SHARNBASVESHWAR COLLEGE OF SCIENCE KALABURAGI

DEPARTMENT OF COMPUTER SCIENCE

CHN- CERTIFICATE COURSE IN COMPUTER HARDWARE & NETWORKING
CHN 01- BASIC ELECTRICITY AND HARDWARE COMPONENTS.

Teaching : 03 Hrs/Week **Max. Marks: 80**
Total : 96 Hrs **I.A. Marks: 20**

SECTION A

Basic Concepts of Electricity

Electric circuit, concept of alternating voltage and current frequency, Amplitude, Phase and graphical representation, Ohm's Law power & Energy concepts, Different resistive networks in AC & DC, Dry cells Battery, Fuses-Types & ratings. **6 Hrs**

Passive Elements

Resisters- Specification, Tolerance, rating, Color code, power dissipation, types of resisters- fixed & variable, Resisters in series & parallel combinations. **6 Hrs**

Capacitors- Types of capacitors- fixed & Variable capacitors, electrolytic capacitors, Dielectric capacitors, Series & parallel connection, RC circuits, Time constant, and their specifications, Energy stored in capacitor. **6 Hrs**

Inductors- Introduction to inductors, types, functions, specifications, behavior with A.C impendence, coil concept. **7 Hrs**

Transformers- Introduction to transformers, types of transformers, (Step-up & step-down) turn ratio, loss, type of cores used in transformers. **7 Hrs**

SECTION B

Semiconductor Devices- Concepts of conductor, Insulator semiconductor, types of semi conductor, P-type, N-type semiconductor, conduction in N-type and P-type semiconductor. **8 Hrs**

Diode- Principle and working of PN junction diode, zener diode, diode specification and identification, testing of diodes, diodes as rectifier, half wave & full wave, bridge rectifiers, filter circuits. **8 Hrs**

Transistors- Types of transistor and their characteristic in different configurations transistor identification and their specification, uses. **8 Hrs**

Regulated Power Supply- Three terminal IC power supplies, stabilized power supplies, short circuits and over voltage protection, typical supply circuits using IC's. Introduction to SMPS, Inventors, & UPS, Voltage Stabilizers and precautionary measures for electric shocks. **8 Hrs**

SECTION C

Number System - Binary, Octal, hexadecimal, decimal number system, ASCII codes, Binary Arithmetic operations, 1's & 2's Complement subtraction. **10 Hrs**

Logic Gates- AND, OR, NOT, NOR, NAND, XOR and XNOR gates, positive and negative logic, half adder & full adders, Boolean algebra. **11 Hrs**

Flip-Flops and counters- Basic RS latch, JK Master slave flip flop D & T Flip flop, Shift register, right & left shift registers, serial-in serial-out, parallel-in parallel-out operation, Counters: asynchronous & Synchronous parallel counter, decode counter, digital IC buffer, encoder, decoder, seven segment decoder, multiplexer, De-multiplexer. **11 Hrs**

References Books:

1. Computer Hardware: B Govindarajalu (TMH)
2. At Guide to managing & maintaining your PC, Jean Andrews, Pub: Thomas Learning publisher-2007.
3. Computer Sytem Architecture by M. Marismano, 3rd ed. N.D Pearson / PHI,2007.
4. Microprocessors- Mathur, Aditya P.N.D: TMH,2007-3rd edd.
5. Microprocessor system 8086/8088 family –Liu Y,2nd ed. N.D PHI, 2008, Gibson G.A
6. Principles of electronics- V.K Metha 9S.Chand & Co.)
7. Digital principles and applications-Malvino & Leach.

CHN 02- PHERIPHAL DEVICES AND MAINTAINENCE.

Teaching : 03 Hrs/Week **Max. Marks: 80**
Total : 96 Hrs **I.A. Marks: 20**

SECTION A

Peripheral Devices

Fundamentals of a Personal Computer- History of computers, classification of computers, Types of computers, components of computer, Block diagram of computer and characteristic of computer, application. **6 Hrs**

Introduction to Microprocessor- Block Diagram, Architecture of 8085 microprocessor with peripheral chips such as 8255, 8251, 8279 VSART, clock generators, PC Architecture, Types of processors & their specifications (Intel Celeron, P4 family, AMD). **6 Hrs**

Processor- installation of CPU in related mother board, operating voltage, power management, Functional parts of micro processor. **6 Hrs**

Memory- Various Volatile & Non Volatile memory, concept of FPM, EDO, SDRAM, SMM, IMM, Installation of various RAM into mother-board, static memory, ROM, PROM, EPROM, EEPOM, internal & external memory, BIOS intension, BIOS Capability, BIOS development BIU identification, system configuration, CMOS setup, Installing memory, Troubleshooting. **7 Hrs**

SMPS – Functions and its operation, color coding, types of connectors, testing voltages, power greed signal, power supply problems, troubleshooting to SMPS, Various types of cabinets- Vertical tower, mini tower, Serial and parallel interface- type of connectors- D type, 9 pin, 25 pin, male, female, their connection and configuration. **7 Hrs**

SECTION B

Mother Board & Components- Types, form factor, different components of mother boards (I/O slots, I/O connectors, CMOS battery, RTC, memory socket, BIOS, front panel connectors) types of buses, compatibility with the processor, SATA interface, Installation of Motherboard, troubleshooting of memory. **5 Hrs**

System Resources – IRQ, DMA**,** Memory address, I/O address, recourse conflict, Plug & play concept. **5 Hrs**

I/O Ports and Devices - Introduction to ports, Types of ports, before installing device, IRQ's, Troubleshooting ports, printers, types of printers, working of printers, Installing of a printer, Troubleshooting of printers, Key boards and Mouse. **5 Hrs**

CMOS Utility – Concept, CMOS RAM, CMOS Batter, backup, CMOS Utility, Program menu, clearing CMOS. **5 Hrs**

Add on Cards, Cables & Connectors – Different latest add on cards – (Identification in terms of I/O slot and connectors), AGP, PCI Express, TV tuner card, DVR card, Video capture, SCSI, USB, NIC, Fire wire, Internal Modem, Sound card. **6 Hrs**

Display System – Types of VDU, (CRT, LCD, LED), components o a video adapter, terms like resolution, dot pitch, interlaced & Non Interlaced power consumption, durability, Specification, Installation. **6 Hrs**

SECTION C

Drives-

Floppy Disk Drives- Floppy Drive, Components (Read/Write Head, Spindle Motor, Head Actuator, Sensor, Connectors) And Preventive Maintenance, Trouble Shooting. Hard Disk Drive – Types, Capacity, Hard Disk Drive Components (Media, R/W Head, Spindle Motor, Head Actuator) Connectors, Jumper Setting And HDD Specification (Head, Cylinder, Sector, Model Number, Firmware Number), Configuration Of HDD In CMOS, BIOS Setup, Partitioning, Formatting, Writing Format, File Format (FAT, NTFS, EXT3 For LINUX), Types Of Interface, Preventive Maintenance (S/W, H/W), Trouble Shooting (H/W, S/W Recovery, Zero Fill). **10 Hrs**

Optical Disk Drive – Types (ROM, R/W, DVD ROM, And DVD R/W), Capacity, Drive Components (Connectors, Motors, Sensors, Lens Jumper Setting) CD ROM Drive/ Disc Format (ISO9660, High Sierra), Difference Between CD & DVD (Capacity, Format), Interface (IDE, SCSI, USB), Troubleshooting, Multimedia Installation. **11 Hrs**

Backup Drive – Pen Drive U3 Format, Zip Drive, USB External Drive (HDD, CD/DVD Writer) Types, Capacity, Interface Connector, Write Protection, Trouble Shooting, Introduction Of Magneto-Optical Drive, Interface, Installation, Troubleshooting **11 Hrs**

Reference Books

1. IBM PC and Clones (Hardware Troubleshooting and Maintenance), B Govindarajalu (Tata McGraw Hill)
2. Bigelow's Troubleshooting Maintenance Guide- Biegelow (Tata McGraw Hill)
3. Computer Installation and Servicing – S.D Balsubramanyam (Pearson Eduacation)

CS-03 PRACTICALS

Teaching Hours: 03 Hrs/Week **Max. Marks: 80**
Total: 96 Hrs **I.A. Marks: 20**

The students shall perform at least 15 experiments form the following list.

1. Demonstration of assembled printed circuit board & components.
2. Demonstrate and use of hand tools, screw driver, pliers, threading tools, drilling machine. Soldering & de soldering practice.
3. Practice of simple series & parallel circuits to measure current, voltage, energy, battery/ cell series & parallel connections.
4. Demonstration of A.C & D.C instantaneous & RMS values, phase, time, period, frequency, & measurement of A.C voltage.
5. Use of Multimeter for the measurement of voltage, current, resistance,
6. Identification of resistors, using color code, classification of resistors, carbon metal film, wire wound resisters, potentiometers
7. Identification of inductors, transformer testing of various specifications.
8. Study digital IC's verification of truth tables of logic gates, verification of truth table multiplexer, Demultiplexer.
9. Identifying standard input & output devices of a PC & physical handling of I/O devices.
10. Identifying types of motherboards from specification & identifying components on a motherboard.
11. Identifying different types of drivers & understanding the mechanism of FDD, HDD, pen drive.
12. Installation of Operating system, partitioning forming.
13. Installation of different accessories.
14. Assembly & disassembly & reassembly of PC
15. Installation of Dual Operating systems.