# Assignment 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?
   1. Ensure the computer is plugged in to prevent electrostatic discharge.
   2. **Wear an anti-static wrist strap to prevent damage from electrostatic discharge.**
   3. Work on carpeted surfaces to prevent slipping.
   4. Use magnetic tools to handle components more easily.

1. What is the purpose of thermal paste during CPU installation?
   1. To insulate the CPU from heat.
   2. To provide mechanical support for the CPU.
   3. **To improve thermal conductivity between the CPU and the heat sink.**
   4. To prevent the CPU from overheating.

1. Which tool is used to measure the output voltage of a power supply unit (PSU)?
   1. **Mustimeters**
   2. Screwdriver
   3. Pliers
   4. Hex key

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

a) **CMOS battery**

* 1. CPU
  2. RAM
  3. Hard drive

Section 2: True or False

1. True or False: When installing a new hard drive, it is essential to format it before use. **TRUE**
2. True or False: A POST (Power-On Self-Test) error indicates a problem with the CPU. **FALSE**
3. True or False: It is safe to remove a USB flash drive from a computer without ejecting it first. **FALSE**

Section 3: Short Answer

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

**Ans**.

**Power Off and Unplug**: Shut down the computer and unplug it.

**Open the Case**: Remove the side panel.

**Remove Old Card**: If applicable, unscrew and remove the old graphics card.

**Insert New Card**: Align and firmly push the new card into the PCIe slot.

**Connect Power**: Attach any necessary power cables.

**Close the Case**: Replace the side panel.

**Power On**: Plug in and turn on the computer.

**Install Drivers**: Install the required drivers for the new card.

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

**ANS**.

RAID (Redundant Array of Independent Disks) is a data storage virtualization technology that combines multiple physical disk drives into a single unit for improved performance, redundancy

Common RAID configurations include:

1. **RAID 0**: Stripes data across multiple disks for improved speed but offers no redundancy.
2. **RAID 1**: Mirrors data between two disks for redundancy; if one fails, data remains safe on the other.
3. **RAID 5**: Uses striping with parity, requiring at least three disks; it provides redundancy and better storage efficiency.
4. **RAID 10 (1+0)**: Combines mirroring and striping for high performance and redundancy, requiring at least four disks.

Section 4: Practical Application

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

**ANS. Done in Class**

Section 5: Essay

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

**ANS**.

Regular maintenance of computer hardware is essential for ensuring optimal performance, prolonging the lifespan of components, and preventing unexpected failures.

**Importance of Regular Maintenance**

1. **Performance Optimization**: Regular checks and cleaning can help maintain speed and efficiency, preventing slowdowns caused by dust buildup or failing components.
2. **Preventive Care**: Identifying potential issues early can prevent costly repairs or data loss from hardware failures.
3. **Longevity**: Keeping components clean and well-maintained extends their lifespan, reducing the need for frequent replacements.
4. **Reliability**: Regular maintenance ensures that hardware functions reliably, which is critical for both personal and business operations.
5. **Security**: Keeping firmware and drivers up to date can protect against vulnerabilities that may be exploited by malware.

**Examples of Maintenance Tasks**

1. **Dusting and Cleaning**: Regularly cleaning the interior and exterior of the computer to remove dust and debris that can cause overheating.
2. **Updating Drivers and Firmware**: Keeping drivers and system firmware up to date to ensure compatibility and performance.
3. **Checking Cables and Connections**: Inspecting and securing all cables to ensure proper connections and prevent short circuits.
4. **Monitoring Temperatures**: Using software tools to monitor component temperatures, ensuring they remain within safe limits.
5. **Running Diagnostics**: Regularly using built-in diagnostics or third-party tools to check the health of hard drives and other components.
6. **Backing Up Data**: Regularly backing up important data to prevent loss due to hardware failure.
7. **Replacing Batteries**: Checking and replacing CMOS batteries in motherboards when necessary to maintain system settings.

By incorporating these maintenance tasks into a routine, users can significantly enhance the reliability and performance of their computer hardware.