What is Network?

- Computer network (or) data network, is a digital telecommunications network which allows nodes to share resources.

Network Nodes :-

(48 bits)
- MAC address → Media Access Control (MAC) address of a device is unique identifier assigned to network interface controller (NIC) for communication at data link layer of network segment.

⇒ Network Interfaces :-

- Network Interface Controller (NIC) is comp. h/w that provides a computer with ability to access transmission media & has ability to process low-level network information.

⇒ Repeaters & Hubs :-

- Repeater is electronic device that receives network signal. cleans it of unnecessary noise & regenerates it.

- Hubs & repeaters in LANs have been mostly obsoleted by modern switches.

→ Bridges

→ Switches

- Network switch is dev (also called switching hub, bridging hub, officially MAC bridge) is a computer networking device that connects devices together on computer network by using packet switching to receive, process & forward data to destination device.

- Switch - MAC table

- every switch port - different MAC address

switch port /MAC	device port /MAC
A1:B1:01	FA:CA:10

→ Bridge :-

- Network bridge connects & filters traffic beth two network segments at data link layer (layer 2) of OSI model to form a single network.

→ Routers :-

- It is internetworking device that forwards packets beth networks by processing the

routing information included in packet or datagram (Internet protocol info. from layer 3)

→ **Modems** :

- Modems (MOdulators - DEModulator) are used to connect network nodes via wire not originally designed for digital network traffic, or for wireless.

  Analog → digital & viceversa.

⇒ **Firewall** →

- A firewall is network device for controlling network security and access rules.

- Firewalls are typically configured to reject access requests from unrecognized sources while allowing actions from recognized ones.

- The vital role firewalls play in network security grows in parallel with constant increase in cyber attacks.

(#) **Common Layouts :-**

(1) **Bus Network :-**

(2) **Star Topology :-**
Network

- star network typically found in wireless LAN,

③ Ring Network

- Each node is connected to its left & right neighbour node, such that all nodes are connected and that each node can reach each other node by traversing nodes left- or rightwards.

- The Fiber Distributed Data interface(FDDI) made use of such a topology.

④ Mesh Network

- Each node is connected to its an arbitery no. of neighbours in such a way that there is at least one traversal from any to node to any other.

⑤ fully Connected Network :-

- Each node is connected to every other node in network.

⑥ Tree Network

- Nodes are arranged hirearchically.