**C.U. Shah Polytechnic, Surendranagar**

**Diploma Computer Engineering**

**Semester 6**

**Computer Maintenance & Troubleshooting**

**(4360701)**

**Topic: Physical Structure of Hard Disk**

**Definition:** The mechanical component that holds the read/write heads, allowing them to move across the spinning platters to access different data locations on the disk.

**Features of Hard Disk:**

**1.** **Storage Capacity**

* The storage capacity of the hard disk refers to the amount of

disk space that can be used to store the user data.

**2.Data Transfer Speed**

* There are two ways to measure the speed of the disk drive
* Average seek time
* Transfer rate

**3.Stability**

* It has been measured by Mean Time Between Failure (MTBF).

**Hard disk drive physical components:**

1) Disk platters

2) Read/write heads

3) Head actuator mechanism

4) Spindle motor

5) Logic board

6) Cables and connectors

7) Head Arm/head slider

**1.Hard Disk Platters(Disks):**

* The platters stores information. It comes in varying sizes.

**2.Read/Write Heads:**

* A hard disk drive usually has one read/write head for top side and one for bottom side.

**3.Head Actuator Mechanism:**

* the heads across disk and positions them accurately above the desired cylinder.

**4.Spindle Motor:**

* The motor is directly connected to the spindle of platters.

**5.Logic Boards:**

* A disk drive a board containing that control spindle and head actuator systems.

**6.Cable and Connectors:**

* Cable and connectors are used to connect HDD to the main computer

system.

**7.Head Arm/head slider:**

* the holds the read/write heads and move across the spinning platters.

**Calculation of storage capacity**

Total number of sectors = Total sides x total tracks per side x Total sectors per

track

Total Storage capacity = Total number of sectors x 512

**Advantages:**

**1.Large storage capacity:** HDDs can store large amounts of data, including backups

**2.Low cost:** HDDs are relatively inexpensive per unit of storage

**Disadvantages:**

* **Prone to damage:** HDDs rely on moving parts, which can be damaged
* **Slow read and write speed**: HDDs are slower than solid-state drives (SSDs)

**Applications:**

* **Personal Computers & Laptops** – Used for storing operating systems, software, and personal files.
* **Servers & Data Centers** – Essential for storing and managing large amounts of enterprise data.

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