**Assignment 2**

**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?

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

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

**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)?

**Ans. A) Multimeter**

4. Which component is responsible for storing BIOS settings, such as date

and time, even when the computer is powered off?

**Ans. A) CMOS battery**

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**

**Explanation: POST error indicates problem with components like RAM, graphics card, motherboard and others.**

1. It is safe to remove a USB flash drive from a computer without ejecting it first.

**Ans. False**

**Explanation: You should eject the USB flash drive to ensure that all files are written properly and not in use. Removing it without ejecting can cause data corruption or loss.**

Section 3: Short Answer

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

**Ans.** Steps to install a new graphics card in a desktop computer:

1. Power off and unplug the computer.
2. Ground yourself to prevent static discharge.
3. Open the case and locate the PCIe x16 slot.
4. Remove the old graphics card (if any).
5. Insert the new graphics card into the PCIe slot.
6. Secure it to the case with a screw.
7. Connect any required PCIe power cables.
8. Close the case and reconnect power.
9. Boot the system and connect the monitor to the GPU.
10. Install the latest graphics drivers.
11. **What is RAID, and what are some common RAID configurations?**

**Ans.** RAID stands for Redundant Array of Independent (or Inexpensive) Disks. It is a data storage technology that combines multiple hard drives or SSDs into a single logical unit to improve performance, data redundancy, or both.

**Common RAID Configurations:**

1. **RAID 0 (Striping)**
   * Purpose: Improved performance
   * Drives Required: Minimum 2
   * Pros: Fast read/write speeds
   * Cons: No redundancy — if one drive fails, all data is lost
2. **RAID 1 (Mirroring)**
   * Purpose: Redundancy
   * Drives Required: Minimum 2
   * Pros: Data is duplicated — high fault tolerance
   * Cons: No performance gain; only half of total storage is usable
3. **RAID 5 (Striping with Parity)**
   * Purpose: Balanced performance and redundancy
   * Drives Required: Minimum 3
   * Pros: Can tolerate 1 drive failure
   * Cons: Slower write speeds due to parity calculations
4. **RAID 10 (or 1+0)**
   * Purpose: High performance and redundancy
   * Drives Required: Minimum 4
   * Pros: Combines speed of RAID 0 with redundancy of RAID 1
   * Cons: Expensive — only 50% of storage is usable

Section 4: Practical Application

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

**Ans: Steps to Replace a CPU Fan in a Desktop Computer:**

1. Power off and unplug the computer.
2. Discharge static electricity by wearing an anti-static wrist strap or touching a grounded metal object.
3. Open the computer case by removing the side panel.
4. Disconnect the old CPU fan's power cable from the motherboard.
5. Remove the old fan and heat sink by loosening its mounting clips, screws, or bracket.
6. Clean the old thermal paste from the CPU surface using isopropyl alcohol and a lint-free cloth.
7. Apply a small amount of new thermal paste (pea-sized) to the center of the CPU.
8. Install the new CPU fan and heat sink, aligning it with the mounting bracket or holes.
9. Secure the new fan using clips or screws, depending on the design.
10. Connect the new fan’s power cable to the correct CPU\_FAN header on the motherboard.
11. Close the case, reconnect the power, and boot the computer.
12. Enter BIOS or use software to ensure the new fan is detected and functioning properly.

Section 5: Essay

**11. Discuss the importance of regular maintenance for computer hardware**

**and provide examples of maintenance tasks.**

**Ans.** Importance of Regular Maintenance for Computer Hardware

Regular maintenance is essential to keep computer hardware running efficiently, extend its lifespan, and prevent unexpected failures. It helps ensure optimal performance, reduces the risk of overheating, and minimizes system downtime caused by hardware issues.

**Benefits of Regular Maintenance:**

* Prevents dust buildup that can cause overheating
* Detects hardware issues early before they become serious
* Maintains smooth performance and reliability
* Increases the longevity of components

**Examples of Maintenance Tasks:**

1. Cleaning Dust from Components
   * Use compressed air to clean fans, heat sinks, and vents.
2. Checking and Replacing Thermal Paste
   * Replace dried-out thermal paste on the CPU for better heat transfer.
3. Inspecting and Replacing Faulty Cables
   * Ensure all power and data cables are secure and undamaged.
4. Monitoring System Temperatures
   * Use software tools to check CPU and GPU temps and ensure cooling is effective.
5. Updating Firmware and Drivers
   * Keep BIOS, motherboard, GPU, and peripheral drivers up to date.
6. Running Disk Checks and Defragmentation (for HDDs)
   * Use tools like CHKDSK or defragmentation to maintain storage health (not needed for SSDs).
7. Testing and Replacing Weak Power Supplies
   * Use a PSU tester or monitor voltage output if experiencing random shutdowns.