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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 electrostatic discharge.

Explanation: wearing an anti-static wrist strap is important because it help to prevent static electricity from building up on your body and damaging delicate computer parts. Static electricity can zap and run these parts, but the wrist strap ground you and stops this form happing.

**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.

**d)** to prevent the CPU from overheating.

Explanation: the purpose of thermal paste to help transfer heat from the CPU to the heatsink because thermal paste is a good conducting heat, thermal paste helps keep the CPU cool and prevents it from overheating, which and effect performance issues.

**3. Which tool is used to measure the output voltage of a power supply unit (PSU)?**

**a) Multimeter**

**b) Screwdriver**

**c) Pliers**

**d) Hex**

**Ans: a)** Multimeter is used to measure the output voltage of a power supply unit (PSU). It is very useful tool for checking electrical things making sure everything is working right and it safely and accurately see how much voltage is being produced without causing any damage.

**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**

**Ans: a)** CMOS battery component is responsible for storing BIOS setting, such as date and time, even when the computer is powered off.

**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 because when we install a new hard drive, we need to format it before using it. This process sets up the drive so that our computer can read and write data to it properly.

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

**Ans:** false because POST (power-on self-test) error doesn’t only mean there is a problem with the CPU. We think that there is other issue with other part of the computer like memory, motherboard, or other hardware issues.

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

**Ans:** false because it is not safe to remove a USB flash drive from a computer without ejecting it first, ejecting means that it ensures that all the data has transfer successfully or complete and help to prevent data corruption or loss.

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

**Ans: 1.** Turn off computer and unplug it from the power outlet to stay safe.

1. Take off the side panel of your computer case to access the inside.
2. Look for the PCI-Express slot on the motherboard, which is where the new graphics card will go.
3. If you have an old graphic card, unscrew and carefully pull it out from the PCIE slot.
4. Now align new graphic card within the PCIE slot and gently push it in until it clicks and secure it with screws.
5. After that we connect power cable if our new graphic card requires additional power connect the necessary power cables from your power supply.
6. Then we put the side panel back on and screw it in place.
7. Plug the computer back in and turn it on.
8. Once the bootup, install the latest drivers for your new graphics from the manufacturer’s website.

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

**Ans:** RAID (Redundant Array of Independent Disks) is a way to use multiple hard drives together for better speed, data protection or both.

There are some common RAID configurations are:

1. RAID 0 (Srtriping) speed is fast but safety is none while its working is to splits data across multiple drives. If one drive fails you lose everything.
2. RAID 1 (mirroring) speed is medium but safety is high while working is to copies all data to two drives. If one drive fails, the other still has all your data.
3. RAID 5 (striping with parity) speed is good for reading but slower for writing where safety is moderate while it works are spreads data and a bit of extra info parity across at least three drives. If one drive fails, you can still recover your data.
4. RAID 6 (striping with double parity) speed is good but slower for writing where safety is high while working like RAID 5 but can handle two drives failing at the same time. Needs at least four drives.
5. RAID 10 (1+0, mirroring and striping) speed is fast where safety also high where working combines the benefits of RAID 0 and RAID 1. Splits data across pairs of mirrored drives. Needs at least four drives.

**Section 4: Practical Application**

1. **Demonstrate how to replace a CPU fan in a desktop computer.**

Ans: First of all turn off your computer and unplug it from the power source then open the case and remove the side panel of your computer case by unscrewing a few screws after that unplug the fans power cable from the motherboard and unscrew and carefully remove the old fan from the CPU heatsink.

Clean the heatsink use a soft cloth or compressed air to clean dust and old thermal paste from the heatsink then apply a small amount of new thermal paste to the center of the CPU if the heatsink was removed. After that place the new fan on the heatsink and secure it with screws and plug the fan’s power cable into the motherboard then close the case put the side panel back on and screw it in place and last plug your computer back in and turn it on.

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

Ans: Regular maintenance for computer hardware is crucial to keep your computer running smoothly and to extend its lifespan.

Importance of maintenance:

First we prevents overheating keeps components cool, preventing damage and improves performance where keeps the system running fast and efficiently. Even identifies potential issues before they become big problems. Extends lifespan helps components last longer.

Here are the example of maintenance tasks:

1. Cleaning dust: use compressed air to clean dust from fans, vents, and components.
2. Checking connections: ensure all cables and components are securely connected.
3. Updating software: keep your operating system, drivers and antivirus software up to date.
4. Monitoring temperatures: use software to check CPU and GPU temperatures.
5. Backing up data: regularly back up important files to an external drive or cloud storage.
6. Running diagnostics: use built in tools to check for hardware issues.