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**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?

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.

Note: - Before working on computer hardware its important to prevent electrostatic discharge (ESD), which can damage sensitive components.

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.

Note: - Thermal paste fills microscopic gaps between the CPU and heat sink to ensure efficient heat transfer, helping to keep the CPU cool.

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

Note: - A multimeter is used to measure voltage, current and resistance. It is essential for checking if the PSU is delivering the current voltage.

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

Note: - The CMOS battery is the small cell that have the system hardware configuration and date and time even when the system is unplugged.

**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

Note: - A new hard drive must be partitioned and formatted before it can store file. Formatting prepares the drive with a file system e.g. NTFS, FAT so the OS can read and write.

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

Ans: - False

Note: - While a POST error can indicate various hardware issues like RAM, GPU, MOTHERBOARD, etc etc. CPU failure is rare. So A POST error doesn’t always mean there’s a CPU problem.

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

Ans: - False

Note: -Removing it without ejecting can lead to data corruption and loss.

**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 graphic card: -

1. Power down and remove plug from the computer.
2. Open the computer case.
3. Locate the PCI Express slot.
4. Insert the graphic card.
5. Connect the power cables if needed.
6. Close the computer case.
7. Power on computer
8. Install or update GPU drivers.

And all set to go.

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

Ans: - RAID is stands for Redundant Array Independent disks.

RAID is a data storage technology that converts multiple physical hard disks into one logical disk.

. improve performance,

. increase storage capacity and

. increase redundancy.

Common RAID configuration: -

1. RAID 0 (Striping)

* Purpose: Speed/performance
* How it works: Data is split across two or more disks.
* Pros: Fast read/write speeds
* Cons: No redundancy — if one disk fails, all data is lost
* Minimum Drives: 2

2. RAID 1 (Mirroring)

* Purpose: Redundancy
* How it works: Data is duplicated (mirrored) on two drives.
* Pros: High data protection — if one drive fails, data is still safe
* Cons: Storage is halved (1TB + 1TB = 1TB usable)
* Minimum Drives: 2

3. RAID 5 (Striping with Parity)

* Purpose: Balanced performance and redundancy
* How it works: Data and parity (recovery info) are spread across all drives
* Pros: Can survive the failure of 1 disk; good read speed
* Cons: Slower write performance; complex rebuilds
* Minimum Drives: 3

4. RAID 10 (RAID 1 + RAID 0)

* Purpose: High performance + redundancy
* How it works: Combines striping (RAID 0) and mirroring (RAID 1)
* Pros: Fast and fault-tolerant
* Cons: Expensive — only half the total drive space is usable
* Minimum Drives: 4.

**Section 4: Practical Application**

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

Ans: - Steps to replace the CPU FAN: -

1. Power down and unplugged the computer

2. Open the computer case

3. Locate the CPU fan

4. Disconnect the fan cable

5. Remove the old fan

6. Clean the old thermal paste

7. Apply new thermal paste

8. Install the new CPU fan

9. Connect the fan cable

10. Close the computer case and turn on computer.

And all set to go.

**Section 5: Essay**

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

Ans: - Regular maintenance is essential to keep computer hardware running efficiently, reliably, and safely. It helps prevent hardware failures, extends the lifespan of components, and ensures optimal performance.

**Examples of Computer Hardware Maintenance Tasks**

1. Cleaning

2. Hardware and Storage Maintenance

3. Temperature and Cooling Check

4. Cable Management

5. Power-Supply Inspection

6. Ram and Component Check

7. Firmware/BIOS Update

8. Back-up and Data protection.