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Q.2.

OSI Model	TCP/IP Model
• It is developed by ISO.	It is developed by ARPANET.
• OSI provides a clear distingues between interfaces, services & protocol.	TCP/IP doesn't have any clear distingues points between services interface, & protocols.
• OSI refers to open system interconnection.	TCP refers to transmission control protocol.
• OSI uses the network layer to define routing standards & protocol.	TCP/IP uses only for internet layer.
• In the OSI model the transport layer is only connection oriented.	A layer of the TCP/IP model is both connection oriented & connection less.
• In the OSI model the data link & physical are seperate layer.	In TCP, Physical & data link are both combined as single host to network layer.
- Minimum size of header is 5 byte.	20 byte.

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Q:3 Hub

A Hub is a networking device that allows you to connect multiple pcs to a single network. It is used to connect segment of a LAN, A hub store various ports, so when a packet act arrives at port, it is copied to various other ports, Hub works as a common connection point for device in a network.

-> Active Hub
Passive Hub

Switch

A Network switch is a Networking device that connects various devices together on a single computer network, it may also be used to route information in the form of electronic date sent over networks, since the process of linking networks segments is also called bridging switching usually refferred to as bridging device.

-> Managable Switch
-> UnManagable Switch

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Q.4. Bridge

A bridge operates at data link layer. A bridge is repeater with add on the functionality of filtering content by reading the MAC address of source & destination.

-> It is also used for interconnecting two lanes working on the same protocol it has a single input & single output port, thus making it a 2 port devices.

-> Transparent Bridge
- These one bridge in which the system are completely unaware of the bridges existence ie whether or not a bridge is added or deleted from the network reconfigured of the station is unnecessary. These bridge forwarding & bridge learning.

-> Source routing Bridge
- In these bridges, routing operates is performed by source station & the frame specifies which route to follow. The host can discover frame by sending a special frame called discovery frame, which operates through the entire network using all possible path to destination.

-> Router

It is a virtual interconnecting device that is designed to receive, analyze & forward data packets between computer networks. It examines a destination IP address of a given data packet, & it uses the headers & forwarding table to decide the best way to transfer the packets, these are some popular companies that developed routers.
Such are Cisco, Nortel, HP, 3com, W-link.

A router is used in LAN & WAN.
- It shares Informations with other routers in networking.
- It uses the routing protocol to transfer data across a network.

8.5 Topology

A Network Topology is the arrangement with which Computer system or network device are connected to each other.

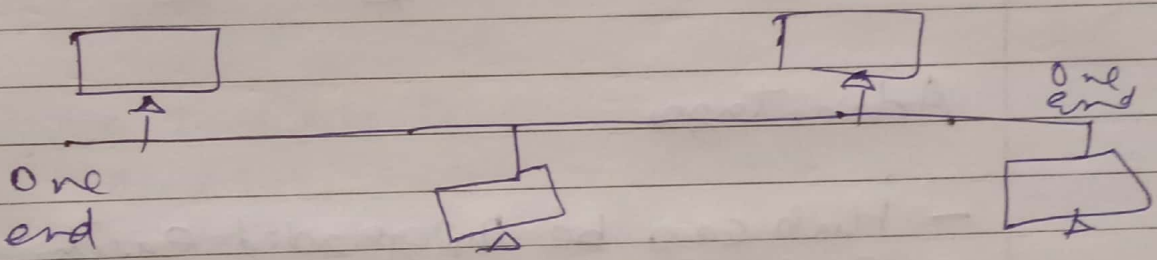
Topology may define both logical & Physical aspect of the network. Both logical & physical topologies could be same or different in a same

network.

-> Bus
-> Star
-> Mesh
-> Ring

Bus Topology

- It is a network types in which every computer & network devices is connected to single cable where it has exactly two end points then it is called linear Bus Topology



Advantages

- Cost Effective
- Less Cable Requirement
-> Used in Small Network
-> Easy to Understand
-> Easy to Expand

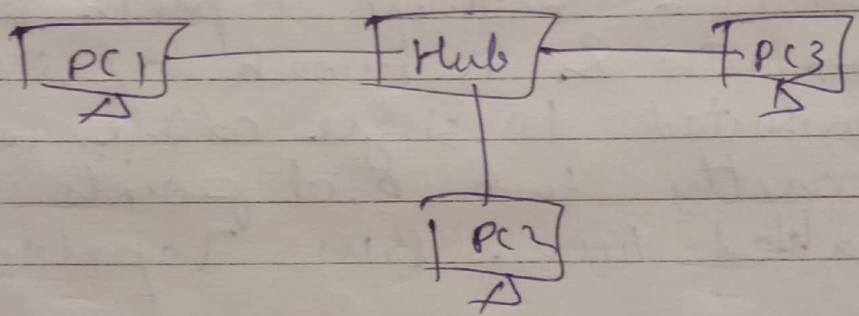
Disadvantages

-> whole Network fails when Cable fails.
-> Cable has limited length.

-> slower than Ring Topology.

* Star Topology

- In this type of topology all the PCs are connected to single hub through a cable. This hub is the central node & all other nodes are connected to the central node.



Advantages

- Hub can be Upgraded easily
- fast Performance
- Easy to Troubleshoot
- Easy to setup & modify

Disadvantages

- Cost of Installation is High
- Expensive to Use
- Performance is based on Hub

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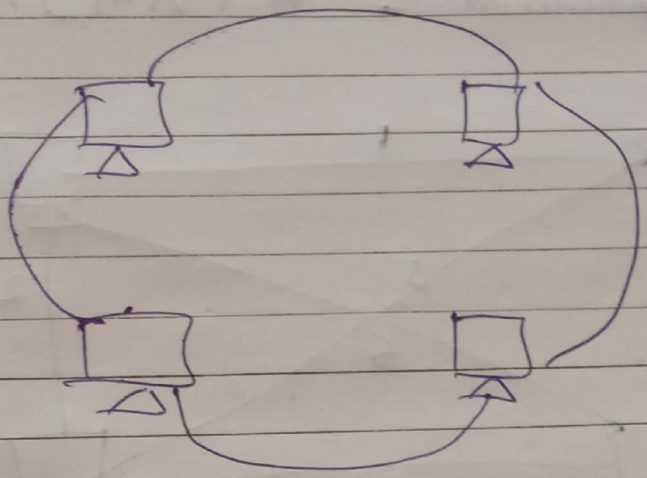
* Ring Topology

- It becomes ring as each computer is connected to another computer with the last one connected to first.



Advantages

- Cost Effective
- Used in small network
- Easy to Expand

Disadvantages

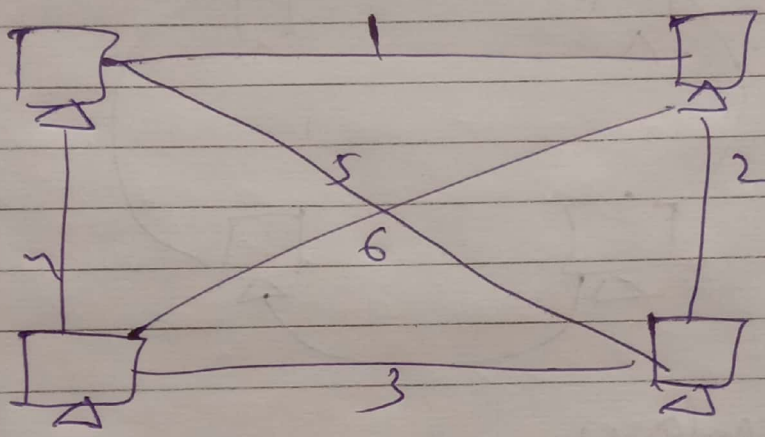
- Cable fails when network fails.
- Cable has limited length.
- Slower than ring topology.

* Mesh Topology

A Mesh Topology can be full mesh topology or partial connected mesh topology.

-> In mesh topology, every computer in the network. The no. of connection in this network can be calculated using the following formulas.

no. of connection = $n(n-1)/2$



n = 4

$\frac{4(3)}{2} = 6.$

Advantages

-> Manage High amount of traffic
-> failure of one does not cause proble.

Disadvantages

- Higher cost.
- Diffiunt in building.
- Chances of Redundant Connection is high.