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Batch - H2
Roll No - 27

Date: __/__/__

CN LAB - 1

Title : Design Network

Aim: Design a simple network with different topologies & test it using PING utility.

Objective:

1. To learn and understand the concept of LAN and test it using PING command.

2. To design a network using various network topologies in Cisco Packet Tracer.

Theory :

1. What is LAN ?

Ans   LAN or Local Area Network is a group of computer or peripheral devices that are connected together. These devices may be connected with a physical media or a connectionless media within a certain geographical area.

These devices can communicate and share resources with each other. LAN is decided upon the geographical area covered by the network i.e. between the range of a few kilometer.

2. Define and explain various network Topologies.

- Bus Topology : In the bus network topology every node is connected in series along a single cable. eg. cable broadband distribution network.
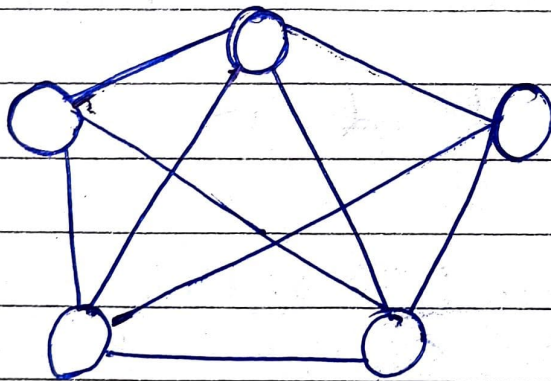

- Ring Topology : In the ring network topology the nodes are connected in a closed loop configuration. Data is passed in only one direction eg. Metro network based on Synchronous Optical Network.
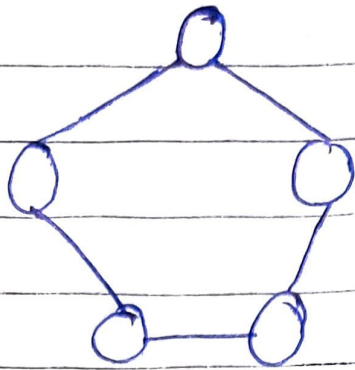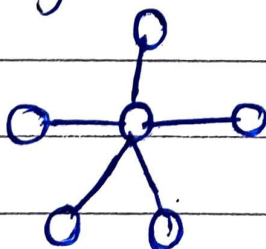
- **Mesh Topology :** The mesh topology links nodes with connections so that multiple paths between the nodes/devices. Meshing multiple paths increased resiliency but also increases cost. More space is needed for dedicated links.

- **Star Topology :** In star topology, a central device connects to all other nodes through a central hub.

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- Hybrid Topology : They hybrid network topology is any combination of 2 or more topologies. Hybrid topologies typically provide exceptional flexibili-ty.

FAQ's :

1. Explain the use of PING-utility command with example.

Ans The ping command sends packets of data to a specific IP address on a network and then lets you know it long it took to transmit data. & get a response.

We use the Ping utility to determine the connection between devices. Examples :- Let there be a PC_1 with IP address : 192.168.20.1, PC_2 with IP address : 192.168.20.2, PC_3 with IP address : 192.168.20.3. Let only PCI & PC_2 be connected.

On using the command ping 192.168.20.2 on PCI, we receive the time between packets

and response which shows us that PC1 & PC2 are connected. Using the ping command 192.168.20.3 on PC2 will result in request time out as the devices are not connected hence the packet is never sent.

2. Compare various types of Network.

Ans

Basis of Comparision	LAN	MAN	WAN
1. Expands to	Local Area Network	Metropolian Area Network	Wide Area Network
2. Meaning	It connects a small group of computers in a small geographic area.	It converts relatively larger areas like cities, town etc.	It spans a large locality & connects countries together
3. Ownership	Private	Private or Public	Private or Public
4. Design and Maintainance	Easy	Difficult	Difficult

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	Basis of comparision	LAN	MAN	WAN
5.	Propogation Delay	Short	Moderate	Long
6.	Speed	High	Moderate	Low.
7.	Fault Tolerance	More	Less	Less
8.	Congestion	Less	More	More
9.	Used for	Colleges, Schools, Hospitals.	Small towns. cities	Country/ Continent
10.	Allows	Single pair of devices to communi- -cate	Multiple computers. can simulta- -neously interact	A huge group of computers communicate at the same time.

Student Observation:-

The hing command can give connection relation amongst the devices that are connected together. The devices that are not connected to each other, donot respond to the hing command.