

## Assignment - 1

### **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

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

Ans- Random Access Memory (RAM) is a volatile memory that transfer data to the cpu. RAM is use for imitate data storage and data retrieval.

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

Ans- HDD & SSD

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

Ans- The purpose of Graphics Processing Unit(GPU) is to handle all the graphics related works like graphic rendering , effects and videos.

#### **Section 2: True or False**

**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

### **Section 3: Short Answer**

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

Ans-

SSD

It is stand for solid state drive.

It has instant access and high reading and writing speed.

It is expensive than hdd.

It is available in compact size and is relatively fast.

HDD

It is stands for Hard disk drive.

It has low speed and cannot perform multiple tasks at a same time.

It is cheaper than ssd.

It is comparatively larger and slower than ssd.

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

Ans- BIOS is stand for "Basic Input Output System." When computer is turn on it identify , configure , test and connect computer hardware to the operating system.

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

Ans- 1.Keyboard - it's allow user to type text , enter commands and navigate the system.

2.Mouse - it is use to control the cursor on the screen and to open , close ,drag

And drop the flies and icons.

3.Webcam - it is use to take picture and video.

#### **Section 4: Practical Application**

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

- CPU
- RAM slots
- SATA connectors
- PCI-E slot

Ans - Done

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

Ans – Done

#### **Section 5: Essay**

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

Ans-

The cooling system serves three important functions. First, it removes excess heat from the engine. second, it maintains the engine operating temperature where it works most efficiently and then it brings the engine up to the right operating temperature as quickly as possible. A cooling system is critical for a computer because it removes excess heat generated by the internal components, preventing them from overheating and potentially malfunctioning or being permanently damaged; this ensures optimal performance and extends the lifespan of the hardware, especially when running demanding tasks like gaming or video editing.

When electricity flows through computer components like the CPU and GPU, it generates heat as a byproduct and that excessive heat can cause components to slow down or throttle their performance to protect themselves from damage, resulting in reduced system speed. Overheating can significantly shorten the lifespan of computer components like the CPU, GPU, and RAM and continues extreme heat can lead to system crashes, errors, and instability. But nowadays Modern processors have built-in mechanisms to automatically reduce clock speed when they get too hot, which can impact performance during demanding tasks.

To keep our system cool there are some methods that give good airflow to our pc system and keep the system cool and produce less heat. these are the methods given below.

## 1. Fans

Fans, unlike heat sinks, form active cooling system. They use energy to run, thus enabling the air to circulate. They work on pushing air out of your PCs and laptops through their casing. Fans are used with heat sinks in a computer system wherein a heat sink is first placed on top of it, after which the fan is piled on.

## 2. Heat Sinks

Heat sinks can be applied with multiple components inside the system. Their function is to dissipate the heat from the element they have been fixed to. Commonly used with older CPUs, heat sinks work conventionally and are attached to those parts that do not generate immense heat.

## 3) Liquid Cooling

Working on the same concept as the IC Engines(internal combustions engines), liquid cooling systems have recently been introduced with advanced technology. The most commonly used liquid for cooling purposes is distilled water. This form of computer cooling system is the best out of all other types for efficient cooling.

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

Ans-

The width of the data bus indicates how much data can be transferred during each memory r/w(read and write) operation. The 8088 CPU has an 8-bit data bus but can actually process 16 bits at a time using its 16-bit internal registers. The 80286 has a full 16-bit data bus.

Bus Width refers to the number of parallel lines that make up a particular kind of computer bus. It is one of the most vital defining features of a data bus. It indicates the number of electric wires or bits that build up the data bus. 1-, 4-, 8-, 16-, 32-, and 64-bit are some common bus width. Bus width refers to the number of bits that can be sent to the CPU simultaneously.

A wider bus width allows for transmitting larger data chunks, reducing the number of bus cycles required to transfer a given amount of data. Consequently, systems with wider bus widths can achieve faster data transfer rates and more efficient processing.

the bus width affects the compatibility between different hardware components. For example, if a peripheral device utilise a bus width more expansive than a motherboard can support, the device will not function optimally. Therefore, it is crucial to ensure compatibility between the bus widths of various components to avoid performance bottlenecks.

### ISA (Industry Standard Architecture)

The IAS bus, widely used in earlier generations of computers, supports 8-bit and 16-bit bus widths. This means it can simultaneously transmit 8 or 16 bits of data to the CPU during each bus cycle.

### EISA (Extended Industry Standard Architecture) and MCA (Micro Channel Architecture)

EISA and MCA are advanced bus architectures developed as successors to the ISA bus. These architectures offer enhanced capabilities and increased performance.

Regarding bus width, EISA and MCA support 16-bit and 32-bit configurations. This enables them to transmit more significant amounts of data to the CPU in a single bus cycle, improving overall system efficiency.

### PCI (Peripheral Component Interconnect)

PCI is a widely used bus architecture in modern computer systems. It is renowned for its versatility and high data transfer rates. The PCI bus supports larger bus widths, specifically 32-bit and 64-bit configurations.

With these broader bus widths, the PCI bus can transmit more substantial volumes of data to the CPU during each cycle, improving processing speeds and system performance.