

Chapter 3rd
Computer Networks

Que:1 Multiple Choice Questions:

1. A computer _____ is a set of computers that are connected together.
a. Network b. System c. Protocol d. Internet
2. A _____ is basically a multiport repeater.
a. Hub b. Switch c. Router d. Bridge
3. A _____ is a 2-port device.
a. Hub b. Switch c. Router d. Bridge
4. Wi-Fi stands for _____
a. Wireless Field b. Wireless Fidelity c. Wire Fire d. Wire Fidelity
5. A _____ is a combination of a Bridge and a Router.
a. Switch b. Bridge c. Hub d. Router

Que:2 Write Full Forms

1. **UTP** Unshielded Twisted Pair
2. **FTP** File Transfer Protocol
3. **SMTP** Simple Mail Transfer Protocol
4. **POP** Post Office Protocol
5. **HTTP** HyperText Transfer Protocol
6. **MAC** Media Access Protocol

Que:3 Short Answer Type Questions.

Q:1 What is a Network?

Ans: Networks are the base of communication in Information Technology. A Computer Network is a set of two or more computers which are connected with each other using some communication media. This communication media can be either guided or unguided. Computer networks are used to share information, for communication or to perform some other tasks.



Q:2 Write the different types of OSI layers.

Ans: OSI stands for Open System Interconnection. ISO develops a 7 layered model for communication between computer systems in a network. Each layer performs its designated function. These 7 layers are:

1. Application Layer
2. Presentation Layer
3. Session Layer
4. Transport Layer
5. Network Layer
6. Data Link Layer
7. Physical Layer

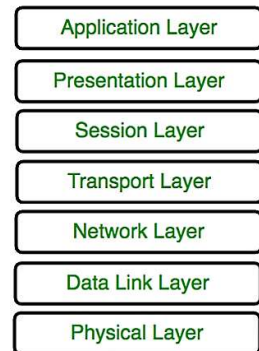
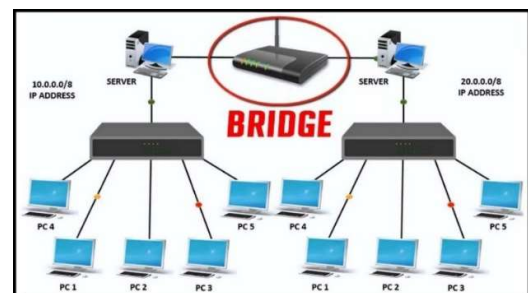


Fig: 7 Layers of OSI Model

Q:3 What is a Bridge?

Ans: Bridge is a network device. This device is used to connect two different ethernet networks. This device uses MAC addresses to forward data packets in a network. It only forwards packets from one network to another concerned network. This device has only one input port and only one output port. Hence this device is also called 2-port device.



Q:4 Why do we need a network?

Ans: Following are some of the important reasons why we need a network:

- To Communicate information (using email, video, instant messaging).
- To share different types of hardware devices (such as printers, modems, etc.).
- To share files.
- To share software and operating systems available on remote systems.
- For network users so that they can easily access and manage information.

Q:5 What is guided media?

Ans: Guided media is a type of transmission media. Using this media, data is transferred using cable wires. This media transfers data through a particular fixed path. Examples of commonly used guided media are:

- Twisted pair cable
- Co-axial cable
- Optical fiber cable

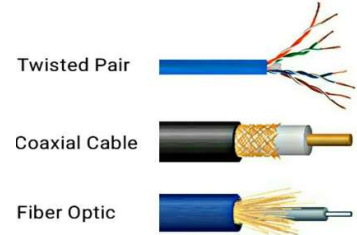


Fig: Guided Media

Q:6 What is un-guided media?

Ans: Unguided media is also a type of transmission media. Using this media, data is transferred through air without using cable wires. This type of communication is often referred to as wireless communication. In this media, data transfer can take place in any direction instead of a fixed path. Examples of commonly used unguided media are:

- Infrared
- Bluetooth
- Wi-Fi
- Radio waves
- Microwaves
- Satellites

Q:7 Define Protocol.

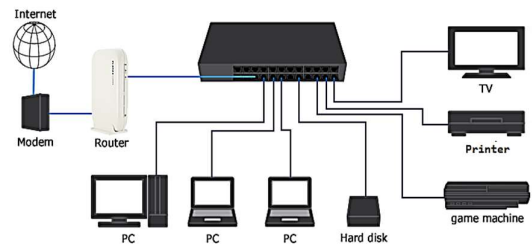
Ans: Network protocols are a set of rules. These rules control the exchange of information in an easy, reliable and secure way. Any kind of data transfer over the network or the Internet is possible only with the help of these protocols. TCP/IP, FTP, SMTP, HTTP, etc. are examples of some commonly used network protocols.

Que:4 Long Answer Type Questions.

Q:1 What are network devices? Describe any three network devices.

Ans: Network device refers to the hardware devices that are used to build a network. Different types of network devices are used for different types of networks, such as: switches, hubs, routers, bridges, gateways, brouters, etc. Following is the description of some of the major network devices:

- **SWITCH:** This device connects the various devices in a network, such as computers, printers, routers, or other switches, so that these devices can communicate with each other.
- **ROUTER:** This device is used to connect our network to the Internet. It is a switch-like device that sends data packets to the network based on its IP address.
- **BRIDGE:** This device is used to connect two different Ethernet (LANs) networks. It uses the MAC address to forward data packets to the network. This device has only one input port and only one output port. That is why it is also called 2-port device.



Q:2 What is Unguided Media? Explain any two media.

Ans: Unguided media is a type of transmission media. Using this media, data is transferred through air without using cable wires. This type of communication is often referred to as wireless communication. In this media, data transfer can take place in any direction instead of a fixed path. Bluetooth, WiFi, Radio Waves, Satellites etc. are the examples of Unguided Media.

- **WiFi:** Full Form of WiFi is Wireless Fidelity. It is a popular wireless networking technology. Using this technology, we can exchange wireless information between two or more devices connected to the same network.

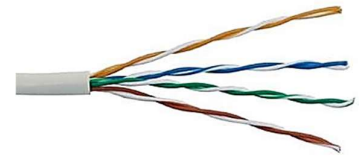
- **Bluetooth:** It is a kind of radio communication technology. It enables short-distance wireless networking between phones, computers and other networking devices. The process used to connect two Bluetooth devices is called "pairing".

Q:3 What is a Twisted Pair Cable? Define its advantages and disadvantages.

Ans: Twisted pair cable is a guided transmission media. It is used to transmit data across a network. This cable consists of two different insulated copper wires, which are twisted together. The first wire is used for data transfer and the second wire is used for grounding (earthing). The wires are twisted together to reduce cross-talk.

Advantages of Twisted Pair Cable:

- These cables can be used for both analog and digital broadcasting.
- These cables are cheap for short distances.
- If any part of the network is damaged, the entire network is not down.



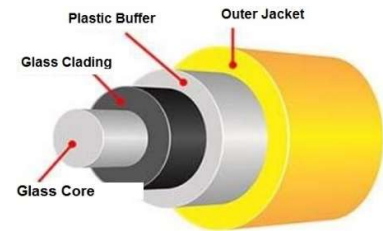
Disadvantages of Twisted Pair Cable:

- The signal cannot travel over the long distances without the use of repeaters.
- These wires are very thin and break easily.

Q:4 What is Fibre Optic Cable? Define its advantages and disadvantages.

Ans: Optical fiber cable is a guided transmission media. It is used to transmit data across a network. It transfers digital data signals in the form of light. This cable is made up of many thin flexible optical fibers. Each fiber is made up of three layers:

- **Core:** It is made up of high-quality silica glass or plastic.
- **Cladding:** It is also made up of high-quality silica glass or plastic.
- **Buffer:** It is an outer protective cover made of plastic.



Advantages of optical fiber:

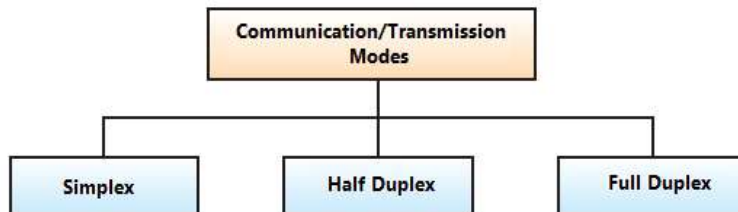
- It is suitable for industrial and noisy areas.
- Its data transfer rate is very high.
- It can be used to transfer data over hundreds of miles.

Disadvantages of optical fiber:

- Optical fiber cables are expensive.
- These wires are not easy to use.

Q:5 What is Communication Mode? Define its types in detail.

Ans: Communication mode is also known as transmission mode. Transmission mode is the process of transferring data or information between two devices connected within a network. There are three types of communication modes:



- **Simplex mode:** In this mode of communication, the communication is unidirectional. Only one of the devices in this mode can send a signal and the other can only receive a signal. For example: Communication between keyboard and computer.
- **Half-duplex mode:** In this communication mode, the flow of communication can be in both directions, but only one device is capable of communicating at a time. For example: In a walkie-talkie, sender speaks on one side and the receiver on the other side listens and then after a pause, another speaks and the first person listens.
- **Full duplex mode:** Even in full duplex mode, the flow of communication is in both directions, but communication is possible in both directions at the same time. This is the fastest mode of communication between devices. For example: Communication between two people using mobile phones.

