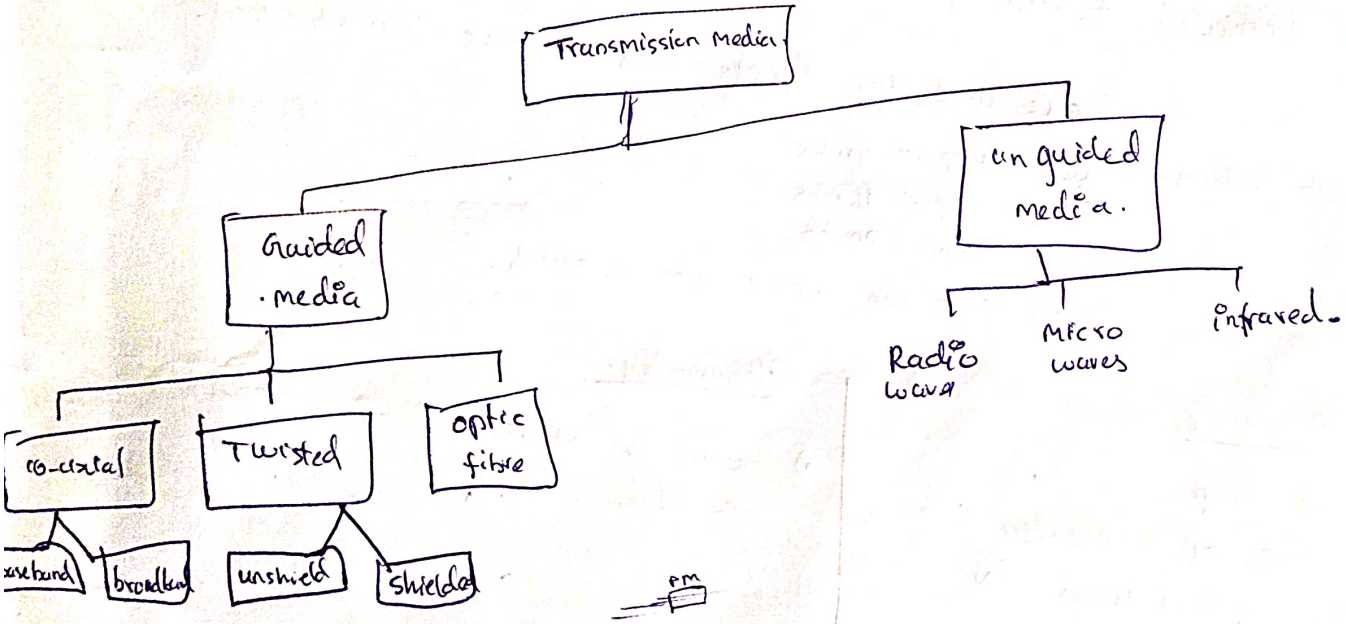
1). Transmission media.

* Transmission media is a communication channels that carries information from send to receiver. Data transmitted through electromagnetic signals.
* The main function of the transmission is to carry the information in the form of bits through LAN.
* It is a physical path b/w sender and Receiver in data Communication.
* characteristic and quality of data transmission are determined by characteristic of medium and signal.
* Transmission media - two types are wired and wireless. each different transmission have different bandwidth, delay, cost and easy to install & maintainence.
* It is available on lowest layer of OSI model eg. physical layer.



Guided

* It is defined as physical medium through which signals are transmitted. also known as bounded media.

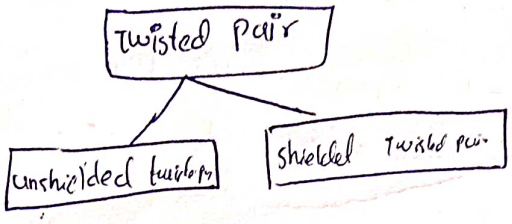
Twisted Pair.

① Twisted pair is a physical media made up of pair of cables twisted each other.

② cheap compared to other transmission media. Installation is easy and lightweight cable.

③ It frequency range for twisted cable from 0 - 3.5 kHz.

④ A twisted pair consist of two insulated copper wire, arranged in regular spiral pattern.



Unshielded

⇒ A unshielded twisted pair is widely used in telecommunication.

Category
- c1: used for telephone lines that have low mb speed.
- c2: supports 4mbs
- c3: supports 16mbs
- c4: support 20mbs
- c5: it can support upto to 200mb.

Advantage

1) It is cheap
2) installation of twisted wire is easy
3) used for high speed LAN.

Disadvantage

1) used for shorter distances because of attenuation.

Shielded

⇒ A shielded twisted wire pair is a cable that contain mesh surrounding the wire that allows the higher transmission rate.

Characteristic

1) The cost of the shielded wire is not high (or) very low.
2) Installation of STP is easy.
3) has higher attenuation.
4) Provides higher transmission rate.
5) has high capacity compare to unshielded twisted pair cable.

disadvantage

1) expensive compared to UTP and co-axial cable
2) has high attenuation rate.

coaxial cable

→ it is commonly used transmission media (eg TV wire is coaxial cable)

→ it contain two conductor Parallel to each other.

→ It has higher frequency as compared to twisted pair cable.

→ Inner conductor of the coaxial cable is made up of copper, outer conductor is made of mesh copper mesh. Middle core is made up of non-conductive cover that seperates the inner conductor from the outer conductor.

→ middle core response for data transfering. copper mesh prevents from EMI.

1. Baseband transmission - process of transfering single signal at high speed.

2. broadband transmission - " " " multiple signals simultaneously.

Advantage

1) can transmitted at high speed.
2) has better shielding compared to twisted cable.
3) Provides high bandwidth.

Disadvantage

1) expensive compare to twisted cable
2) if fault occurs in the cable causes the entire network.

optic fiber

→ is a cable that uses electrical signal for communication.

→ that holds the optic fibre coated in plastic that are used to send data by pulses of light.

→ plastic coating protects from heat, cold, electromagnetic from other types of wiring.

→ provide faster data transmission than copper wires.

basic element

i) core
ii) cladding
iii) jacket

ad

1) Greater bandwidth
2) faster speed
3) Longer distances
4) Better reliability
5) Thinner and sturdier.

Unguided media

→ transmit the electromagnetic waves using any physical medium.. known as wirless transmission.

Radio waves

→ Electromagnetic waves that are transmitted in all direction of free space.

→ range in frequency of radio waves (3KHz to 1KHz).

→ Sending & receiving antenna is not aligned. (sending antenna can be received by receiving antenna).

Eg: FM Radio.

→ Radio transmission used - wide area network. Radio waves cover large area.

Provides higher transmission rate.

Micro waves transmission

→ is a technology that transmit focused beam of a radio signal from one ground based microwave transmission antenna to another.

→ frequency - (1GHz to 1000GHz).

→ Sending & receiving antenna should be aligned. atenna are mounted on the tower to send beam to another antenna which is km away.

Characteristic

frequency

bandwidth - 1 to 10 Mbps

Short distance - Inexpensive

long distance - require high power

Attenuation - means loss of signal.

infrared

→ transmission is a wireless technology used for communication over short ranges.

→ frequency of the infrared in the range from 300GHz - 400GHz.

Short range communication → data transfer b/w two cell phones, TV remote operation, data tranfer b/w computer and cell phones in the same closed area.

→ high bandwidth, data rate very high.

→ can't penetrate walls.

→ is unreliable outside the building because the sun rays will interfere with the infrared wave