DETAILED SYLLABUS

UNIT – I MOTHERBOARD COMPONENTS   15 HOURS

1.1 **Motherboard components**: Processor sockets/slots – Memory sockets – Chipsets –
Cache– BIOS – Clock generator – RTC – Super I/O Controller – Power connector –
Battery –Keyboard/Mouse Connectors – Jumpers – Ports and Headers – Pin Connectors
-Motherboard Form factor - Hardware, Software and Firmware.
1.2 **Mother Board**: Architecture and block diagram
1.3 **Processors**: Introduction –Core2 Duo processor, Quad core processor, Core i3, i5, i7
series, AMD A10 series, Xeon Processor features only.
1.**4 Chipsets**: Chipset basics - North / South Bridge architecture and Hub architecture.
1.5 Bus Standards: Overview and features of PCI, AGP, USB, & Processor Bus.

UNIT – II MEMORY AND I/O DEVICES   15 HOURS
2.1 **Primary and Secondary Memory**: Introduction - Memory speed - Access time -
Wait states. Main Memory – types - Memory errors. Hard Disk: Introduction –
Construction – Working Principle – File Systems – Formatting and Troubleshooting.
2.2 **Removable Storage and Special Devices**: DVD-ROM – Recordable DVD -
Rewritable DVD. Blu-ray: Introduction - Blu-ray Disc Parameters - Recording and
Playback Principles. Special drives: External drives, Memory stick, USB flash drive, Solid
state drive.
2.3 **Keyboard and Mouse: Keyboard**: Interfacing and Signals (USB, Wireless), Types of
keys, Keyboard Matrix, Key bouncing, Types of keyboard (Simple, Mechanical). Mouse:
Optical mouse operation – Optical mouse cleaning – Troubleshooting flowchart for a
mouse.
2.4 **Printers and Scanners: Printer**: Introduction – Types of printers – Dot Matrix,
Inkjet, Laser, Thermal, MFP printer (Multi Function Printer) - Operation and
Troubleshooting. Scanner: Introduction, Scanner mechanism, working principle – Types
of Scanners (Barcode, Handheld, Flatbed) – Preventive maintenance and
Troubleshooting.

UNIT– III DISPLAY, POWER SUPPLY and BIOS   15 HOURS
3.1 **Displays and Graphic Cards: Displays**: LCD Principles – Plasma Displays – TFT
Displays - LED Displays. Graphic Cards: Video capture card.
3.2 **SMPS:** Block diagram – Basic Principles and Operations – O/P Voltage –Cable color
code – Connectors and Power Good – Common Failures (No circuit diagram to be
discussed)
3.3 **Bios:** Bios functions – Cold and Warm booting – BIOS error codes – BIOS interrupts
– BIOS advanced setup. Upgrading BIOS, Flash BIOS-setup. Identification of different
BIOS (AMI, AWARD BIOS).
3.4 **POST:** Error, Beep Codes, Error messages, Post – Faults related to Hardware.

UNIT – IV MAINTENANCE AND TROUBLESHOOTING OF DESKTOP & LAPTOP
COMPUTERS   17 HOURS
4.1 **Laptop:** Difference between laptop and desktop- Types of laptop – Block diagram –
working principles–configuring laptops and power settings - SMD components, ESD and
precautions
4.2 **Laptop components:** Adapter – Types, Battery –Types and basic problems, RAM–
types, CPU – types, Laptop Mother Board - block diagram, Laptop Keyboard.
4.3 **Installation and Troubleshooting**: Formatting, Partitioning and Installation of OS
–Trouble Shooting Laptop and Desktop computer problems.
4.4 **Preventive Maintenance and Upgrading**: Preventive Maintenance: Tools required
–active and passive maintenance – Types of Diagnostics software – Preventive

Maintenance Schedule. Upgrading of Systems: Motherboard, Memory, CPU, Graphics Card, BIOS up gradation and Updating of System & Application software.

UNIT – V MOBILE PHONE SERVICING   18 HOURS

5.1 **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.

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

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

5.4 **Software**: Flashing- Formatting- Unlocking -Use of secret codes-Downloading-Routing.

5.5 **Diagnostic Software and Viruses**: Mobile Viruses – Precautions – Antivirus Software.

REFERENCES

S. No.	Title	Author	Publisher	Year of Publishing / Edition
1	Computer Installation and Servicing	D.Balasubramanian	TataMc-Graw Hill, New Delhi	Second Edition 2010
2	PC Repair and Maintenance	Joel Rosenthal	Fire wall Media, New Delhi	First Edition 2007 Reprint : 2012
3	Modern Computer Hardware Course	Manahar Lotai, Pradeep Niar, Payal Lotia	BPB Publication, New Delhi	Second Revised and Updated Edition 2011
4	Troubleshooting, Maintaining and Repairing PCs	Stephen J.Bigelow	TMH, New Delhi	Fifth Edition
5	PC Hardware in a nutshell	Robert Bruce Thompson.	O'Reilly Media	Third Indian Reprint 2008.
6	The Laptop Repair Workbook: An Introduction to Troubleshooting and Repairing Laptop Computers.	Morris Rosenthal	Foner books	First Edition 2008
7	The Cell Phone Handbook	P.J. Stetz and Penelope Stetz	FindTech Ltd	Second Edition
8	Advanced Mobile Repairing	Pandit Sanjib	BPB Publication, New Delhi	First Edition 2010