Memory Devices, Comparing Flash memory Devices, DVD Construction and technology, DVD Tracks and Sectors, DVD Capacity, DVD-RAM, DVD-RW, DVD+RW, Troubleshooting Optical Drives.

Unit IV

18 Lectures

USB, Serial Port and The SCSI Interface

Universal Serial Bus, USB Connectors, Enabling USB Port, USB Adapters, Serial Port.

Introduction to SCSI, Different Standards of SCSI, SCSI Cables and Connectors, SCSI cable and Connectors, Plug and Play SCSI, SCSI Configuration and Troubleshooting

Microcontrollers

Introduction to 8-bit microcontroller, Architecture of 8051 microcontroller, Pin configuration of 8051, register set of 8051, Important Operational Features of 8051, Instruction set of 8051

Hardware and Preventive Maintenance

Contributors to System Failure: Heat, Cold, Dust, Noise interface, Power Line Problems, Corrosion and Magnetism, Test Equipment: Wamp Plugs, Meters, Logic Probe/Pulser, Infrared Thermometer, Outlet Testers, Active Preventive Maintenance Procedure, System Back Ups, Power Line Noise, General Precautions

Unit V

18 Lectures

Computer Viruses, Antivirus and Vaccines

Definition and Types of Viruses: Boot viruses, Trojan horse, Stealth viruses, Worm; History, Viruses on Different Operating Systems, Infection Strategies: Non-resident and resident viruses; Methods to avoid detection, Vulnerability and Counter Measures. Antivirus and Vaccine.

Troubleshooting

Industry Standard Replaceable Components, Computer Faults, Types of Faults: Hardware and Software, Troubleshooting Tools, Fault Recognition, Fault Elimination Process, Trouble Shooting Levels, PC Diagnostics: Diagnostic Software, POST, Hardware Diagnostics; Top Troubleshooting Problems.

Books for Study:

1. Upgrading and Repairing PCs by Scott Muller; Publishers: Techmedia.
2. IBM PC and Clones by B. Govindarajalu, Publisher: Tata McGraw Hill Publishing Company Ltd.
3. Viruses and Vaccines by Appa Patil.

Reference Books:

1. PC Upgrade and Maintenance Guide by Mark Minasi; Publishers: BPB Publications, New Delhi

B.Sc. - V Semester

Computer Maintenance

Note: Preferably 7 (seven) experiments should be done. Any other experiments of similar standard may also be set.

The scheme of examination will be as follows:

1. One experiment of three hours duration.

2. Marks:

Experiment : 30

Sessional : 10

Viva-voce : 10

Total Marks : 50

List of Practicals:

1. Troubleshooting a computer system.
2. Configuration of Motherboard with the help of its jumpers.
3. To study viruses and antivirus.
4. Data recovery from hard disk using parallel connection method.
5. Installation of an Antivirus software and study of its various facilities.

B.Sc. – VI Semester

Subject: Computer Maintenance

Computer Networking & Troubleshooting

Max. Marks: 85

Unit I- Networking Fundamentals

18 Lectures

Introduction to Networking, Networking Basics: Hardware Components, Software Components, Switching Techniques: Circuit Switching, Packet Switching, Fundamentals of: Token Ring, FDDI, ATM (Asynchronous Transfer Mode).

Reference Models and Ethernet

OSI Model: Protocol Stacks, Layer and their Functions, Enhancement of OSI Model, TCP/IP Suit: Services and Applications Protocols.

Unit II

Hardware Elements for Network

Network Interface Cards, Network Adapter Cards, Network Cables: Ethernet Coaxial Cable, Twisted Pair cable, selecting the Proper cable: Category 3 Cable, Category 5 Cable, Category 6 Cable, Hubs and Switches, Building Your Own Twisted Pair Cables, Wireless Network Standards: Wi-Fi- A Standard Upon A Standard.

Ethernet

Fundamentals of Ethernet, Traditional Ethernet Dependent Interfaces: 10 Base2, 10 Base5, 10BaseT, Fastest Ethernet: 10BaseTX, 10BaseFX, 10BaseT4, Gigabyte Ethernet

Unit III – Building Local Area Network

18 Lectures

LAN Topologies, Types of Servers: File Servers, Print Servers, Application Servers, Network type: Peer to Peer Networks, Server Based Networks, Combinational Networks

Extending LAN: Repeaters, Bridges, Routers, Gateways, Hubs and Switches

Multiplexing and High – Speed Digital Access

Multiplexing: Frequency Division Multiplexing, Wave Division Multiplexing, Time Division Multiplexing and their applications

DSL Technology: ADSL, DMT and other DSL Technology, Cable Modems: Traditional Cable Networks, HFC Network, Data Transmission Schemes, and SONET

Unit IV

18 Lectures

Network Security and Protection and Troubleshooting

Network Security, Types of Network Attacks, and Common Networking Problems: Physical Media, Network Interface card, Network Protocol Mismatch, Network Congestion, Broadcast Storms, Power Problems, Server Problems.

Network Protection: Introduction to Firewall, Types of Firewall: Packet Filter Firewall, Circuit Proxy Firewall, Stateful Multi-Layer Inspection (SMLI) Firewall, Cryptography, Digital Signatures, Virtual Private Networks

Unit V

18 Lectures

Introduction to Cloud Computing

Cloud Computing: History of Cloud Computing, Cloud architecture, Cloud Storage, Advantages of Cloud Computing, Limitations of Cloud Computing

Developing Cloud Services

Web based Application – Pros and Cons of Cloud Service Development, Types of Cloud Service Development, Software as a Service, Platform as a service, Web Services, On Demand Computing, Discovering Cloud Services Development Services and Tools.

Books for Study:

1. Computer Networks by Andrew S. Tanenbaum; Publisher: Pearson Prentice Hall.
2. Complete Guide to Networking by Peter Norton and Dave Kearns Publisher: Techmedia
3. Cloud Computing: Web Based Applications That Change the Way You Work and Collaborate Online:
Michael Miller
4. Cloud Computing: A Practical Approach: Anthony T Velte
 Toby J Velte
 Robert Elsenpeter

Reference Books:

1. Data Communication and Computer Networks by Dr. Madhulika Jain and Satis Jain; Publisher: BPB Publications .
2. Data Communications and Networking: Behrouz A. Forouzan Publisher: Tata McGraw-Hill

Paper III: Practical and Project

A student is required to do at least 5 experiments and a project work in the semester. The project will be based on 3-4 weeks industrial training. The evaluation of the project will be based on written report as well as viva-voce examination. The scheme of examination will be as follows:

Distribution of Marks:

Practical

Experiment	:	15 Marks		
Sessional	:	05 Marks	Total :	25 Marks
Viva-voce	:	05 Marks		

Project

Project Work	:	15 Marks		
Project Report	:	05 Marks	Total :	25 Marks
Viva-voce	:	05 Marks		

Total : 50 Marks

List of Practicals:

1. Installation of LAN and its testing.
2. Installation of LAN card, LAN cable laying and connectivity and connecting hub.
3. Installation of Remote Control Desktop.
4. Installation of Wireless LAN.
5. Installation of Norton Internet Security and study of its utilities.
6. Setting up of a Server-Client Network and assigning permissions to clients.
7. Installation of LAN using Windows 2003 Server.
8. Installation of LAN using Linux.

(Or any other experiment of similar standard.)