Module-2: Installation and Maintenance of Hardware and Its Components

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.

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.

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

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

SECTION-2: True or False

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

Ans: True

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

Ans: False

7. 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:

- Turn off the computer
- Open the CPU side panel
- Locate the PCIe slot, if old graphic card is attached then remove it by unlocking PCIe lock
- Insert net graphic card and press until click sound
- Close the side panel and turn on CPU
- Install the necessary graphic drivers

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

Ans: RAID is technology used to combine multiple physical hard drives into logical storage.

Advantages of RAID:

- Improved performance: Use multiple disks to improve read-write operations.
- Date redundancy: Protects data in drive failure.
- Increased storage: Combines the physical storage into one logical volume

Types of RAID :

I. **RAID 0 (Stripping):** It access two drives simultaneously. It doesn't provide backup. Provides high speed and no redundancy.
II. **RAID 1 (Mirroring):** Data is duplicated across two drives for redundancy. It reduces the storage by half. Provides high redundancy.
III. **RAID 5 (Stripping with Parity):** It uses 3 drives for storing data and parity. Provides balance performance and redundancy.
IV. **RAID 6 (Stripping with Double parity):** It uses 4 drives for storing data and parity, it allows 2 drive failure.
V. **RAID 10 (1+0):** It combines RAID 1 & RAID 0 for high speed and redundancy.

SECTION-4: Practical Application:

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

Ans:

- Power off the computer and unplug all cables.
- Open the side panel of CPU.
- Remove all cables on motherboard.
- Unscrew the fan
- Apply new thermal paste and install new fan.
- Close the side panel and turn of computer
- Check that fan is detect in BIOS.

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

Ans: Regular maintenance keeps computer efficient, prevent overheating and reduce failures.

Maintenance tasks:

- Clean dust and fan.
- Replace thermal paste.
- Check the health of SSD/HDD.
- Clean peripheral ports.
- Regularly update firmware and drivers