**ASSIGNMENT – 2:**

**Installation and Maintenance of Hardware and its Components**

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| **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.**

**Answer:** (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.**

**Answer:** (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**

**Answer:** (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**

**Answer:** (a) CMOS battery

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| **SECTION 2: TRUE OR FALSE** |

**5. True or False: When installing a new hard drive, it is essential to format it before use.**

**Answer:** True

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

**Answer:** False

**7. True or False: It is safe to remove a USB flash drive from a computer without ejecting it first.**

**Answer:** False

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| **SECTION 3: SHORT ANSWER** |

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

* **Answer:**
  + Turn off the computer and disconnect it from the power source.
  + Remover the side panel of the computer case to access the internal components.
  + Align the new card with the PCIe slot and press it firmly until it clicks into place. Secure it with screws.
  + Attach necessary power connectors from the PSU to the graphics card.
  + Close the case.
  + Start the computer, download, and install the latest drivers for the new graphics card from the manufacturer’s website.

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

* **Answer:** Redundant Array of Independent Disks is a data storage technology that combines multiple drives into a single logical unit to improve performance, provide redundancy, or both.
* **Common RAID Configurations:**
  + RAID 0: Striping without redundancy; improves performance but offers no fault tolerance.
  + RAID 1: Mirroring; duplicates data across two drives for redundancy.
  + RAID 5: Striping with parity; requires at least three drives, offers fault tolerance, and balances performance and redundancy.
  + RAID 10(1+0): Combines mirroring and striping; provides high performance and fault tolerance but requires a minimum of four drives.

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| **SECTION 4: PRACTICAL APPLICATION** |

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

* **Answer:** 
  + Power off and unplug the computer.
  + Open the case.
  + Carefully remove the old fan by loosening its mounting screws.
  + Clean the CPU surface.
  + Apply fresh thermal paste.
  + Install the new fan with proper alignment.
  + Secure it with screws.
  + Reassemble the computer and test its functionality.

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| **SECTION 5: ESSAY** |

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

* **Answer:** 
  + **Improve performance**
    - Maintenance can help your computer run faster and more efficiently by removing dust and debris, updating software, and defragmenting your disk.
  + **Prevent problems**
    - Regular maintenance can help you identify and fix issues before they become more serious and lead to data loss or system outages.
  + **Extend hardware life**
    - Maintenance can help prevent wear and tear that can lead to costly repairs.
  + **Improve security**
    - Maintenance can help keep your computer safe from malware and other security threats.
  + Some examples of computer hardware maintenance tasks include:
    - **Cleaning**: Cleaning internal components, such as fans and heat sinks, to prevent overheating.
    - **Updating**: Updating operating systems and drivers to ensure they are compatible.
    - **Removing software**: Removing software that may be unnecessary or resource-intensive.
    - **Running disk clean-up**: Running a disk clean-up to free up disk space on your hard drive.
    - **Backing up data**: Regularly backing up your data so you have a copy in case anything goes wrong.