Module 2 : Installation and Maintenance of Hardware and Its

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

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

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

Ans. Steps :

1) Open the CPU case using screwdriver.
2) Find the graphics card slot cover where the card will fit.
3) Insert the graphics card into the graphics card slot until it sounds like click.
4) Connect power cables from the SMPS if the card needs more power.
5) Close the CPU and screw it back.
6) Plug in monitor to the new graphics card port.
7) Turn on PC and install drivers if needed.

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

Ans. **RAID :**

- RAID stands for Redundant Array of Independent Disks.
- Combined of multiple hard drives to improve speed, data storage & safety.
- Mostly used in servers and advanced computer setups.

Common Configurations :

1) RAID 0(Striping) :
   - Splits data across devices.
   - Faster speed, but with no backup option.
   - If in case one drive fails, then all data is lost.
2) RAID 1(Mirroring) :
   - Copies data to two drives.
   - Good backup option, but uses double of space.
3) RAID 5 :
   - At least 3 drives needed.
   - Speed and Safety is combined using parity.
   - Can handle failure of one drive.

4) RAID 10(1 + 0) :
   - Mixing of RAID 1 and RAID 0.
   - At least 4 drives needed.
   - Faster and safe, but more drives are needed.

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

Ans. Steps :

1) Turn off the PC and unplug power cable.
2) Open the CPU case using a screwdriver.
3) Find the CPU fan.
4) Unplug the fan's power cable from motherboard.
5) Unscrew the fan from CPU socket.
6) Remove the old fan.
7) Attach new fan to the CPU Socket.
8) Plug new fan's cable into the same fan header.
9) Close the CPU case and tight the screws.
10) Turn on PC and check in BIOS that new fan is spinning properly.

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

Ans. **Importance of Regular Maintenance :**

- It keeps computer running smoothly, lasting longer, and helps to system failures.
- It improves system performance, cooling and stability.

Example of Maintenance Tasks :

1) Dust Cleaning
   - Use compressed air to clean fans and components.
   - Prevent overheating and noise of fan.
2) Cables and Connections Checking
   - Check that all cables are secure and not damaged.
   - Loose cable connections can cause system errors or crash the system.
3) Updating Drivers Regularly
   - Keeps hardware more compatible.
   - Improves system performance and security.
4) Use of Antivirus
   - Protects hardware from malicious software.
   - Prevent from losing of data and slowdowns.

5) Hard Drive Health Check
    - Use of command like CHKDSK etc.
    - Helps to catch signs of drive failure early.
6) Reapplying Thermal Paste
    - Keeps CPU and GPU cool if temperature rises.
    - Needed every few years.