

**M-Scheme DETAILED SYLLABUS**

**34682 – COMPUTER HARDWARE AND NETWORKS**

**UNIT I MOTHERBOARD COMPONENTS AND MEMORY STORAGE DEVICES**

**1.1 Introduction:** Parts - Mother board, sockets, expansion slots, memory, power supply, drives and front panel and rear panel connectors – Hardware, Software and Firmware.

**1.2 Processors:** Architecture and block diagram of multi core Processor(any one), Features of new processor(Definition only)-chipsets (Concepts only)

**1.3 Bus Standards** Overview and features of PCI, AGP, USB, PCMCIA, Processor BUS – High

**1.4 Primary Memory:** Introduction-Main Memory, Cache memory –DDR2- DDR3, RAM versions – 1TB RAM – Direct RDRAM

**1.5 Secondary Storage:** Hard Disk – Construction – Working Principle – Specification of IDE, Ultra ATA, Serial ATA; HDD Partition - Formatting. Troubleshooting hard disk drives.

**1.6 Removable Storage:** CD&DVD construction – reading & writing operations; CD-R,CDRW; DVD-ROM, DVD-RW; construction and working of DVD Reader / Writer. Blue-ray: Introduction – Disc Parameters – Recording and Playback Principles – Solid state memory devices.

**UNIT II I/O DEVICES AND INTERFACE**

**2.1 Keyboard and Mouse:** Keyboard: Signals – operation of membrane and mechanical keyboards troubleshooting; wireless Keyboard. Mouse- types, connectors, operation of Optical mouse and Troubleshooting.

**2.2 Printers:** Introduction – Types of printers– Dot Matrix, Laser, line printer, MFP (Multi Function Printer), Thermal printer - Operation –Construction – Features and Troubleshooting

**2.3 I/O Ports:** Serial, Parallel, USB, Game Port, Bluetooth interface, IR connector, fire ware, Signal specification problems with interfaces.

**2.4 Displays and Graphic Cards:** Panel Displays– Principles of LED, LCD and TFT Displays. SVGA Port signals – common problems and solutions.

**2.5 Power Supply:** SMPS: Principles of Operation and Block Diagram of ATX Power Supply, connector specifications

### **UNIT III BIOS, POST and Mobile Phone Servicing**

**3.1 BIOS:** Standard CMOS setup, Advanced BIOS setup, Power management, advanced chipset features, PC Bios communication – upgrading BIOS, Flash BIOS - setup.

**3.2 POST:** Definition – IPL hardware – POST Test sequence – beep codes and error messages.

**3.3 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.

**3.4 Tools & Instruments used in mobile servicing:** Mobile servicing kit – soldering and de-soldering components using different soldering tools - Use of multimeter and battery booster.

**3.5 Installation & Troubleshooting:** Assembling and disassembling of different types of mobile phones – Installation of OS - Fault finding & troubleshooting- Jumpering techniques and solutions.

**3.6 Software and Antivirus:** Flashing- Formatting- Unlocking -Use of secret codes- Downloading- Routing; Mobile Viruses – Precautions – Antivirus Software.

### **UNIT – IV COMPUTER NETWORK DEVICES AND OSI LAYERS**

**4.1 Data Communication:** Components of a data communication – Data flow: simplex – half duplex – full duplex; Networks – Definition - Network criteria – Types of Connections: Point to point – multipoint; Topologies: Star, Bus, Ring, Mesh, Hybrid – Advantages and Disadvantages of each topology.

**4.2 Types of Networks:** LAN – MAN – WAN – CAN – HAN – Internet – Intranet – Extranet ,Client-Server, Peer To Peer Networks.

**4.3 Transmission Media:** Classification of transmission media - Guided – Twisted pair, Coaxial, Fiber optics; Unguided – Radio waves – Infrared – LOS – VSAT – cabling and standards.

**4.4 Network devices:** Features and concepts of Switches – Routers(Wired and Wireless) – Gateways.

**4.5 Network Models:** Protocol definition - standards - OSI Model – layered architecture – functions of all layers.

## **UNIT V 802.X AND TCP/IP PROTOCOLS**

**5.1 Overview of TCP / IP :** OSI & TCP/IP – Transport Layers Protocol – connection oriented and connectionless Services – Sockets – TCP & UDP.

**5.2 802.X Protocols :** Concepts and PDU format of CSMA/CD (802.3) – Token bus (802.4) – Token ring (802.5) – Ethernet – type of Ethernet (Fast Ethernet, gigabit Ethernet) – Comparison between 802.3, 802.4 and 802.5

**5.3 Network Layers Protocol:** IP –Interior Gateway Protocols (IGMP, ICMP, ARP, RARP Concept only).

**5.4 IP Addressing :** Dotted Decimal Notation –Subnetting & Supernetting – VLSM Technique-IPv6 (concepts only)

**5.5 Application Layer Protocols:** FTP– Telnet – SMTP– HTTP – DNS – POP

## **TEXT BOOKS**

- 1.Computer Installation and Servicing D.Balasubramanian Arasan Ganesan Institute of Technology 1993
2. The complete PC upgrade and Maintenance Mark Minasi BPB Publication 1997