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. Dhamdhere 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

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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	35
Sessional	05
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 INTRODUCION TO C

Max Marks: 70

UNIT – I **18 Lectures**

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, Program Manager, File Manager, 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.

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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 : 35
   Sessional : 05
   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=1/2Π√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.)