Lesson Plan for Computer Hardware & Maintenance

This lesson plan is prepared lecture-wise, covering 45 contact hours as per the syllabus. Each unit is divided into lectures of 1 hour each.

Unit I – Fundamentals of Computer Hardware (11 Lectures)

1. Lecture 1: Introduction to Computer Hardware – Definition, Scope, Importance
2. Lecture 2: Types of Computer Systems – Desktop, Laptop, Server, Embedded
3. Lecture 3: Evolution of Computers – Generations and Milestones
4. Lecture 4: Overview of Hardware vs Software
5. Lecture 5: Motherboard – Functions, Components, Types
6. Lecture 6: Motherboard Form Factors (ATX, Micro-ATX, ITX etc.)
7. Lecture 7: Chipsets – Role, Types, Northbridge vs Southbridge
8. Lecture 8: Buses in Computer – PCI, PCIe, SATA, USB overview
9. Lecture 9: Comparison of Bus Standards (Speed, Applications)
10. Lecture 10: Hands-on Identification of Motherboard & Components
11. Lecture 11: Revision & Practice of Unit I

Unit II – Components and Peripherals (11 Lectures)

12. Lecture 12: CPU – Architecture, Types, Installation Procedure
13. Lecture 13: CPU Cooling Methods (Air, Liquid)
14. Lecture 14: RAM – Types (DDR, DDR2, DDR3, DDR4, DDR5), Installation
15. Lecture 15: Power Supply (SMPS) – Function, Types, Connectors
16. Lecture 16: Storage Devices – HDD: Working & Interfaces
17. Lecture 17: Storage Devices – SSD & NVMe: Speed & Applications
18. Lecture 18: Input Devices – Keyboard, Mouse, Scanner, Microphone
19. Lecture 19: Output Devices – Monitor (LCD, LED, OLED), Printers
20. Lecture 20: Ports & Connectors (USB, HDMI, VGA, DisplayPort)
21. Lecture 21: BIOS/UEFI – Basics, Setup & Configuration
22. Lecture 22: Revision & Practice of Unit II

Unit III – PC Assembly Process (11 Lectures)

23. Lecture 23: Safety Precautions in Assembly (ESD Handling)
24. Lecture 24: Tools Required for PC Assembly
25. Lecture 25: Mounting Motherboard in Cabinet
26. Lecture 26: Installing Processor (CPU) and Cooling Fan
27. Lecture 27: Installing RAM Modules
28. Lecture 28: Installing Storage Devices (HDD/SSD/NVMe)
29. Lecture 29: Connecting Power Supply (SMPS) to Components
30. Lecture 30: Installing Graphic Card and Expansion Cards
31. Lecture 31: POST (Power On Self Test) – Purpose & Errors
32. Lecture 32: BIOS Setup & Boot Configuration
33. Lecture 33: Revision & Practice of Unit III

Unit IV – Troubleshooting and Maintenance (12 Lectures)

34. Lecture 34: Common Hardware Problems & Symptoms
35. Lecture 35: Boot Errors – Causes & Diagnostic Tools
36. Lecture 36: BSOD (Blue Screen of Death) – Reasons & Fixes
37. Lecture 37: Driver Issues & Compatibility Problems
38. Lecture 38: Malware & Software Troubleshooting Tools
39. Lecture 39: Preventive Maintenance of Computer Hardware
40. Lecture 40: Cleaning & Dust Management in PCs
41. Lecture 41: Upgrading RAM – Procedure & Compatibility Issues
42. Lecture 42: Upgrading Storage – HDD to SSD Migration
43. Lecture 43: GPU Installation & Upgradation
44. Lecture 44: Case Studies of Hardware Failures & Fixes
45. Lecture 45: Final Revision & Problem Solving of Unit IV