

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?
Answer: Wear an anti-static wrist strap to prevent damage from electrostatic discharge.

2. What is the purpose of thermal paste during CPU installation?
Answer: 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)?
Answer: Multimeter.

4. Which component is responsible for storing BIOS settings, such as date and time, even when the computer is powered off?
Answer: CMOS battery.

Section 2: True or False

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

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

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

Section 3: Short Answer

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

- Power off and unplug the computer.
- Open the computer case.
- Locate the PCI-E slot on the motherboard.
- Insert the graphics card gently into the slot.
- Secure it with a screw.
- Connect power cables if required.
- Close the case, power on the system, and install the drivers.

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

RAID (Redundant Array of Independent Disks) combines multiple drives for redundancy or performance.

- RAID 0: Striping for speed.
- RAID 1: Mirroring for data protection.
- RAID 5: Striping with parity.
- RAID 10: Combination of RAID 0 and RAID 1.

Section 4: Practical Application

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

- Turn off and unplug the computer.
- Open the case and remove the old fan's power connector.
- Unscrew or unclip the old fan.
- Clean the CPU and apply new thermal paste.
- Install the new fan properly.
- Connect it to the motherboard.
- Close the case and test the fan.

Section 5: Essay

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

Importance of Regular Hardware Maintenance:

1. Improves Overall System Performance:

- Ensures hardware components operate at their optimal capacity.
- Prevents slow processing caused by overheating or hardware strain.
- Maintains smooth multitasking and system responsiveness.

2. Prevents Overheating and Thermal Damage:

- Dust blocks airflow inside the cabinet.
- High internal temperature can damage CPU, GPU, and motherboard.
- Proper cooling reduces risk of sudden shutdowns.

3. Extends Lifespan of Components:

- Clean components experience less wear and tear.
- Reduces stress on internal parts.
- Delays need for costly hardware replacements.

4. Reduces Risk of Sudden Failures:

- Regular inspection detects loose cables early.
- Identifies unusual noises from fans or hard drives.
- Prevents unexpected breakdowns during important work.

5. Protects Important Data:

- Hard drives can fail without warning.
- Monitoring drive health helps detect early issues.
- Regular backups prevent permanent data loss.

6. Enhances Electrical Safety:

- Prevents short circuits from damaged wires.
- Ensures stable power supply to all components.
- Reduces fire hazards caused by faulty connections.

7. Improves System Stability and Compatibility:

- BIOS updates improve hardware communication.
- Driver updates fix bugs and improve performance.

- Reduces hardware conflicts and system crashes.

Examples of Regular Maintenance Tasks:

1. Cleaning Internal Components:

- Turn off and unplug the computer.
- Use compressed air to clean CPU fan, heat sink, PSU, and case fans.
- Remove dust from motherboard and RAM slots carefully.

2. Checking and Securing Cables:

- Ensure power cables are firmly connected.
- Inspect SATA and data cables for damage.
- Tighten screws and internal fittings.

3. Replacing Thermal Paste:

- Remove old dried paste carefully.
- Apply a small amount of fresh thermal paste.
- Reinstall heat sink properly for effective cooling.

4. Monitoring Storage Devices:

- Run disk checking utilities regularly.
- Check for bad sectors and unusual noises.
- Replace aging drives before failure.

5. Performing Regular Backups:

- Backup important documents to external drives.
- Use cloud storage for additional safety.
- Schedule backups weekly or monthly.

6. Updating BIOS and Device Drivers:

- Install updates from manufacturer websites.
- Improve hardware compatibility and security patches.

7. Inspecting Cooling System:

- Ensure fans rotate smoothly without noise.
- Replace slow or faulty fans.
- Maintain proper ventilation space around the system.

8. Checking Power Supply Unit (PSU):

- Ensure PSU fan is working correctly.
- Use surge protector or UPS to prevent voltage damage.

Conclusion:

Regular hardware maintenance is essential for ensuring high performance, long lifespan, system safety, and data protection. Simple preventive measures such as cleaning, inspection, updating, and monitoring can significantly reduce hardware failures and repair costs while ensuring smooth and reliable computer operation.