# 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?

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

## Section 2: True or false

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

## Section 3: Short Answer

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

Ans = steps involved in installing a new graphics card in computer are following

I. Power Off and Unplug the Computer
II. Open the Case
III. Discharge Static Electricity
IV. Locate the PCIe Slot
V. Remove the Expansion Slot Cover
VI. Insert the Graphics Card
VII. Secure the Card
VIII. Connect Power (if needed)
IX. Close the Case and Reconnect Power
X. Close the Case and Reconnect Power

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

Ans = **RAID stands for Redundant Array of Independent Disks it** is a data storage virtualization technology that combines multiple physical hard drives into a single logical unit for **improved performance, redundancy, or both**.

Common RAID Configurations:

1. **RAID 0 (Striping):**
   - **Purpose:** Performance
   - **Pros:** Fast read/write speeds
   - **Cons:** No fault tolerance — if one drive fails, all data is lost.
2. **RAID 1 (Mirroring):**
   - **Purpose:** Redundancy
   - **Pros:** Data is mirrored on two drives; high fault tolerance.
   - **Cons:** Storage capacity is halved (since all data is duplicated).
3. **RAID 5 (Striping with Parity):**
   - **Purpose:** Performance and fault tolerance
   - **Pros:** Data and parity are striped across three or more drives; can survive one drive failure.
   - **Cons:** Slightly slower writes due to parity calculations.
4. **RAID 10 (or 1+0):**
   - **Purpose:** Performance and redundancy
   - **Pros:** Combines RAID 1 and RAID 0; fast and fault-tolerant.
   - **Cons:** Requires at least 4 drives; only half the total capacity is usable.

RAID is often used in servers, NAS devices, and high-performance desktops that require data protection or fast storage access.

## Section 4: Practical Application

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

Ans = steps for replacing a cpu fan in desktop computer are following

1. Power Down and Unplug

2. Open the Computer Case

3. Disconnect the Old Fan

4. Remove the Old Fan and Heatsink

5. Clean the Old Thermal Paste

6. Apply New Thermal Paste (If Needed)

7. Install the New Fan

8. Connect the New Fan

9. Close the Case and Power On

## Section 5: Essay

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

Ans =

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Ans =

1. **mproves Performance:**
   Dust, outdated drivers, or poor thermal management can slow down a computer. Regular cleaning and updates keep it running smoothly.
2. **Extends Hardware Lifespan:**
   Preventative care reduces wear on components like fans, hard drives, and power supplies, helping them last longer.
3. **Prevents Overheating:**
   Dust buildup in fans and heatsinks impairs airflow, leading to thermal issues. Maintenance ensures proper cooling.
4. **Reduces Risk of Data Loss or Failure:**
   Failing hard drives or overheating CPUs can result in system crashes or permanent data loss. Maintenance helps detect problems early.
5. **Enhances Security:**
   Keeping firmware and hardware-related software updated helps close security vulnerabilities.