NAME :- MEWADA PAVAN

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 fromelectrostatic

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 electrostatic discharge.

1. 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 supplyunit (PSU)?

a) Multimeter b) Screwdriver c) Pliers d) Hex key

ANSWER : a] Multimeter

1. 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

SECTION 2: TRUE OR FALS E

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

ANSWER : TRUE, Formating makes hard drive usable.

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

ANSWER : FALSE, But **not all POST errors mean a CPU problem** — they could be due to RAM, graphics card, or other components too.

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

ANSWER : FALSE, It is **not safe** to remove a USB flash drive without ejecting it first. Because there are great chances for data loss, file system error, usb unreachable, etc.

SECTION 3: SHORT ANSWER

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

ANSWER :

1. POWER DOWN AND UNPLUG
2. OPEN THE COMPUTER CASE
3. LOCATE PCI’S SLOT

\* IF OLD GRAPHIC CARD IS INSTALLED, THEN CAREFULLY REMOVE IT.

4. PREPARE EXPANSION SLOT.

5. INSTALLED GRAPHICS CARD LINE IT UP PCIe X 16 SLOT

6. CONNECT POWER CABLE.

7. CLOSE THE CASE AND RECONNECT & POWER ON.

8. INSTALLED DRIVE FROM MANUFACTURED’S WEBSITE [ NVIDIA, AMD,

INTEL] .

9. CHECK DISPLAY OUTPUT AND RUN THE GAMES TO ENSURE THE GPU

WORKING PROPERLY.

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

ANSWER : **RAID (Redundant Array of Independent/Inexpensive Disks)** is a storage technology that combines multiple hard drives (or SSDs) into a single system to improve **performance, reliability, or both**.

**🔹 Common RAID Configurations**

**1. RAID 0 (Striping)**

* **How it works**: Data is split evenly across 2 or more drives.
* **Pros**: High performance, faster read/write speeds.
* **Cons**: No redundancy → if one drive fails, all data is lost.
* **Minimum drives**: 2

**2. RAID 1 (Mirroring)**

* **How it works**: Data is duplicated (mirrored) across 2 drives.
* **Pros**: High redundancy (if one drive fails, data is safe).
* **Cons**: Storage capacity is cut in half (because data is duplicated).
* **Minimum drives**: 2

**3. RAID 5 (Striping with Parity)**

* **How it works**: Data and **parity information** (used to rebuild data if a drive fails) are distributed across all drives.
* **Pros**: Good balance of performance, storage efficiency, and fault tolerance.
* **Cons**: Write speed is slower due to parity calculations.
* **Minimum drives**: 3

**4. RAID 6 (Striping with Double Parity)**

* **How it works**: Similar to RAID 5, but stores **two sets of parity**.
* **Pros**: Can survive the failure of 2 drives.
* **Cons**: Slower writes, less usable storage.
* **Minimum drives**: 4

**5. RAID 10 (RAID 1 + 0, Mirrored Stripes)**

* **How it works**: Combines RAID 1 (mirroring) and RAID 0 (striping). Data is striped across mirrored pairs.
* **Pros**: High performance **and** redundancy.
* **Cons**: Expensive (needs at least 4 drives, and half storage is lost to mirroring).
* **Minimum drives**: 4

SECTION 4: PRACTICAL APPLICATION

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

ANSWER :

1. POWER DOWN AND UNPLUG
2. OPEN CASE
3. LOCATE THE CPU COOLER/FAN

\*The CPU cooler is mounted directly on top of the CPU socket, usually near the center of the motherboard.

4. DISCONNNECT THE FAN CABLE

5. REMOVE THE OLD FAN/COOLER

6. CLEAN THE CPU SURFACE

7. APPLY NEW THERMAL PASTE

8. INSTALL NEW COOLER /FAN

9. CONNECT THE COOLER /FAN

10. CLOSE THE CASE

\* Reattach the side panel and secure it with screws.

11. Power On and Test

\* Enter the **BIOS/UEFI** or use monitoring software (like HWMonitor) to check CPU temperatures and confirm that the fan is spinning.

SECTION 5: ESSAY

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

ANSWER :

----------- **Importance of Regular Maintenance-----------**

1. **Improves Performance** – Cleaning hardware and updating drivers can prevent slowdowns.
2. **Prevents Overheating** – Dust and dirt buildup in fans and heat sinks can cause overheating, which may damage components.
3. **Reduces Downtime** – Regular checks help detect issues early before they lead to complete hardware failure.
4. **Increases Lifespan** – Proper care can extend the usable life of components like hard drives, power supplies, and cooling systems.
5. **Data Safety** – Preventive maintenance reduces the risk of sudden crashes or drive failures that could lead to data loss.
6. **Cost Savings** – Timely maintenance avoids expensive repairs or replacements.

**-------------Examples of Maintenance Tasks----------------**

1. **Cleaning Tasks**
   * Remove dust from fans, vents, and heat sinks.
   * Clean keyboards and screens to prevent malfunction or poor visibility.
2. **Cooling & Ventilation**
   * Ensure proper airflow inside the CPU case.
   * Reapply thermal paste on CPU when necessary.
3. **Hardware Checks**
   * Inspect cables, power supply, and ports for wear or damage.
   * Run hard drive diagnostics to check for errors or bad sectors.
4. **Software-Related Maintenance**
   * Update drivers and BIOS for compatibility and performance.
   * Run antivirus scans to prevent malware affecting hardware efficiency.
5. **Preventive Measures**
   * Use surge protectors or UPS to prevent power damage.
   * Ensure proper environment (cool, dust-free area) for hardware placement.

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