Module 2 : Installation and Maintenance of Hardware and Its

Section 1 : Multiple Choice

1. Which of the following precautions should be taken before working on computer hardware?

a) Ensure the computer is plugged in to prevent electrostatic discharge.

b) Wear an anti-static wrist strap to prevent damage from electrostatic discharge.

c) Work on carpeted surfaces to prevent slipping.

d) Use magnetic tools to handle components more easily.

Ans : b) Wear an anti-static wrist strap to prevent damage from electrostatic discharge.

2. What is the purpose of thermal paste during CPU installation?

a) To insulate the CPU from heat.

b) To provide mechanical support for the CPU.

c) To improve thermal conductivity between the CPU and the heat sink.

d) To prevent the CPU from overheating.

Ans : c) To improve thermal conductivity between the CPU and the heat sink.

3. Which tool is used to measure the output voltage of a power supply unit (PSU)?

a) Multimeter

b) Screwdriver

c) Pliers

d) Hex key

Ans : a) Multimeter

4. Which component is responsible for storing BIOS settings, such as date and time, even when the computer is powered off?

a) CMOS battery

b) CPU

c) RAM

d) Hard drive

Ans : a) CMOS battery

Section 2 : True Or False

5. True or False: When installing a new hard drive, it is essential to format it before use.

Ans : True

6. True or False: A POST (Power-On Self-Test) error indicates a problem with the CPU.

Ans : False

7. True or False: It is safe to remove a USB flash drive from a computer without ejecting it first.

Ans : False

Section 3 : Short Answer

8. Describe the steps involved in installing a new graphics card in a desktop computer.

Ans :

- Power off the computer and unplug all cables.
- Open the side panel of the case.
- Ground yourself to prevent static damage.
- Locate the PCIe x16 slot on the motherboard.
- Remove the case expansion slot cover(s).
- Insert the graphics card firmly into the PCIe slot.
- Secure the card with screws or the locking bracket.
- Connect PCIe power cables from the PSU if required.
- Close the case, reconnect cables, and power on.
- Install/update the latest GPU drivers.

9. What is RAID, and what are some common RAID configurations?

Ans :

- RAID (Redundant Array of Independent/Inexpensive Disks) is a method of combining multiple hard drives to improve performance, reliability, or both.

Common RAID configurations:

- **RAID 0 (Striping):** Data split across drives → Faster performance, no redundancy.
- **RAID 1 (Mirroring):** Data duplicated on two drives → High reliability, reduced storage capacity.
- **RAID 5 (Striping with Parity):** Data and parity spread across 3+ drives → Balance of performance and redundancy.

- **RAID 10 (1+0):** Combines mirroring and striping → High performance and redundancy, requires at least 4 drives.

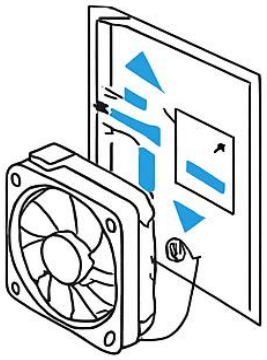
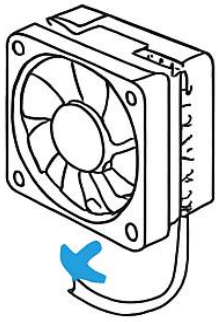
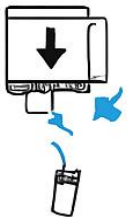
Section 4 : Practical Application

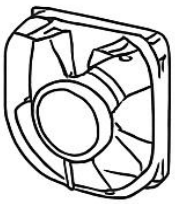
10. Demonstrate how to replace a CPU fan in a desktop computer.

CPU Fan Replacement

A) Replace just the CPU fan

1. Shut down & unplug pc.
2. Open the side panel, place case on a strale, non-carpert
3. Ground yourself, wear an anti-static wrist strap or touch bare metal on case
4. Locate CPU cooler
5. Note airflow direction on the old fan arror to yehs:
6. Unplug the fan from motherboad header
7. Remove the fan Unclip metel clips or unscrewa




5. Mount the new fam to heatsink w csa ıcam/mear call scors
9. Plug the fan back into CPU_FAN header
10. Cable-manage to reconnect power, boot

B) Replace the entire cooler

1. Shut down & unplug pc.
2. Open the side panel, oird groose case on a stable, non-carpet
6. Unplug ean tor inoe hearbard header

7. Remove the ian conter or ins
8. Inel/AMD screw mounts: for hne int loasen a cew t-anpıo wenll free
9. Plug the fan back into CPU_FAN
10. Cable-manage to ensure
11. Blades won't hit wires fitln aminc
12. Close the case, reconnect power
5. Clean old paste from cpu and cooler base with alcohol and lint-free
8. Loosen new paste to CPU
7. Pea-sized dot (or a narrown line in long, reclangu)
9. install the new cooler, absning posts/hor les and lowering straight down
9. Attach the new cooler, atigning posts/holes and lowering straight b
10. Tighten evenly in a cross pattern until snug and locking intel push-pins if
12. Plug fan into the CPU_FAN header and tidy-c

Section 5 : Essay

11. Discuss the importance of regular maintenance for computer hardware and provide examples of maintenance tasks.

Ans : Regular maintenance of computer hardware is essential to ensure smooth performance, extend the lifespan of components, and prevent costly repairs. Over time, dust, heat, wear-and-tear, and improper usage can negatively affect hardware efficiency. By performing routine maintenance, users can keep their systems reliable and stable.

Importance of Regular Maintenance:

1. **Improves Performance –** Keeps the system running smoothly without slowdowns or overheating.
2. **Prevents Hardware Failures –** Reduces the risk of component damage (e.g., fans, hard drives).
3. **Extends Lifespan –** Helps hardware last longer by minimizing stress and damage.
4. **Maintains Data Safety –** Prevents sudden crashes that may lead to data loss.
5. **Cost-Effective –** Saves money by avoiding early replacements or expensive repairs.

Examples of Maintenance Tasks:

- **Cleaning Dust and Debris**
  Use compressed air or a soft brush to remove dust from fans, CPU coolers, and vents to prevent overheating.
- **Checking and Replacing Thermal Paste**
  Replace old thermal paste on the CPU/GPU to maintain proper heat transfer.
- **Monitoring Hard Drive Health**
  Use tools (e.g., CrystalDiskInfo) to check for bad sectors and back up important files regularly.
- **Updating Software and Drivers**
  Keep BIOS, operating system, and drivers updated for better compatibility and security.
- **Running Antivirus/Antimalware Scans**
  Protects the computer from threats that can corrupt hardware or slow performance.
- **Cable Management**
  Organize internal and external cables to improve airflow and prevent accidental disconnections.
- **Inspecting and Replacing Worn Components**
  Replace aging fans, faulty power supplies, or weak batteries (like the CMOS battery).