Assignment:

Module -1: Understanding of Hardware and Its Components

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

<div align="center">

1. ALU

2. RAM

3. CU

4. 1 and 3 both

</div>

Ans- 2 RAM

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

RAM (Random Access Memory) is like your computer's short-term memory. Here's what it does:

- **Stores data temporarily**: It holds data and instructions that the CPU needs while performing tasks.

- **Boosts speed and responsiveness**: More RAM = smoother multitasking and faster performance.

- **Supports active applications**: All the programs you're currently running (like browsers, games, or software) use RAM so they can run efficiently.

- **Cleared on shutdown**: RAM is **volatile memory**, which means its contents disappear when the computer is turned off.

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

1. HDD

2. SSD

 3. SD card

 4. 1 and 2 both

Ans-4. 1 and 2 both

4. What is the purpose of a GPU?

Ans- A graphics processing unit (GPU) is an electronic circuit that can perform mathematical calculations at high speed. Computing tasks like graphics rendering, machine learning (ML), and video editing

5. True or False: The motherboard is the main circuit board of a computer where other components are attached

Ans- True

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

Ans- True

7. True or False: An expansion card is a circuit board that enhances the functionality of a component.

Ans- True

8. Explain the difference between HDD and SSD

Ans-

Feature	HDD	SSD
Speed	Slower	Faster
Durability	Mechanical = less durable	No moving parts = more durable
Cost	More affordable	Higher cost
Capacity	Typically higher	Common but slightly lower
Use Case	Archiving, backups	OS, apps, gaming, fast access

9. Describe the function of BIOS in a computer system

Ans- BIOS (basic input/output system) is the program a computer's microprocessor uses to start the computer system after it is powered on. It also manages data flow between the computer's operating system (OS) and attached devices, such as the hard disk, video adapter, keyboard, mouse and printer.

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

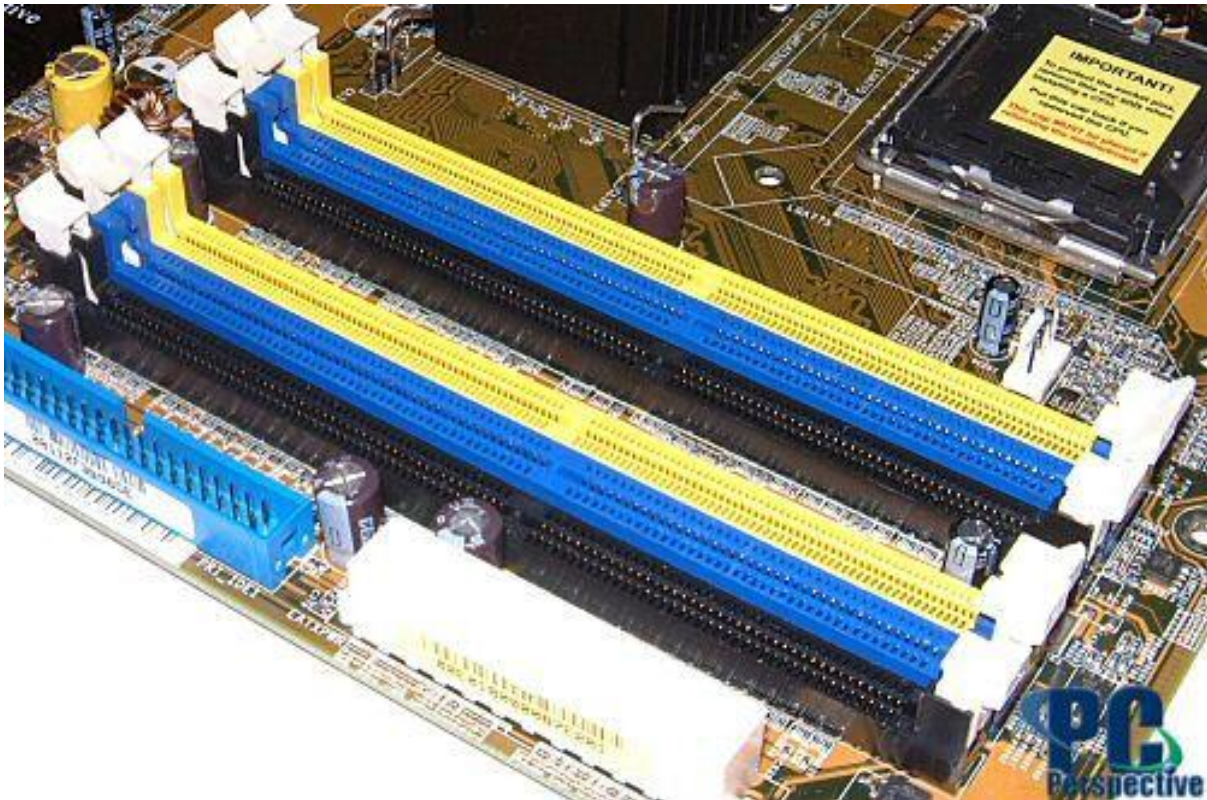Ans- Examples of input devices include

1. Touchpads
2. Microphones
3. joysticks

11. Identify and label the following components on a diagram of a motherboard:
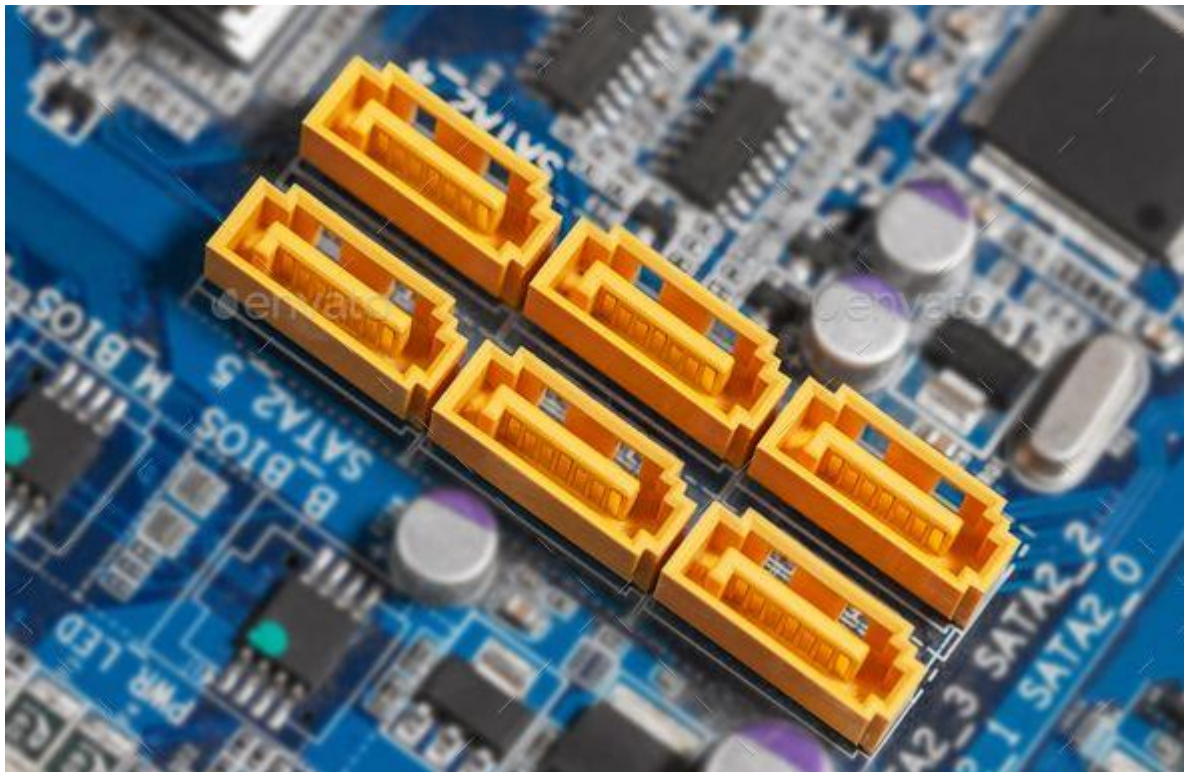
● CPU

● RAM slots

● SATA connectors Section SATA connectors Section

● PCI-E slot

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

Ans- ▯ **Power Down and Unplug**

- o   Shut down your computer completely.

- o   Unplug all cables, especially the power cord.

2. **Open the Case**

- o   Use a screwdriver to remove the side panel of your desktop case.

- o   Lay the case flat for easy access to the motherboard.

3. **Ground Yourself**

- o   Wear an anti-static wrist strap or touch a metal part of the case to discharge static electricity.

4. **Locate the RAM Slots**

- o   Find the long slots near the CPU—these are the DIMM slots.

- o   If replacing old RAM, gently push the clips outward to release it.

5. **Align and Insert the RAM**

- o   Hold the RAM by the edges.

- o   Align the notch on the RAM with the ridge in the slot.

- o   Firmly press down until the clips snap into place.

6. **Close the Case and Reconnect**

- o   Reattach the side panel.

- o   Plug in all cables and power up the system.

7. **Verify Installation**

- On Windows: Open Task Manager (Ctrl + Shift + Esc) → Performance tab → Check memory.

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

Ans-1. Prevents Overheating:

High temperatures can cause the computer to slow down (thermal throttling) or shut down to protect itself.

2. Improves Performance:

Components like CPUs and GPUs perform better at lower temperatures, especially during gaming, video editing, or heavy multitasking.

3. Increases Lifespan of Hardware:

Constant high temperatures degrade components over time, especially capacitors and silicon chips.

4. Ensures System Stability:

Overheating can cause sudden reboots, crashes, or data corruption.

Examples- 1 Air cooling (fans)

2 Liquid cooling

3 Heat pipes

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

Ans-What Is a Bus?

A **bus** is a communication system that transfers data between components of a computer (e.g., CPU, memory, peripherals). It's made up of multiple lines for:

- **Data transfer** (data bus)

- **Memory addressing** (address bus)

- **Control signals** (control bus)

Bus width refers to the number of bits that can be transmitted simultaneously along a bus. Think of it like the number of lanes on a highway—the wider the bus, the more data that can travel at once, enhancing overall system performance.