

Ch-8 Transmission Media

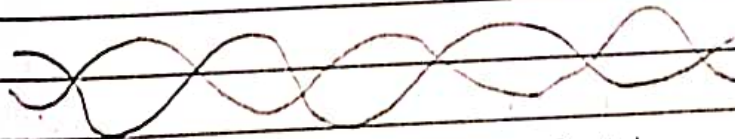
1 Write down a short note about twisted pair cable.

-> Twisted pair cable is the oldest and least expensive and most commonly used transmission medium.

Twisted pair cable consist of two insulated copper wire.

The thickness of a single copper wire is around 0.6 mm and the two wires are treated as a single unit.

One of the conductors is used to carry the signal and the other is used as a ground reference only.



Twisted Pair Cable

→ Advantages :

- 1 Easy to install
- 2 Cost-effective
- 3 Use for short-distance transmission

→ Disadvantages :

- 1 The connection established using UTP is not secure.
- 2 They are efficient only for a distance up to 100 meters.
- 3 They are installed in pieces of up to 100 meters.
- 4 These cables have limited bandwidth.

→ Application :

- 1 In EPBAX system use a TPC to connect telephone.

2 To establish a LAN in a building.

3 Used to transmit digital signals.

4 It is also use in modern Ethernet networks.

7 Explain the advantage of Optical Fiber in detail.

These are the main advantage of Optical Fiber.

1 In Optical Fiber a higher data transfer rate.

2 Optical Fiber is smaller in size and lighter weight.

3 It is not susceptible to electrical interference and cross talk.

4 It does not cause electrical interference.

5 It allows a signal to travel for longer distance.

6 It has lower attenuation.

7 Optical fiber cables provide more bandwidth for carrying data.

8 Fiber is immune to temperature change and moisture.

9 Optical fiber cost is very low.

10 Optical fiber has less power loss.

10 Explain Microwave band in detail.

Microwave waves is a type of electromagnetic waves with a frequency range from 1 to 300 GHz.

Microwave transmission uses only frequency from 1 to 40 GHz.

These waves are highly directional and suitable for satellite communication.

Microwaves cannot travel along the curvature of the earth surface.

⇒ There are two type of Microwave.

1 Terrestrial Microwave

2 Satellite Microwave

1 Terrestrial Microwave:

Microwaves in the frequency range of 2 to 40 GHz are known as terrestrial Microwave.

Terrestrial Microwave achieve long distance communication.

Terrestrial Microwave ^{can} communications between pairs of Earth-based transmitters and receivers to relay information.

2 Satellite Microwaves:

Microwaves in the frequency range of 1 to 70 GHz are used for satellite transmission.

In satellite microwaves transmission the microwaves are directed to a satellite placed in orbit.

This satellite receives the signal, amplifies and converts the signal to a downlink frequency.

→ Application

1. Use for long distance wireless transmission.
2. Use for satellite communication.
3. Use for cell phone communication.
4. Microwaves are also used for making microwave ovens.

→ Advantages.

- 1 Microwave spectrum has larger bandwidth.
- 2 Use of microwave we can transmit large amount of information.
- 3 This technology helps to manage crowded spectrum.

→ Disadvantages.

- 1 Reflected from flat surfaces like water and metal.
- 2 Split around solid objects.
- 3 Reflected by the atmosphere.