

Programme: Diploma

Class Test: II

Session: 2017-18

Course: Computer & IT Fundamentals

Year: Ist

Course CODE: 105

Time: 09:45 to 10:45

Max.Marks : 15

Date: 24-01-2018

Instructions to candidates: Attempt Any Three Questions

Sl#	Question	Marks	CO MAPPING
1	Explain LAN, MAN AND WAN. LAN, MAN तथा WAN को समझाइए।	5	CO3
2	Explain different Networking Topologies. नेटवर्किंग की विभिन्न टोपोलोजी को समझाइए।	5	CO3
3	What is Operating System? Explain Single and Multiuser Operating System. ऑपरेटिंग सिस्टम क्या है? सिंगल यूजर एवं मल्टियूजर ऑपरेटिंग सिस्टम को समझाइए।	5	CO4
4.	Explain the difference between Multiprogramming and Multiprocessing. मल्टिप्रोसेसिंग एवं मल्टिप्रोग्रामिंग में अंतर समझाइए।	5	CO4

Q.1 Explain LAN, MAN AND WAN.

Ans. **Local Area Network (LAN)**

A Local Area Network (LAN) is a network that is restricted to smaller physical areas e.g. a local office, school, or house. Approximately all current LANs whether wired or wireless are based on Ethernet. On a 'Local Area Network' data transfer speeds are higher than WAN and MAN that can extend to a 10.0 Mbps (Ethernet network) and 1.0 Gbps (Gigabit Ethernet).

Wide Area Network (WAN)

Wide Area Network is a computer network that covers relatively larger geographical area such as a state, province or country. It provides a solution to companies or organizations operating from distant geographical locations who want to communicate with each other for sharing and managing central data or for general communication.

Metropolitan Area Network (MAN)

A Metropolitan Area Network (MAN) is a network that connects two or more computers, communicating devices or networks in a single network that has geographic area larger than that covered by even a large 'Local Area Network' but smaller than the region covered by a 'Wide Area Network'. MANs are mostly built for cities or towns to provide a high data connection and usually owned by a single large organization.

Q.2 Explain different Networking Topologies.

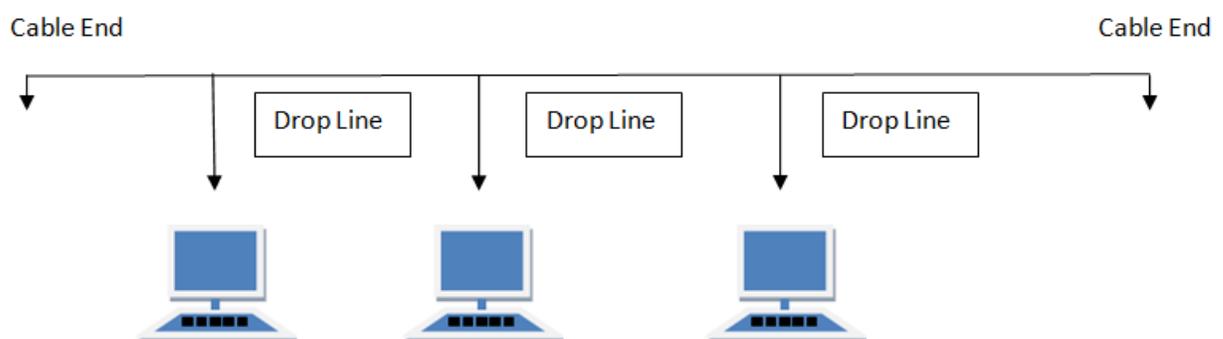
Ans.

Types of Network Topology

Network Topology is the schematic description of a network arrangement, connecting various nodes(sender and receiver) through lines of connection.

BUS Topology

Bus topology is a network type in which every computer and network device is connected to single cable. When it has exactly two endpoints, then it is called **Linear Bus topology**.

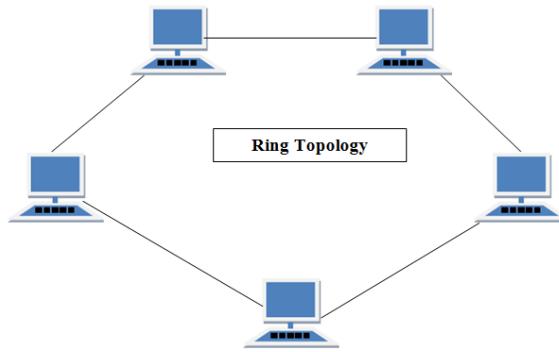


Features of Bus Topology

1. It transmits data only in one direction.
2. Every device is connected to a single cable

RING Topology

It is called ring topology because it forms a ring as each computer is connected to another computer, with the last one connected to the first. Exactly two neighbours for each device.

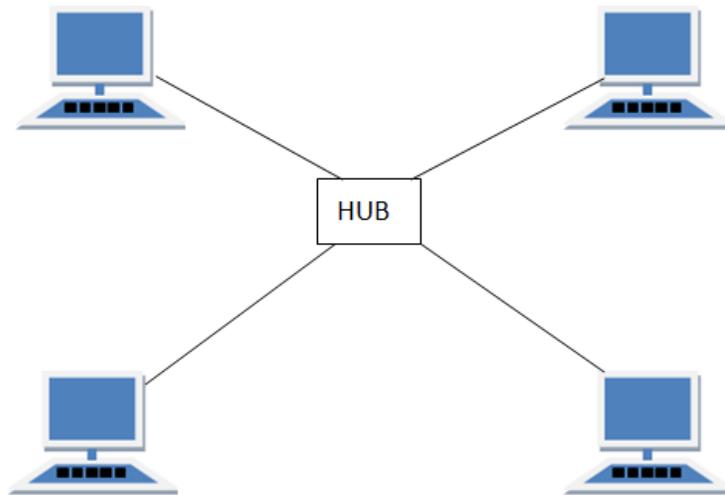


Features of Ring Topology

1. The transmission is unidirectional, but it can be made bidirectional by having 2 connections between each Network Node, it is called **Dual Ring Topology**.
2. Data is transferred in a sequential manner that is bit by bit. Data transmitted, has to pass through each node of the network, till the destination node.

STAR Topology

In this type of topology all the computers are connected to a single hub through a cable. This hub is the central node and all others nodes are connected to the central node.

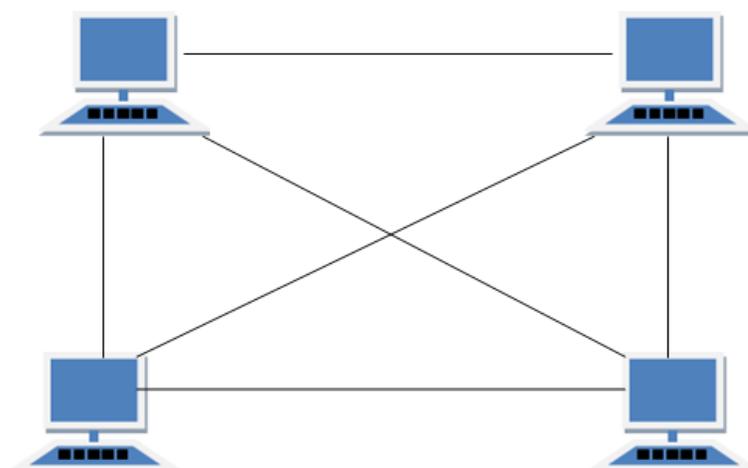


Features of Star Topology

1. Every node has its own dedicated connection to the hub.
2. Hub acts as a repeater for data flow.
3. Can be used with twisted pair, Optical Fibre or coaxial cable.

MESH Topology

It is a point-to-point connection to other nodes or devices. All the network nodes are connected to each other. Mesh has $n(n-1)/2$ physical channels to link n devices.



Q.3 What is Operating System? Explain Single and Multiuser Operating System.

Ans.

An **operating system** or **OS** is a software program that enables the computer **hardware** to communicate and operate with the computer software.

Single User- A single-user operating system is a system in which only one user can access the computer system at a time. On the other hand, a multi-user operating system allows more than one user to access a computer system at one time.

A single user operating system provides the facilities to be used on one computer by only one user. In other words, it supports one user at a time. However, it may support more than one profiles. Single keyboard and single monitor are used for the purpose of interaction. The most common example of a single user operating system is a system that is found in a typical home computer.

Multi User- A multi-user operating system has been designed for more than one user to access the computer at one time. Generally, a network is laid down, so that a computer can be remotely used. Mainframes and minicomputers work on multi-user operating systems. These operating systems are complex in comparison to single user operating systems. Each user is provided with a terminal and all these terminals are connected to a main computer. In a multi-user environment, it is very important to balance the requirements of the users, as the resources of the main computer are shared among the users.

Q.4 Explain the difference between Multiprogramming and Multiprocessing.

Ans.

Multiprocessing:	Multiprogramming:
1. Multiprocessing refers to processing of multiple processes at same time by multiple CPUs.	1. Multiprogramming keeps several programs in main memory at the same time and execute them concurrently utilizing single CPU.
2. It utilizes multiple CPUs.	2. It utilizes single CPU.
3. It permits parallel processing.	3. Context switching takes place.
4. Less time taken to process the jobs.	4. More Time taken to process the jobs.
5. It facilitates much efficient utilization of devices of the computer system.	5. Less efficient than multiprocessing.
6. Usually more expensive.	6. Such systems are less expensive.