**Assignment 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.

Explanation

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

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

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

Ans- a) Multimeter

1. **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**

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

**Ans- t**rue

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

**Ans-** False

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

**Ans-** false

**Section 3: Short Answer**

**8. Steps to Install a New Graphics Card in a Desktop Computer**

1. **Power Off and Unplug the Computer: Ensure the computer is completely turned off and disconnected from the power source.**
2. **Open the Computer Case: Remove the side panel to access the internal components.**
3. **Remove the Old Graphics Card: Disconnect any power cables and unscrew the existing graphics card from the PCIe slot, then gently pull it out.**
4. **Install the New Graphics Card: Align the new card with the PCIe slot and firmly push it in until it clicks. Secure it with screws and reconnect any necessary power cables.**
5. **Close the Case and Reconnect Everything: Replace the side panel and reconnect all cables.**
6. **Power On and Install Drivers: Turn on the computer, install the graphics card drivers, and test the functionality.**

**9. What is RAID and Common RAID Configurations**

**RAID (Redundant Array of Independent Disks) is a storage technology that combines multiple hard drives to enhance performance and provide data redundancy.**

**Common RAID Configurations:**

* **RAID 0 (Striping): Distributes data across multiple disks for improved speed but no redundancy.**
* **RAID 1 (Mirroring): Duplicates data on two disks for redundancy; if one fails, data is safe on the other.**
* **RAID 5: Distributes data and parity across three or more disks, allowing for one disk failure without data loss.**
* **RAID 6: Similar to RAID 5 but can tolerate two disk failures due to additional parity.**
* **RAID 10 (1+0): Combines RAID 1 and RAID 0, offering both speed and redundancy, requiring at least four disks.**

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**Section 4: Practical Application**

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

**Ans-** replace cpu fan in step 1 Power Off and Unplug the Computer and Open the Case, step 2 Disconnect the Old Fan and Remove CPU Fan and Heatsink, step 3 Clean the Old Thermal Paste and Apply New Thermal Paste, step 4 Install the New Fan/Cooler, step 5 Close the Case and Reconnect and check

**Section 5: Essay**

Regular maintenance of computer hardware is crucial for ensuring optimal performance, longevity, and reliability. Neglecting maintenance can lead to overheating, hardware failures, and decreased efficiency. Here are some key reasons for regular maintenance:

1. **Prevents Overheating**: Dust accumulation can block airflow, leading to overheating. Regular cleaning helps maintain proper ventilation and cooling.
2. **Enhances Performance**: Keeping hardware components in good condition ensures that the computer operates at peak performance, reducing lag and improving responsiveness.
3. **Extends Lifespan**: Routine maintenance can prolong the life of hardware components, saving costs on replacements and repairs.
4. **Ensures Data Integrity**: Regular backups and checks can prevent data loss due to hardware failures, ensuring that important information is safeguarded.
5. **Updates for Security and Compatibility**: Keeping BIOS, firmware, and drivers up to date helps protect against vulnerabilities and ensures compatibility with new software and hardware.

**Examples of Maintenance Tasks**

* **Cleaning**: Regularly dusting off components, including fans, heat sinks, and vents, to prevent overheating.
* **Replacing Thermal Paste**: Applying new thermal paste to the CPU and GPU to improve heat transfer and cooling efficiency.
* **Updating BIOS and Drivers**: Keeping the BIOS and hardware drivers updated to enhance performance and security.
* **Replacing Old Fans**: Installing new fans if existing ones are noisy or ineffective to ensure proper cooling.
* **Regular Backups**: Performing routine backups of important data to prevent loss in case of hardware failure.
* **Checking Cables and Connections**: Inspecting and securing cables, power connectors, and internal plugs to ensure stable connections and prevent power issues.

By implementing these maintenance tasks, users can significantly improve the reliability and performance of their computer systems.