**Tops technology**

**Assignment**

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Subject:-

Networking and cybersecurity

Module -1: Understanding of Hardware and Its Components

**Section 1: Multiple Choice**

**1. Which of the following is NOT a component of the CPU?**

Ans:- RAM

Reson :-

RAM is not a part of the CPU because its function is different from the CPU

**2. What is the function of RAM in a computer?**

Ans:- RAM is essential for a computer's performance and is used for tasks like opening apps, browsing websites, and editing documents.RAM can also helps to display monitor when pc get start.

**3. Which of the following is a primary storage device?**

Ans:- RAM

Reson :-

Because CPU can directly accesses primary memory so its much faster than secondary memory.

**4. What is the purpose of a GPU?**

Ans:- GPU's main purpose is to accelerate graphics rendering, which allows for smoother and higher-quality visuals in games, videos, and other applications.

**Section 2: True or False**

**5. The motherboard is the main circuit board of a computer where other components are attached**

Ans:-True

Reson :-

Because all other divice will attach with only motherbord to access or perform task on computer.

**6. A UPS (Uninterruptible Power Supply) is a hardware device that provides emergency power to a load when the input power source fails.**

Ans:- True

Its provide backup power, protecting equipment from damage in event of power failure

**7. An expansion card is a circuit board that enhances the functionality of a component.**

Ans:- True

Reson:-

expansion slot to enhance its capabilities of computer divice.

**Section 3: Short Answer**

**8. Explain the difference between HDD and SSD**

Ans:-

| **SSD** | **HHD** |
| --- | --- |
| * **Fast performance:** SSDs offer much faster data access and transfer speeds than HDDs. * **Compact size:** SSDs are smaller and lighter than HDDs, making them an ideal option for use in portable devices such as laptops and tablets. * **Lower power consumption:** SSDs consume less power than HDDs, making them more energy-efficient. * **Higher cost:** SSDs are generally more expensive than HDDs, making them a less cost-effective option for storing large amounts of data. * **No mechanical parts:** SSDs have no moving parts, making them more durable and less susceptible to mechanical failure than HDDs. | * **High storage capacity:** HDDs offer a high storage capacity, with some models capable of storing up to 16TB of data. * **Lower cost:** HDDs are generally less expensive than SSDs, making them a more cost-effective option for storing large amounts of data. * **Larger size:** HDDs are physically larger and heavier than SSDs, making them less suitable for portable devices. * **Slower performance:** HDDs are slower than SSDs when it comes to data access and transfer speeds. * **Mechanical parts:** HDDs contain mechanical details that can wear out over time, making them less durable than SSDs. |

**9. Describe the function of BIOS in a computer system**

Ans:-BIOS (Basic input / output system)

1. Hardware Detection: BIOS detects and initializes hardware components like CPU, RAM, KEYBORD, MOUSE, and STORAGE devices

. 2. Boot Process: BIOS searches for a bootable devices (like a hard drive or SSD), loads the operating system, and passes control to it.

3. Configuration: BIOS provides a setup utility (accessible during boot) to configure settings like. - Boot order - Time and date - Security settings (passwords, secure boot) - Hardware settings (fan control, USB ports)

4. Low-Level Input / Output Operations: BIOS provides a set of routines for basic input/output operations, such as: - Keyboard and mouse input - Display output (text and graphics) - Disk I/O operations

5. Self-Test: BIOS performs a power-on Self-Test (POST) to verify hardware functionality during boot

. 6. Interface: BIOS acts as an interface between the operating system and hardware components, allowing the OS to interact with hardware without needing to know the hardware details

**10. List and briefly explain three input devices commonly used with computers.**

**Ans:-**

Scanner:- A scanner is used to scan documents and enter them into the computer in digital form. The scanned document can be saved as an image on the computer. You can also edit the document if you want

Webcam:- A webcam is an input device. A webcam is a camera that you use to take pictures or video conferences by connecting it to your computer or laptop. You can connect the webcam to your computer with a cable, or you can also use a wireless webcam.

Joystick:-A joystick is an input device with a stick attached and is used to control the direction of the device. It is most commonly used in gaming.

Touchscreen-: A touchscreen or graphics tablet is an input device that allows users to interact with the computer by touching the screen.

**Section 4: Practical Application**

**11. Identify and label the following components on a diagram of a motherboard**

Ans:-

1. CPU: The central processing unit, usually located in a socket in the center of the motherboard.

2. RAM Slots: The memory slots where you insert the RAM modules (DIMM or DDR).

3. SATA Connectors: The connectors for attaching storage devices like hard drivers or solid-state drives

. 4. PCI-E Slot: The expansion slot for adding hardware components like graphics cards, sound card, or network cards.

12. Demonstrate how to install a RAM module into a computer.

Ans:-

Step 1: Prepare the Computer. Shut down the computer and unplug the power cord.

Step 2: Open the Computer Case. Remove screws or clips to access the interior. Step 3: Locate the RAM Slote. Find the RAM slots on the motherboard, usually near the CPU.

Step 4: Align the RAM Module. Match the notches on the RAM module with the tabs On the RAM slot.

Step 5: Insert the RAM Module. Push the RAM module into the slot at a 45-degree angle.

Step 6: Secure the RAM Module. Apply even pressure to both ends until it clicks into Place.

Step 7: Verify Installation. Double-check the modules is firmly seated and Recognized by the system in the BIOS.

ection 5: Essay

**13. Discuss the importance of proper cooling mechanisms in a computer system. Include examples of cooling methods and their effectiveness.**

Ans:-

1. Reduced performance

2. System crashes

3. Hardware damage

4. Shortened lifespan Effective cooling methods include:

1. Air Cooling: Uses fans to circulate air through the system, dissipating heat from components. - Effectiveness: 6/10 (limited by airflow and dust buildup)

2. Liquid Cooling: Uses a liquid coolant to absorb heat, transferring it to a radiator for dissipation. - Effectiveness: 8/10 (more efficient than air cooling, but requires maintenance)

3. Heat Slink: Metal blocks with fins, attached to components to dissipate heat. - Effectiveness: 7/10 (dependent on design and airflow)

4. Case Fans: Fans installed in the case to improve airflow and exhaust hot air. - Effectiveness: 5/10 (depended on case design and fan placement.)

5. Thermal Paste: Applied to CPU/GPU dies to improve heat transfer to heat sinks. - Effectiveness: 9/10 (crucial for efficient heat transfer)

6. Rediators: Uses in liquid cooling systems to dissipate heat from the coolant. - Effectiveness: 8/10 (dependent on design, size, and airflow)

7. All-in-One (AIO) Liquid Coolers: Pre-assembled liquid cooling system for CPUs/GPUs. - Effectiveness: 8.5/10 (convenient, but may have limited upgradeability) Proper cooling mechanisms ensure:

• Optimal performance

• Extended hardware lifespan

• Reduced noise levels

• Increased system reliability When choosing a cooling method, consider factors like:

• System configuration

• Component specifications

• Case design

• Noise tolerance

• Budget

**14.Explain the concept of bus width and its significance in computer architecture.**

Ans-: Significance of bus width:

1. Data transfer rate: A wider bus allows for more data to be transferred at once, increasing the overall data transfer rate.

2. Performance: A wider bus can improve system performance by reducing the time it takes to transfer data between components.

3. Memory access: A wider bus can provide faster memory access times, as more data can be transferred between the CPU and memory.

4. Scalability: A wider bus can support more devices and components, making it easier to add new features and functionality to the system. Common bus width:

• 8-bit (older systems)

• 16-bit (older systems)

• 32-bit (common in older systems and some embedded systems)

• 64-bit (common in modern systems, including desktops, laptops, and servers)

• 128-bit (used in some specialized systems, like graphics processing units