

UNIT 45: Transmission Media

Topic :- Transmission Media.

⇒ Transmission media is a Pathway that carries the information from sender to receiver. we use different type of cables or waves to transmit the data. Data is transmitted normally through electrical or, electromagnetic signal. An electrical signal is in the form of current. An electromagnetic signal is a series of electromagnetic energy pulsed at various frequencies. These signals can be transmitted through copper wire, optical fibre, atmosphere, water and vacuum. Different media have different properties like bandwidth, delay, cost and ease of installation and maintenance. Transmission media is also known as communication channel.

Types of Transmission media:-

⇒ There are two types of transmission media that are —

ii) wired or, Guided or, Bounded transmission media.

⇒ Bound transmission media are the cables that have physical existence and are limited by the physical geography. Media in which the signals are transmitted through a solid medium known as guided media. Popular bound transmission media in use are twisted pair cable, co-axial cable and optical fibre cable.

iii) wireless or, unguided or, unbound transmission media.

⇒ Media in which the signals are not transmitted through a solid medium is called unguided media. It is also known as wireless communication. Now, ^{days} ~~it is~~ wireless communication is becoming popular. Wireless LAN are being installed in office and college campus. This transmission media uses microwave, radiowave, Infrared are some of popular are bound transmission media.

Communication media

Guided media

Unguided media

Twisted pair
cable

Co-axial
cable

Optical
fibre

Micro
wave

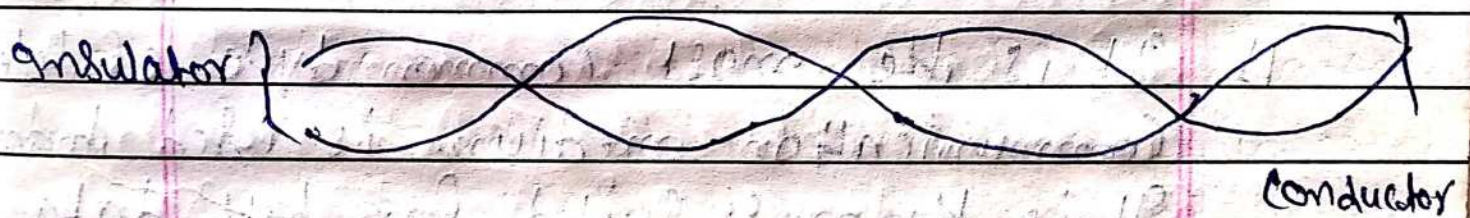
Radio
wave

Infrared

Topic :- Twisted Pair Cable.

- 2) It is a pair of copper wire with diameter of 0.4 to 0.8 mm, twisted together and wrapped with a plastic coating. The twisting increases the electrical noise immunity and reduces error rate of the data transmission. Each conductor is separately insulated by some low smoke and fire retardant substance. The twisting process serves to include the performance of the medium by containing the electromagnetic field within the pair. The radiation of electromagnetic energy here is by reducing the strength of

Signal within the wire is improved over a distance. These are popular for telephone network, the maximum transmission speed is limited the data rate in this category 28 Kbps. The wire in twisted pair cabling are twisted together in pair. Each pair would negative and positive. Any noise that appears on first wire of the pair would occur on the other wire. Twisted pair cabled are most effectively used in systems that use a balance line method of transmission.



Advantage of twisted pair cable:

- 1. • The oldest method of data transmission. Broad, man power to repair and service. This media of communication are easily available.
- 2. • In a telephone system signal can travel several kilometer without amplification.
- 3. • This media can be used for both analog and digital data transmission.

The band width depends on the thickness of the wire. It is the least expensive media of transmission for short distance.

Disadvantage of twisted pair cable

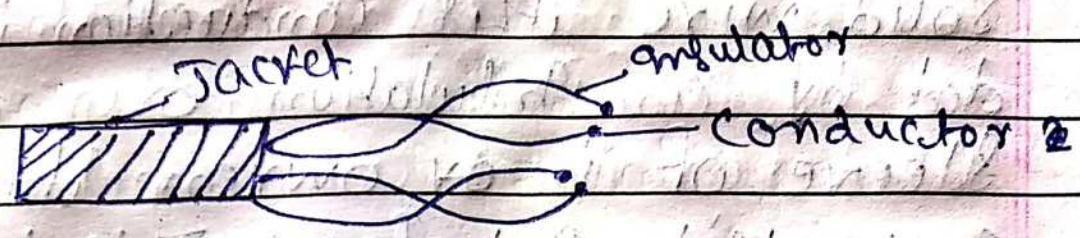
- It is likely to break easily.
- It can support 19200 BPS the 50 feet RS-282.

Types of Twisted Pair cable:

- 1) UTP (Unshielded Twisted Pair cable)
- 2) STP (Shielded Twisted Pair cable)

- 1) It is the most common type of telecommunication medium is used today. It is the most suited for both data and voice transmission hence each commonly used in telephone system. The cable has four pairs inside the jacket. Each pair is twisted with a different number of twisted pair is to help interference from adjacent pairs and other electrical device. Each twisted pair consist of two metal conductor that are insulated with their own clear plastic insula-

tion the horizontal wiring is limited to a maximum of 90 meters. A UTP contains 2-4200 twisted pair.



2) STP differ from UTP in the metallic shield or, screen which surrounds the pair, which may or may not be twisted. The pairs can be individually shielded. A single shield can surround a cable containing multiple pairs or, both techniques can be employed in modern. The shield itself is made of aluminium, steel or, copper. This shield is in the form of a metallic foil and is electrically grounded although less effective the shield. Some times it's in the form of ~~nickel~~ nickel or, gold plating of the individual conductor.

