Assignment-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: 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. When installing a new hard drive, it is essential to format it before use.

Ans: True

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

Ans: False

7. 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. Turn off the computer and unplug it from the power supply.

2. Open the computer case.

3. Remove the old graphics card (if present).

4. Insert the new graphics card into the PCIe slot on the motherboard.

5. Secure the card with screws and connect required power cables.

6. Close the case, plug in the computer, and install/update graphics drivers.

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

Ans: RAID (Redundant Array of Independent Disks) is a technology that combines multiple hard drives to improve performance, data redundancy, or both.

Common RAID configurations:

RAID 0: Improves performance (no data protection).

RAID 1: Mirrors data for redundancy.

RAID 5: Provides both performance and fault tolerance using parity.

RAID 10: Combines mirroring and striping for speed and redundancy.

Section 4: Practical Application

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

Ans: Practical Demonstration: Replacing a CPU Fan in a Desktop Computer

1. Shut down and unplug

   Turn off the computer, unplug the power cable, and press the power button once to discharge residual power.

2. Open the case

   Remove the side panel of the computer cabinet using a screwdriver.

3. Ground yourself

   Wear an anti-static wrist strap or touch a grounded metal part of the case.

4. Disconnect the CPU fan cable

   Locate the CPU fan connector on the motherboard and gently unplug it.

5. Remove the old CPU fan/heatsink

   Release the fan clips or unscrew the heatsink evenly and lift it off carefully.

6. Clean the CPU surface

   Remove old thermal paste from the CPU using isopropyl alcohol and a lint-free cloth.

7. Apply new thermal paste

   Place a small pea-sized drop of thermal paste on the CPU.

8. Install the new CPU fan

   Position the fan/heatsink correctly and secure it firmly with clips or screws.

9. Reconnect the fan cable

   Plug the fan connector into the CPU_FAN header on the motherboard.

10. Close the case and test

   Reattach the side panel, plug in the system, power it on, and check that the fan spins properly.

Section 5: Essay

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

Ans: Regular maintenance of computer hardware is essential to ensure optimal performance, reliability, and longevity of a computer system. Over time, dust accumulation, wear and tear, and outdated components can cause hardware to function inefficiently or fail completely. Proper maintenance helps prevent unexpected breakdowns, reduces repair costs, and improves overall system efficiency.

One important reason for regular hardware maintenance is performance optimization. Dust buildup inside the computer can block airflow, causing components such as the CPU and graphics card to overheat. Overheating can slow down the system or lead to sudden shutdowns. Cleaning internal components and ensuring proper ventilation helps the system run smoothly and efficiently.

Another key benefit is increased hardware lifespan. Components like fans, hard drives, and power supplies are prone to wear over time. Regular inspection allows early detection of potential issues, such as noisy fans or loose cables, preventing major hardware failures. Replacing or repairing faulty parts in time extends the life of the computer.

Regular maintenance also improves data safety and system stability. Checking storage devices for errors, ensuring secure cable connections, and updating firmware or BIOS can help prevent data loss and system crashes. A well-maintained system is less likely to experience sudden failures that could result in loss of important files.

Examples of common hardware maintenance tasks include cleaning dust from fans and vents, checking and tightening internal cables, replacing worn-out components, applying fresh thermal paste to the CPU when needed, and testing hardware using diagnostic tools. Updating device drivers and ensuring proper power supply connections are also part of effective hardware maintenance.

In conclusion, regular computer hardware maintenance is crucial for maintaining performance, preventing damage, and ensuring long-term reliability. By performing simple and routine maintenance tasks, users can avoid costly repairs, protect their data, and keep their systems running efficiently.