

## Module -1: Understanding of Hardware and Its Components

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

**Ans : 1. ALU (Arithmetic Logic Unit)**

The ALU is a core component of the CPU responsible for performing all arithmetic and logical operations.

#### Key Responsibilities:

Arithmetic operations: Addition, subtraction, and sometimes multiplication and division.

Logical operations: AND, OR, NOT, XOR, comparisons (e.g., greater than, equal to).

#### Components Inside the ALU:

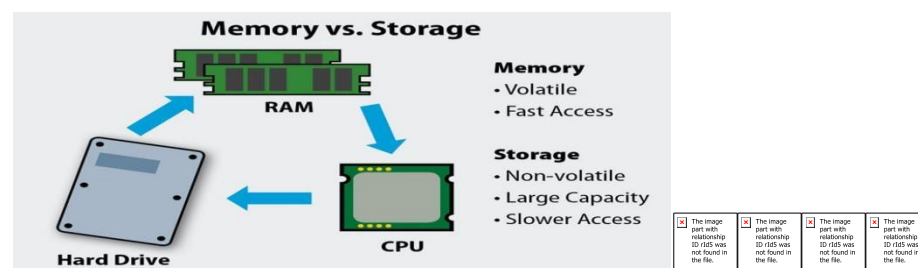
Input Registers: Temporarily hold the operands.

Operation Decoder: Interprets the control signals to select the correct operation.

Logic Gates & Circuits: Perform the actual math or logical function.

Flags Register: Sets bits (like Zero, Carry, Overflow) based on the result.

### 2. RAM (Random Access Memory)



#### What is RAM?

RAM is a type of computer memory that:

Temporarily stores data and instructions your computer is actively using.

Is much faster than storage devices like hard drives or SSDs.

Loses all data when the computer is turned off (it's volatile memory).

Think of it like:

RAM = Your short-term memory

Storage = Your long-term memory

More RAM = More apps and processes your computer can handle at once.

Want to know how much RAM you need for something specific, like gaming or video editing?

### **3.CU (control unit)**

Depending on context, it could mean a few things:

"CU" = See You – Internet slang (so "3. CU" might be part of a list like "1. Bye, 2. Take care, 3. CU").

"CU" = Copper – Chemical symbol for copper, so maybe you're referencing elements or materials?

"CU" – Could be a label in a document, presentation, or something technical.

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

Ans : RAM (Random Access Memory) is a type of volatile memory used to temporarily store data and instructions that the CPU needs while performing tasks.

### **Main Functions of RAM:**

#### **(1) Temporary Storage**

1. Holds data, programs, and operating system instructions currently in use.
2. Gets erased when the computer is turned off.

#### **(2) Fast Access**

1. Much faster than hard drives or SSDs.
2. Allows quick read/write operations to speed up processing.

#### **(3) Supports Multitasking**

1. Lets the CPU switch between different programs efficiently.
2. The more RAM you have, the more apps you can run smoothly at the same time.

#### **(4) Helps in Data Processing**

1. Stores intermediate results and temporary files while software (like a browser or video editor) is running.

### Example:

If you're editing a document and listening to music at the same time:

The document, music app, and part of the operating system are all loaded into RAM.

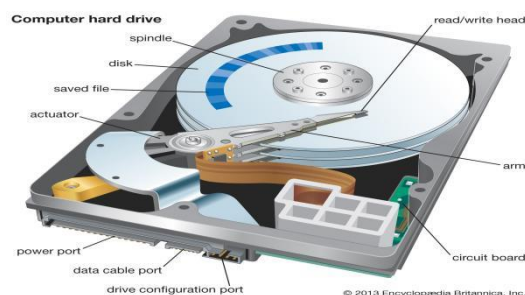
This allows you to interact with them quickly, without long loading times.

Let me know if you want a visual diagram or a comparison between RAM and storage (like SSD/HDD).

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

Ans :

#### 1. HDD (Hard Disk Drive)



An HDD is a data storage device used in computers, laptops, gaming consoles, DVRs, and more. It uses spinning magnetic disks (called platters) to read and write data.

Unlike RAM, it doesn't lose data when the power is off.

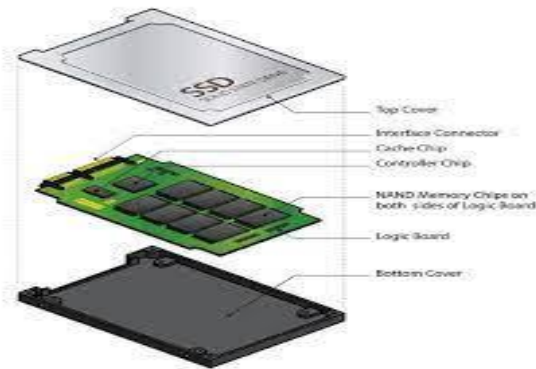
### Key Features:

| Feature    | Description                              |
|------------|--|
| Storage    | Usually ranges from 500 GB to several TB |
| Speed      | Slower than SSDs (Solid State Drives)    |
| Cost       | Cheaper per GB than SSDs                 |
| Durability | More fragile due to moving parts         |

Example in a Sentence:

*My laptop has a 1TB HDD, but I'm planning to upgrade to an SSD for faster performance.*

## 2. SSD(Solid State Drive)



An SSD is a storage device that uses flash memory (no moving parts) to store data. It's much faster and more durable than traditional hard drives (HDDs).

Think of it like:  
Your computer's super-fast long-term memory.

It keeps your data safe even when the power is off—just like an HDD, but faster.

### Key Features:

| Feature    | Description                              |
|------------|--|
| Speed      | Much faster than HDDs (boots in seconds) |
| Durability | No moving parts = more shock resistant   |
| Cost       | More expensive per GB than HDDs          |
| Lifespan   | Typically longer under normal use        |

### Common Uses:

- (1) Operating systems (for faster boot)
- (2) Gaming
- (3) Video editing
- (4) Performance-heavy apps

### Example in a Sentence:

I upgraded my PC with a 512GB SSD and now it boots in under 10 seconds.

Want a side-by-side comparison of SSD vs HDD or help choosing one?

### 3.SD card (Secure Digital Card)

## What is an SD Card?



An SD card is a small, portable memory card used for storing digital data, commonly found in:

- (1) Phones (especially older models)
- (2) Cameras
- (3) Drones
- (4) Game consoles
- (5) Laptops (via SD card slots)

### Types of SD Cards:

| Type | Capacity Range      | Common Use                   |
|------|---------------------|------------------------------|
| SD   | Up to 2 GB          | Older devices                |
| SDHC | 2 GB – 32 GB        | Cameras, phones, GPS units   |
| SDXC | 32 GB – 2 TB        | High-resolution video, games |
| SDUC | Up to 128 TB (rare) | High-end video production    |

### Key Features:

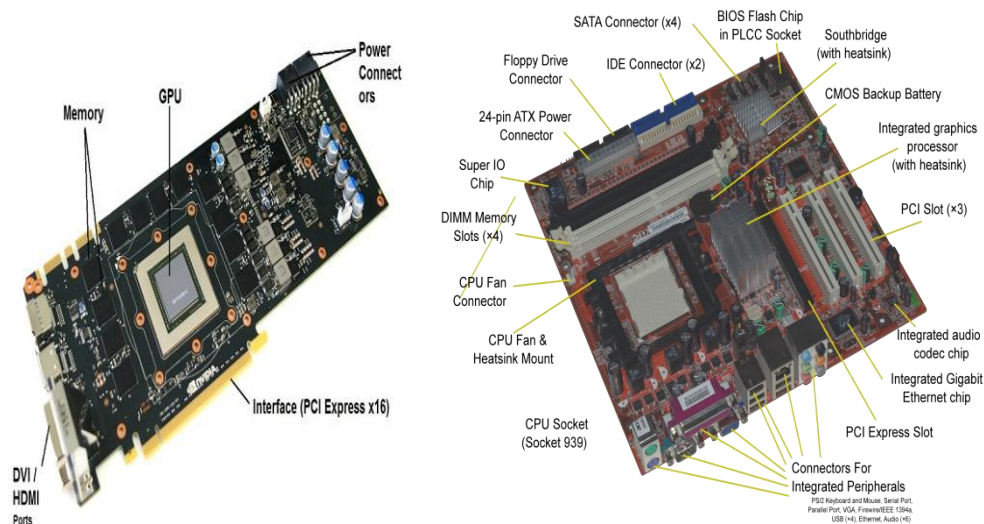
- (1) Removable and reusable
- (2) Compact and portable
- (3) Speed classes (e.g., Class 10, UHS-I, UHS-II) affect read/write speed

**Example in a Sentence:**

I inserted a 64GB SD card into my camera to store all my vacation photos.

### 3. What is the purpose of a GPU?

Ans :



#### GPU – Graphics Processing Unit

The GPU (Graphics Processing Unit) is a specialized processor designed to handle graphics and image processing tasks. It's like a turbo-charged helper for the CPU, especially when it comes to rendering images, videos, animations, and more recently, accelerating AI and data processing.

#### Main Purposes of a GPU:

- (1) Render Graphics
- (2) Displays everything you see on screen: images, videos, games, animations, UI.
- (3) Handles 2D and 3D graphics rendering.
- (4) Offload Work from the CPU
- (5) Takes care of graphics-heavy tasks so the CPU can focus on other operations.
- (6) Parallel Processing

Has thousands of cores for handling many tasks at once, making it ideal for:

- (1) Gaming
- (2) Video editing
- (3) 3D rendering
- (4) Machine learning / AI
- (5) Cryptocurrency mining
- (6) Boost Performance in Apps

Apps like Adobe Photoshop, Blender, AutoCAD, and video games run much smoother with a powerful GPU.

**Example:**

In a video game:

The GPU draws the characters, environment, lighting, shadows, etc., in real time.

While the CPU manages the game's rules, logic, and user input.

**Quick Analogy:**

Think of the GPU as the artist and the CPU as the director:

The director (CPU) decides what should happen,

The artist (GPU) brings it to life with visuals.

Want to know the difference between integrated vs dedicated GPUs?

**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. 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 : HDD (Hard Disk Drive) uses spinning magnetic disks to store data, making it slower and more prone to damage.

SSD (Solid State Drive) has no moving parts and uses flash memory, making it much faster, quieter, and more durable than an HDD.

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

Ans : The BIOS (Basic Input/Output System) initializes and tests hardware components during startup and loads the operating system from storage into memory.

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

Ans :     Keyboard – Used to input text, numbers, and commands into the computer.

Mouse – A pointing device used to interact with graphical elements on the screen.

Scanner – Converts physical documents and images into digital format for the computer.