Chapter – 1
Networking and Telecommunication (Questions with its Solutions)

Question Pattern:
Very Short : 1 Mark Type
Technical Terms: 1 Mark Type
Full Forms: 1 Mark Type
Short Q/A : 2 Marks Type

❖ Write the full form of the following: *[1 Marks Type]*

a. **ADSL:** Asymmetric / Asynchronous Digital Subscriber Line
b. **ARPANET:** Advanced Research Project Agency Network
c. **ATM:** Automated teller machine
d. **BNC:** Bayonet Neil Concelman
e. **DSL:** Digital Subscriber Line
f. **FTP :** File Transfer Protocol
g. **HTTP:** Hypertext Transfer Protocol
h. **IRC:** Internet Relay Chat
i. **ISDN:** Integrated Services Digital Network
j. **ISP:** Internet Service Provider
k. **LAN:** Local Area Network
l. **MAN:** Metropolitan Area Network
m.**MODEM:** Modulator Demodulator
n. **NIC:** Network Interface Card
o. **NOS:** Network Operating System
p. **POP:** Post Office Protocol
q. **PSTN**: Public switched Telephone Network
r. **SMTP:** Simple Mail Transfer Protocol
s. **STP:** Shielded Twisted Pair
t. **TCP/IP:** Transmission Control Protocol / Internet Protocol
u. **URL:** Uniform Resource Locator
v. **USB:** Universal Serial Bus
w. **UTP:** Unshielded Twisted Pair
x. **VoIP:** Voice over Internet Protocol
y. **WAN:** Wide Area Network
z. **WAP:** Wireless Application Protocol
aa. **WWW:** World Wide Web

❖ **<u>Write down the appropriate technical terms for the following:</u>** ***[1 Mark Type]***

1. **The smallest unit to represent information on a quantum computer.**
   ⇨ Quantum bit / qubit

2. **A company which provides services of internet.**
   ⇨ Internet Service Provider (ISP)

3. **The protocol that makes the network communication possible.**
   ⇨ Transmission Control Protocol / Internet Protocol (TCP/IP)

4. **A powerful program that controls and coordinates a computer's hardware devices and runs software and applications.**
   ⇨ Operating System (OS)

5. **A type of network in which every computer works as both client and server.**
   ⇨ Peer to Peer Network (P2P)

6. **Computer or device on a network.**
   ⇨ Network host

7. **Transmission technology used in the remote control of television.**
   ⇨ Infrared

8. **The communication mode that supports data in both direction at the same time.**
   ⇨ Full duplex

9. **The communication mode that supports data in one direction at a time.**
   ⇨ Simplex

10. **An intelligent device that connects two different networks.**
    ⇨ Routers

11. **A device that interconnects two networks that uses same technology. Or A device that interconnects two networks called westside and eastside.**

    ⇨ Bridges

12. **Protocol used by the internet.**
    ⇨ Transmission Control Protocol / Internet Protocol (TCP/IP)

13. **Powerful computer in a network.**
    ⇨ Server

14. **Number of bits that can be transferred per second over a given transmission medium.**
    ⇨ Bandwidth

15. **A cable that transmits light signals.**
⇨ Optical Fiber

16. **A computer network limited within a room.**
⇨ Local Area Network (LAN)

17. **Operating system that can handle the network.**
⇨ Network Operating System (NOS)

18. **A card used to connect network cable to a computer.**
⇨ Network Interface Card (NIC)

19. **The websites that search documents for specified keywords in WWW.**
⇨ Search Engine.

20. **A device used to connect PC with a telephone line.**
⇨ Modulator Demodulator (Modem)

21. **The internet protocol that is used to communicate between web client and web servers.**
⇨ Hypertext Transfer Protocol (HTTP)

22. **A set of rules and procedure that govern transmission of data.** ⇨ Protocol

23. **A protocol that allows a user to transfer files to another network.** ⇨ File Transfer Protocol (FTP)

24. **A device that joins cables or cable to a device.**
⇨ Connectors

25. **Operating system that manages the resources on the network.** ⇨ Client's OS

26. **The unique address that defines that route to a file on the internet server.** ⇨ Uniform Resource Locator (URL)

27. **The entry and exit point of a network.**
⇨ Gateway

28. **The client PCs that are responsible for carrying out different kinds of routine task under the guidance and control of the server.**
⇨ Workstations.

29. **A cable which is made of pairs of solid or stranded copper twisted along each other.**
⇨ Twisted Pair Cable

30. **A process of transferring information from sender to a receiver with the use of a medium.**

⇨ Communication

❖ **Answer the following questions in one sentence.** ***[1 Mark Type]***

1. What is a search engine? ***(Important)***

Ans: A search engine is a software system that is designed to carry out web searches on the basis of keywords given by the users.

Example: google, Ask, Bing, Yahoo etc.

2. What is network protocol?

Ans: Network protocol is a set of rules followed by sender and receiver in the process of communication.

3. Write the name of any two search engines.

Ans: Name of any two search engines are:

a. Google
b. Bing

4. Define web browser. Write the name of any four web browsers.

Ans: A web browser is a software application used to retrieve data from world wide web (WWW). The name of any two web browsers are:

a. Google chrome
b. Opera
c. Mozilla Firefox
d. Safari

5. What is intranet? Where it is used?

Ans: An intranet is a private network contained within an enterprise that is used to securely share company information and computing resources among employees. It is used in companies, business, within an organization to establish internal communication.

6. Define bandwidth.

Ans: Bandwidth is defined as number of bits that can be transferred per second over a given transmission medium.

7. Define data communication modes with its types.

Ans: The way in which data is transmitted from one location to another location is called data communication modes. There are two modes they are:

a. Simplex Mode b. Duplex Mode

8. Define simplex mode with its examples.

Ans: Simplex mode is a types of communication mode in which data can only transmit in one direction. The best example of simplex mode is **radio, newspaper** and **television** broadcasting.

9. Define full duplex mode with its examples.

Ans: Full duplex mode is a type of duplex mode in which a connection between two devices are capable of sending data in both directions at the same time.

The best example of this mode is **telephone, internet telephony, Video calls/video conferencing etc** in which two people can communicate, and both are free to speak and listen at same time.

10.Define half duplex mode with its examples.

Ans: Half duplex mode is a type of duplex mode in which data can transmit in both directions but only one direction at a time.

The best example of this communication mode is **walkie-talkie** and **wireless handset.**

11.Define fiber optic cable.

Ans: Fiber optic cable is a guided/wired transmission media which uses electric signals to transmit data and it transfer data signals in the form of light.

12.Define URL with a suitable example.

Ans: Uniform Resource Locator (URL) is the address that defines the route to a file on the internet server (web server or mail server).

Example: https://www.google.com

13.Define telnet.

Ans: Telnet is a protocol that allows to connect to remote computers (called hosts) over a TCP/IP network (such as the internet).

14.What do you mean by IRC? Give any two examples of IRC.

Ans: Internet Relay Chat (IRC) is an application layer protocol that facilitates communication in the form of text. Example: Facebook messenger, Viber etc.

15. Define modem with it use.

Ans: A modem (Modulator-Demodulator) is a network hardware device that allows to connect to ISP(Internet Service Providers) and browse the internet. It is used in telephone system that converts digital data to analogue signal and vice versa.

❖ **Answer the following question.** ***[2 Marks Type]*** **1. What is computer network? Enlist any two advantages and two disadvantages of it.**

Ans: A computer network is an interconnection between two or more computers

connected together to share the resources and information. Internet is the example of computer network.

Any two **advantages** of computer network are:

a. Sharing of different peripheral devices and hardware is possible.
b. Faster as well as cheaper communication and data transmission.

Any two **disadvantages** of computer network are:

a. It is very expensive to build computer network due to various hardware and software requirement.
b. Establishing computer network is not easy as it requires trained manpower and expert support.

2. Define communication media with its type and example.
OR
What do you mean by guided and unguided media? Give some examples of it.

Ans: Transmission media are the pathways that connect computers, other devices, and people on a network.

There are two main communication media they are:

a. Wired or Bounded or Guided Transmission Media
In this communication media, data and signals are transferred in a closed conductor through the use of cables or wires. This is easy, fast and secure way to transfer data and information from one computer to another.
Example: Coaxial Cable, Twisted Pair Cable, Optical Fiber

b. Wireless or Unbounded or Unguided Transmission Media
It is the type of transmission media in which data and signals are transferred through the form of wave. In this communication media, it transmits the electromagnetic waves without using any physical medium.
Example: Microwaves, Radio Wave, Infrared

3. What is guided communication media? List its types with uses. Ans: Guided communication media is a type of communication media in which media, data and signals are transferred in a closed conductor through the use of cables or wires. This is easy, fast and secure way to transfer data and information from one computer to another.

Types of guided communication media with its uses are listed below:-

a. Coaxial Cable: It is used in **TV cables** or used as a transmission line for **radio frequency signals.**
b. Twisted Pair Cable: It is generally used in **telephone lines** to provide data and voice channels or even used in **LAN**.

c. Optical Fiber: It is used It is also commonly used in telecommunication services, such as **internet, television and telephones.**

4. Write any four differences between STP and UTP.

Ans: Difference between **STP (Shielded Twisted Pair)** and UTP

Shielded Twisted Pair (STP)	Unshielded Twisted Pair (UTP)
1. Data rate in STP is **high**.	1. Data rate in UTP is **slow** compared to STP.
2. In STP **noise is less**.	2. In UTP noise is high compared to STP.
3. STP is **expensive** than UTP.	3. The **cost** of UTP is **less**.
4. Generally used for connecting organizations over a long distance.	4. It is used for **data transmission** within **short distance** such as for home and office networks.

5. Difference between guided and unguided media with its example.

Ans: Difference between guided and unguided media with its examples are mentioned below in table:

Guided Media(wired)	Unguided Media(wireless)
1. Guided media is also called wired or bounded communication media in which data and signals are transferred in a closed conductor through the use of cables or wires.	1. Unguided media is also called wireless or unbounded communication media in which data and signals are transferred through the form of wave.
2. It is used for point-to-point communication.	2. It is generally suited for radio broadcasting in all directions.
3. **Examples:** coaxial cables, twisted pair, optical fiber.	3. **Examples:** Microwaves, Radio Wave, Infrared

6. Define Protocol. List the names of any five protocols with its uses.

Ans: A protocol is a set of rules that governs the communications between computers on a network. It is the format and procedures that governs the transmitting and receiving of data.

Protocol	Uses

Transmission Control Protocol / Internet Protocol **(TCP / IP)**	Backbone protocol of the internet.
Simple Mail Transfer Protocol **(SMTP)**	Used to send email or a network.
Post Office Protocol **(POP3)**	Used to retrieve e-mail from a mail server and holds email until they pick it up.
File Transfer Protocol **(FTP)**	Used to send and receive files from a remote host.
Hyper Text Transfer Protocol **(HTTP)**	Used for the web to send documents those are encoded in HTML

7. Define router and switch with its uses.

Ans: A router is a device that joins two different networks together such as LAN(Local Area Network) and WAN(Wide Area Network).It is used to connect multiple devices to the Internet, and connect the devices to each other.

Switch is connectivity device that is capable of forwarding packets directly to the ports associated with particular network address. A switch's main objective is to establish a simultaneous connection among various devices.

8. Differences between switch and hub.

Ans: Difference between switch and hub are described below in a table:

Switch	**Hub**
1. It transfers packets to only those selected computers connected in a network.	1. It broadcasts the information packets to all computers connected in a network.
2. It is more expensive than hub.	2. It is cheaper than switch.
3. It is full duplex device so multiple devices can send data at the same time.	3. It is half duplex device so only one device can send data at a time.

9. Differentiate between server and client(workstation).

Ans: Difference between server and client are listed below in a tabular format.

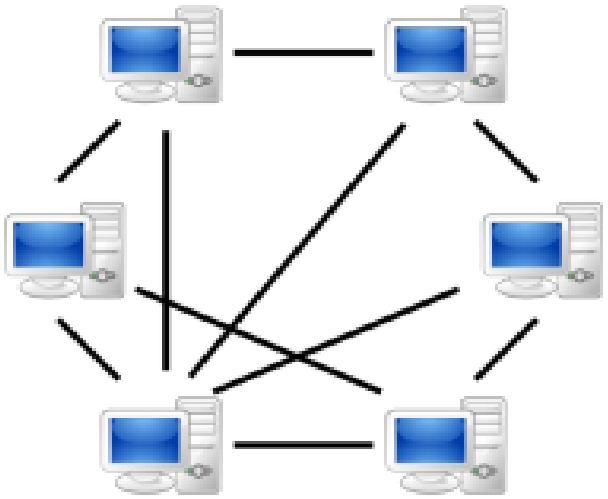
Server	Client(workstation)
1. A server is a computer designed to process requests and deliver data to other client computers.	1. A client is a computer that access the services provided by the server.
2. It provides services to client whenever client request for services.	2. It requests the server for content or services.
3. **Example:** database server, web server, file server etc.	3. **Example:** Desktops, Laptops, smartphones etc.

10.Differentiate between peer to peer and client server network with figure.

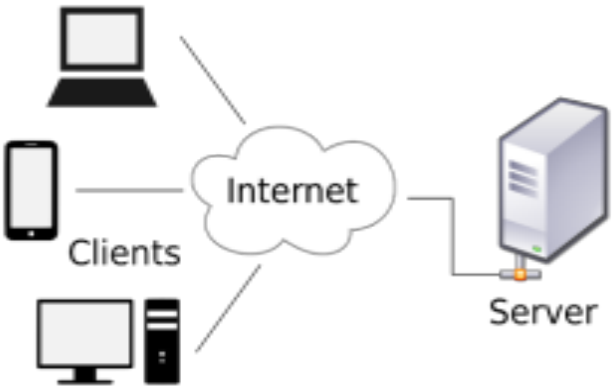
Ans: Difference between peer to peer and client server network are discussed below:

Peer to Peer	Client Server
1. It is the type of network architecture in which all nodes or computers on the network **have an equal relationship with each other**.	1. It is the type network architecture in which main computer (server) is equipped with more powerful processor, large memory and network operating system (NOS).
2. Security is not centrally controlled.	2. Security is controlled by the central computer(server).
3. It is used in small networks within less than 10 computers.	3. It is used in large networks within less than 10 computers.

Peer to Peer Diagram:



Client Server Diagram:



11. Define centralized network architecture. Write its advantages and disadvantages.

Ans: Centralized systems are systems that use client/server architecture where one or more client nodes are directly connected to a central server. This is the most commonly used type of system in many organizations where a client sends a request to a company server and receives the response.

Some **advantages** of centralizes network are:

a. It saves cost of installation of network system.
b. Host Computer gives facilities of storage and software to

workstation. Some **disadvantages** of centralizes network are:

a. The malfunctioning of host computer affects other workstation.
b. It is difficult to add more workstation.

12.Define computer networks. List any 3 types of computer network.

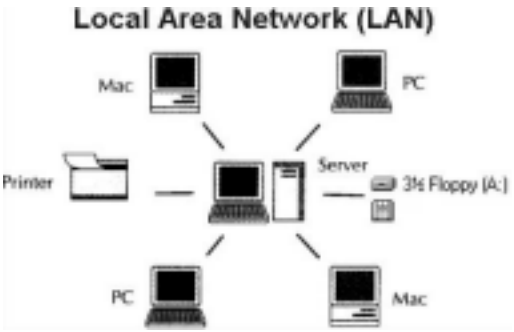
Ans: A computer network is an interconnection between two or more computers connected together to share the resources and information. Internet is the example of computer network.

Any 3 types of computer network are:

a. Local Area Network(LAN)
b. Metropolitan Area Network (MAN)
c. Wide Area Network(WAN)

13.Define LAN with its feature.

Ans: LAN (Local Area Network) is a type of computer network in which two or more than two computers are connected in a very limited area within a same or adjacent building. This type of computer network cannot cover more than few kilometers.

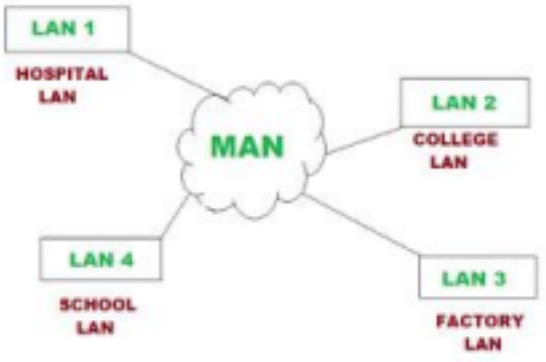


Some of the features of LAN are:

a. It covers small geographical areas such as room or buildings.
b. The communication quality is better and data transfer rate is high.

14.Define MAN with its feature.

➢ **Ans:** A Metropolitan Area Network (MAN) is a network that interconnects users with computer resources in a geographic area such as within a city or a town. Data transfer rate is slower than LAN as it has bigger network.

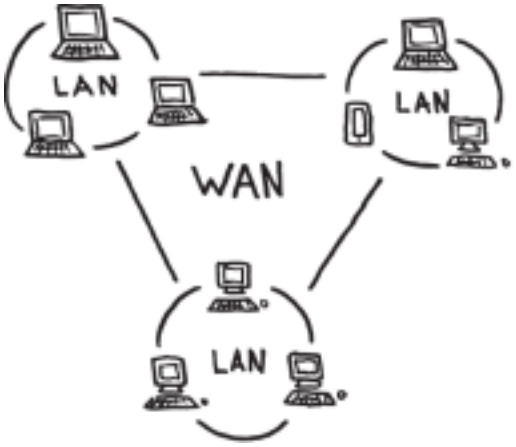


Some features of MAN are:

a. It generally covers a single town or city.
b. It is owned by single or multiple organizations.

15.Define WAN with its feature.

Ans: Wide Area Network is a network that is extended to a large area in which computers are connected through wireless technology or satellite communication.



Some features of WAN are:

a. It covers the whole world and cannot be restricted to any geographical location.
b. It is an expensive system compared to other networking types such as LAN and MAN.

16.What is MAN? Write any two differences between LAN and WAN.

Ans: A Metropolitan Area Network (MAN) is a network that interconnects users with computer resources in a geographic area such as within a city or a town.

Difference between LAN and WAN are mentioned below in a tabular format.

Local Area Network (LAN)	**Wide Area Network (WAN)**
1. A LAN connects devices in a limited geographical area.	1. WAN connects devices in a wide geographical area.
2. It has higher data transfer rate as it has limited coverage area.	2. It has lower data transfer rate due to its wide coverage area.
3. **Example:** LAN network in an office building.	3. **Example**: Internet

17.Define network topology. List the types of topologies.

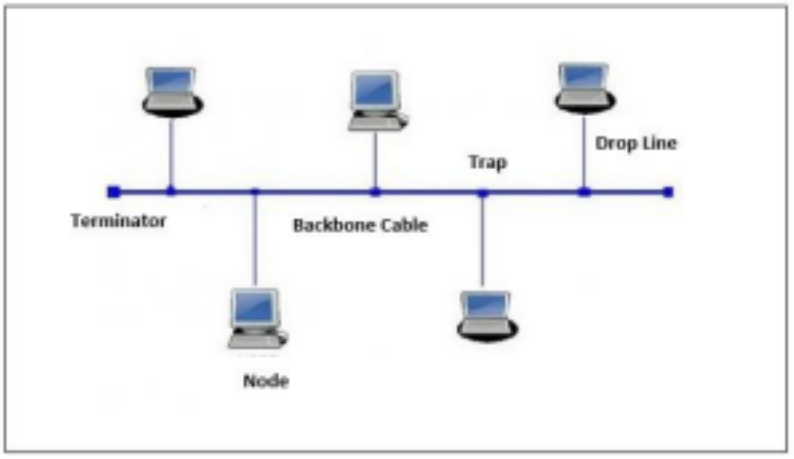
Ans: Network topology is the inter-connected pattern of network components. The arrangement of computers in a network is called Network Topology. It is the physical layout of connected computers.

The various types of topologies are:

a. Bus Topology
b. Ring Topology
c. Star Topology
d. Mesh Topology

18.Define bus topology with a suitable diagram.

Ans: In Bus topology, every computer and network devices are connected to the single main cable. Drop lines and taps are used to connect node to the backbone cables. A drop line is the connection between the node and the backbone. This topology allows only one device to transmit data at a time.



19.Define ring topology. Why it is not common in practice?

Ans: In this topology all the computers are connected to each other in a closed loop by a single cable with each other. The last computer connects to the first one to form a ring like structure. Data travel around the network, in one direction, using a token.

Ring topology is not common in practice due to the following reason:

a. If the network is too large then it is difficult to detect failure links as each node has to be checked individually.
b. Any node failure causes whole network failure.

20. "The internet is called network of network." Justify this statement in your own words.

Ans: The term "Internet" is often referred to as a "network of networks" because it accurately describes its fundamental structure and the way it functions. Some of the reasons that justifies internet is called network of network are listed below:

a. The Internet is not a single, centrally managed network but rather a decentralized and global infrastructure that connects a vast array of networks.

b. The Internet's architecture is designed to accommodate an ever-growing number of networks and devices. New networks can be seamlessly integrated into the internet's structure, and this scalability is a hallmark of a network of networks.