

COMPUTER HARDWARE MAINTENANCE AND ADMINISTRATION

BRANCH:- CSE

SEMESTER – THIRD

These important questions have been prepared using your previous exam papers (PYQs), verified concepts, and additional reference from trusted online academic sources. For deeper understanding, please refer to your class notes as well.

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TOP 24 HIGH-PROBABILITY QUESTIONS

Unit 1: I/O Devices & Interfaces

1. What are **Input/Output (I/O) Devices**? Explain the **difference** between Input and Output Devices. Give two examples of each.
 2. What is the difference between a **Serial Port** and a **Parallel Port**? Explain the function of a Serial Port.
 3. Compare the main differences between **HDMI, VGA, and DVI** cables.
 4. Explain the role and importance of **USB ports** in modern computer systems.
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Unit 2 & 3: Power Supply (SMPS) & Basic Electronics

5. What is a **Switch Mode Power Supply (SMPS)**? Explain its **function and importance** in a computer system.
 6. Explain the different types of **SMPS connectors** (ATX, Molex, SATA, PCIe) used in a standard PC.
 7. List the common **symptoms of a faulty SMPS** and suggest precautions to be taken when handling power supplies.
 8. Define **Voltage, Current, and Resistance**. Explain their relationship using **Ohm's Law**.
 9. What are the main differences between a **BJT (Bipolar Junction Transistor)** and a **MOSFET**?
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Unit 4 & 5: Motherboard, Chipsets & Bus

10. Define **Motherboard Form Factor**. Explain the different types like **ATX, Micro-ATX, and Mini-ITX**.
11. What is a **Chipset**? Explain the roles of the **Northbridge and Southbridge** architecture.
12. Differentiate between **BIOS (Basic Input/Output System)** and **UEFI (Unified Extensible Firmware Interface)**.

13. Explain the concept of the **System Bus** (Data Bus, Address Bus, Control Bus). What is the function of the **CMOS Battery**?
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Unit 6 & 7: Memory & Storage

14. Explain the **Memory Hierarchy** in a computer system. Differentiate between **RAM and ROM**.
15. What is the key difference between **SRAM and DRAM**?
16. Compare and contrast **HDD (Hard Disk Drive) and SSD (Solid State Drive)** based on speed, reliability, and technology.
17. Explain the differences between **SATA, PATA, and NVMe** interfaces used for storage devices.
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Unit 8, 9 & 10: OS & Administration

18. What are the essential **Prerequisites** for installing Windows 10/11?
19. Explain the differences among **NTFS, FAT32, and exFAT** File Systems.
20. Differentiate between **Command Prompt and PowerShell**. Explain the role of the **Task Manager** in performance monitoring.
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Unit 11 & 12: Laptop Troubleshooting

21. What are the key differences between a **Laptop Motherboard and a Desktop Motherboard**?
22. Explain the troubleshooting steps for common **LCD Display issues** in laptops (e.g., dim video, flickering screen, or no display).
23. Discuss **malware mitigation techniques** and how they protect laptops.
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Unit 13: E-Waste Management

24. What is **E-waste (EEE and WEEE)**? Explain the concept of **EPR (Extended Producer Responsibility)** in E-waste management.

HIGHLY IMPORTANT SHORT NOTES (Revision Focus)

Topic / Unit	Short Note / Key Points to Remember
I/O Ports & Cables (Unit 1)	Serial vs. Parallel: Serial transmits one bit at a time (slower, longer distance); Parallel transmits multiple bits simultaneously (faster, shorter distance). USB: Universal standard, hot-swappable, provides power.

Topic / Unit	Short Note / Key Points to Remember
HDMI vs. VGA	HDMI: Digital signal, high-definition video + audio. VGA: Analog signal, video only, older standard.
SMPS Function (Unit 2)	Function: Converts high-voltage AC current (from wall) into low-voltage DC current (needed by components). Role: Essential for stable power supply and protecting components.
SMPS Connectors (Unit 2)	ATX: Main 20/24 pin power. ATX12V (EPS): 4/8 pin for CPU. Molex: Older peripherals (fans, drives). SATA: Slim connector for SATA drives. PCIe: 6/8 pin for high-power GPUs.
BJT vs. MOSFET (Unit 3)	Both are transistors. BJT: Current-controlled device. MOSFET: Voltage-controlled device (more common in modern digital circuits).
Motherboard Form Factors (Unit 4)	ATX: Standard desktop size. Micro-ATX: Smaller version, fewer expansion slots. Mini-ITX: Smallest, used for HTPC/SFF builds.
Northbridge vs. Southbridge (Unit 5)	Northbridge (Memory Controller Hub): Faster. Handles CPU, RAM, and GPU (high-speed components). Southbridge (I/O Controller Hub): Slower. Handles I/O devices, hard drives, USB, BIOS. (Modern CPUs integrate Northbridge functions).
BIOS vs. UEFI (Unit 5)	BIOS: Legacy, limited size/speed, supports MBR. UEFI: Modern, graphical interface, faster boot, supports GPT (large disks).
SRAM vs. DRAM (Unit 6)	SRAM (Static RAM): Faster, more expensive, used for Cache Memory. DRAM (Dynamic RAM): Slower, cheaper, used for System RAM (main memory).
HDD vs. SSD (Unit 7)	HDD: Mechanical platter, slower, cheaper, higher capacity. SSD: Flash memory chips, faster, no moving parts, more durable, more expensive.
SATA vs. NVMe (Unit 7)	SATA: Older interface, uses AHCI, slower (max $\sim 600 \text{ MB/s}$). NVMe: Uses PCIe lanes, much faster (up to 7000 MB/s), low latency, used for high-performance SSDs.
NTFS vs. FAT32 (Unit 9)	NTFS: Used by modern Windows, supports large files/partitions, security features (permissions). FAT32: Legacy, no security, limited to $\sim 4 \text{ GB}$ file size.

Topic / Unit	Short Note / Key Points to Remember
EPR (Unit 13)	Extended Producer Responsibility: Policy that holds manufacturers responsible for the entire lifecycle of their products, especially for the collection and disposal of e-waste.
E-waste (Unit 13)	EEE: Electrical and Electronic Equipment. WEEE: Waste Electrical and Electronic Equipment (the discarded EEE).

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