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Batch: Hardware (Abdul Hamid Sir) 9:30am to 10:30am

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.

2. What is the purpose of thermal paste during CPU installation?
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)?
Ans: [a] Multimeter

4. 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

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: **1.Power Down and Unplug the PC**
• **Turn off your computer.**
• **Pull it out of the wall outlet and power down the PSU.**

2. Open the Case
• **Take the side panel off of your PC case with a screwdriver.**
• **Work on a flat, static-free area.**

3. Discharge Static Electricity
• **Use an anti-static wrist strap or touch something metal to discharge**
static to prevent harming components with static.

4. Find the PCIe Slot
• **Locate the PCIe x16 slot (generally the longest slot nearest the CPU).**
• **If upgrading, take out the old GPU by unscrewing it and unplugging it with care.**

5. Remove Expansion Slot Covers
• **If the new GPU is bigger, you may need to take out 1–2 metal brackets in the back of the**
case.

6. Install the Graphics Card
• **Align the gold connectors with the PCIe slot.**
• **Squeeze. Press the card firmly and steadily into the slot until it clicks in place.**
• **Fasten. Screw the side of the GPU to the case.**

7. Connect Power Cables (if necessary)
. **High-performance GPUs draw more power.**
. **Connect. 6-pin or 8-pin PCIe power cables from your PSU to the GPU.**

8. Close the Case
. **Close up. Reattach the side panel and tighten screws.**

9. Plug In and Power On
. **Plug it back in.**
. **Plug your monitor into the new GPU, not the motherboard.**
.**Turn on your PC.**

10. Install Drivers
• **After booting Windows, install the current graphics drivers**

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

Ans: RAID is an acronym for Redundant Array of Independent (or Inexpensive) Disks. It's a virtualization technology for data storage that takes several hard disks or SSDs and groups them together into one unit to
•Enhance performance
•Provide data redundancy is
•Both!

RAID Configurations:

RAID 0 – Striping
Divides data between 2 or more disks.
High performance
No redundancy. If a disk fails, all data is lost.
Ex. Gaming, video editing.

RAID 1 – Mirroring
Copies data on two disks.
High redundancy. One disk crashes? The other still contains all the data.
Storage capacity reduced by half (50% efficiency).
Ex. Critical personal or business information.

RAID 5 – Striping with Parity
Data is striped with parity (error-checking data) over 3 or more disks.
Good trade-off between performance, storage, and redundancy.
Slower writes because of parity calculation.
Ex. Servers, NAS systems.

RAID 10 (1+0) – Striped and Mirrored
Merges RAID 1 and 0 – striping for performance, mirroring for redundancy.
Fault-tolerant and fast.
Requires a minimum of 4 drives; 50% storage efficiency.
High-availability and high-performance configurations.

Section 4: Practical Application

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

Ans: DONE

Section 5: Essay

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

Ans:

Computers are a necessity of life in this technology era for work, education, entertainment, and communication. Like any device, computers also need to be maintained regularly so that they can run smoothly and serve long. Hardware maintenance is particularly vital since it impacts the performance, reliability, and longevity of the computer directly.

Why Hardware Maintenance Matters

Dust, heat, and wear over time can deteriorate computer parts. Poor maintenance may lead to overheating, reduced performance, or even sudden hardware failure. Regular maintenance assists in:

=>Preventing hardware failure

=>Optimal performance

=>Component life extension

=>Prohibition of expensive repairs or data loss

Keeping hardware clean and monitoring for the first sign of issues, users can minimize the chances of breakdowns and enhance overall productivity.

Examples of Common Maintenance Tasks

=>Cleaning Dust and Debris:

Dust accumulation prevents airflow and causes overheating.

Clean fans, vents, and internal parts routinely with compressed air.

=>Inspecting and Replacing Thermal Paste:

Enables efficient heat exchange between heat sink and CPU.

Reapply periodically for optimal cooling performance.

=>Hard Drive Health Monitoring:

Inspect using programs like Crystal Disk Info or SMART status.

Back up data routinely and replace malfunctioning drives.

=>Firmware and Driver Update:

Maintains device compatibility and optimizes performance.

Periodic updates can resolve bugs and security issues.

=>Checking and Controlling Cables:

Faulty or loose cables can lead to connectivity issues.

Secure and manage cables to avoid accidental disconnections.

=>Executing Diagnostic Tools:Helps detect problems early (e.g., memory tests, CPU benchmarks).

Useful for troubleshooting performance issues.

=>Replacing Aging Components:

Over time, fans, power supplies, and even RAM may wear out.

Upgrading or replacing old parts keeps the system running smoothly.