

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: RAM temporarily stores data that the CPU needs to access quickly while performing tasks. It enables faster processing and multitasking.

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

ANS: HDD and SSD

4. What is the purpose of a GPU?

ANS: The purpose of a GPU is to accelerate graphics rendering and handle visual tasks, improving performance in gaming, video editing etc.

SECTION 2: True or False

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

ANS: True

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

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:

Feature	HDD (Hard Disk Drive)	SSD (Solid State Drive)
Technology	Spinning disks with moving parts	Memory chips, no moving parts
Speed	Slower read/write speeds	Faster read/write speeds
Durability	It will damage from shocks or drops	More durable, shock-resistant
Capacity	Higher capacity at a lower cost	Lower capacity for the same price
Cost	Cheaper	Expensive

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

ANS: The BIOS is firmware software that is responsible for booting the computer, performing hardware checks, and initializing system components. It also provides a setup interface for configuring hardware settings and ensures communication between the operating system and hardware.

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

ANS: **a) Keyboard:** This is the device used to type letters, numbers, and symbols into computer.

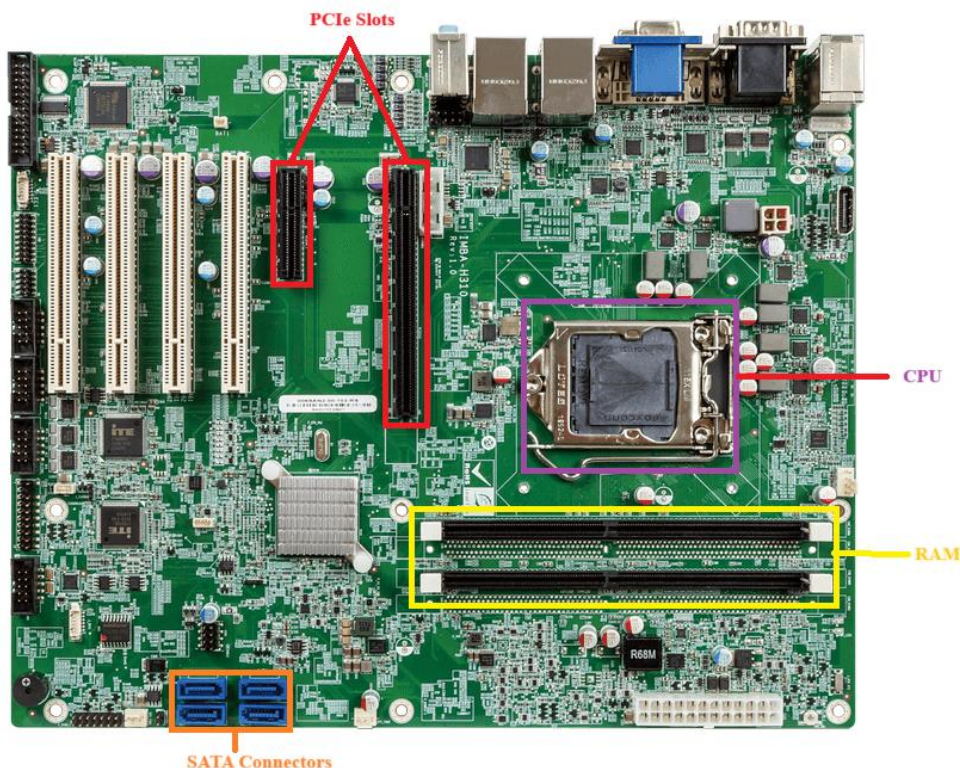
b) Mouse: Mouse is used to select items on the screen and to give instructions to computer to perform tasks.

c) Scanner: A scanner is device that converts physical documents into digital format that is saved in computer.

SECTION 4: Practical Application

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

ANS:



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

ANS:

- Turn off and unplug the computer.
- Open the case to access the motherboard.
- Locate the RAM slots and align the RAM module with the slot.
- Insert the RAM firmly until it clicks into place.
- Close the case.
- Plug in and power on the computer.
- Check if the system recognizes the new RAM.

SECTION 5: Essay

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

ANS: IMPORTANCE OF PROPER COOLING MECHANISM:

- 1) Preventing Overheating: High temperatures can damage the components of motherboard and cause them to malfunction or degrade over time. If the CPU or GPU exceeds safe operating temperatures, it can lead to system crashes, corrupted data, or permanent damage.
- 2) Maintaining Performance: Current generation processors and graphics cards are designed to run at high clock speeds, but they can throttle when they get too hot. Cooling mechanisms help maintain consistent performance by preventing them to throttle.
- 3) Stability and Reliability: Overheated systems are experience crashes, freezes, or data corruption. Cooling ensures the system operates smoothly.

COOLING METHODS:

- 1) Air cooling: Air cooling involves using fans to blow air over heat sinks attached to CPU and GPU. Heat sinks absorb heat from the components and disperse it across their larger surface area to promote cooling.

Effectiveness: Air cooling is effective for low to mid-range systems or those with lower power demands.

- 2) Liquid cooling: Liquid cooling system use a pump to circulate coolant through tubes and a radiator. A cooling block is attached to the CPU or GPU that absorbs heat and transferred to the coolant that dissipated through the radiator.

Effectiveness: Liquid cooling is more efficient than air cooling, especially for high-performance systems.

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

ANS: There are three types of bus in computer architecture:

- 1) Data bus: A data bus carries the data between components like the CPU and memory.
- 2) Address bus: An address bus carries the memory address where data is to be read or written.
- 3) Control bus: A control bus manages the control signals that regulates operations reading and writing to memory.

Significance of bus width: Bus width directly impact the system's data transfer speed and memory addressing.

Data transfer speed: A wider bus allows more bits to be transferred simultaneously, leading to faster data exchanges between the CPU, memory, and other components. This improves overall system performance.

Memory addressing: The width of the address bus determines how much memory the system can access. For example, a 64-bit address bus allows addressing of significantly more memory than a 32-bit address bus.