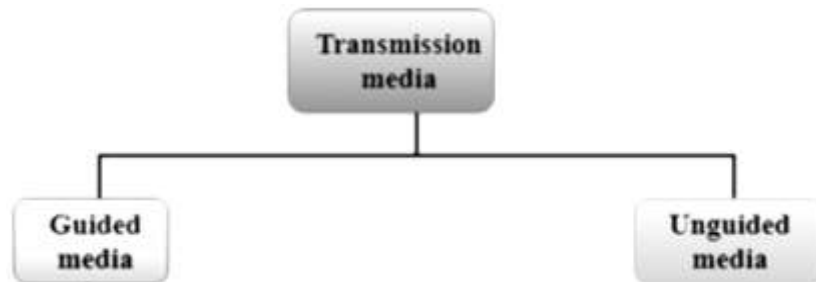


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### TRANSMISSION MEDIA

Transmission media is a communication channel that transfer information from sender to recipient. Data is transmitted through electromagnetic signals Is known as transmission media, The primary function of the transmission media is to transfer information in the form of bits via the LAN.

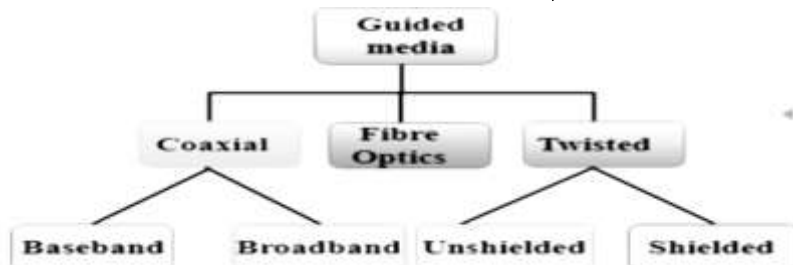
Transmission Media is broadly classified into the following types,

### TYPES,

Transmission media is contains a main two types called the first one guided and the second one unguided and also explains subtypes.

- 1) **GUIDED MEDIA:** As physical medium through which data are transferred at. It is also known as bound media or guided media.

### GUIDED MEDIA TYPES;



### ***A) TWISTED PAIR,***

A physical media made up pair of cables twisted with each other. A twisted pair cable is cheap compared to other transmission media. Installation of the twisted pair cable are easy, and a lightweight cable. The frequency range distance for twisted pair cable is less or more than 3.5 KHz.

The degree of reducing noise interfered is determined by the number of turns per foot. More the number of turns per foot decreases noise interference.

*For example* is Unshielded Twisted Pair cable, shielded Twisted Pair cable.

#### **Characteristics of twisted pair cable,**

That was cheap and easy installation at and use for short distance are used for higher speeding LAN Lines. The cost of the shielded twisted pair cable is not very high and not very low. An installation is easy. Higher in compared to unshielded twisted pair cable and a higher attenuation.

That provides the higher data transmission rate.



### ***B) COAXIAL CABLE;***

The name of the cable coaxial as contains two conductors parallel to each other. Coaxial cable is very commonly used transmission media,

For example, TV wire, it high frequency as compared to Twisted pair cable.

The coaxial cable is made up copper the inner conductor and the outer conductor is made up of copper mesh, The middle core is made up non-conductive cover that separates the inner conductor from the outer conductor, the middle core a responsible for data transferring whereas the copper mesh prevents from the Electromagnetic interference, *Examples*, Baseband transmission and Broadband transmission, High speeding data transferring at, and high bandwidth are provided, better shielding to the twisted cable are.

#### **Characteristics of coaxial cable line,**

Higher bandwidth and data rates (high - speed transmission) less attenuation more expensive than twisted pair can be easily installed and Low error data rates.



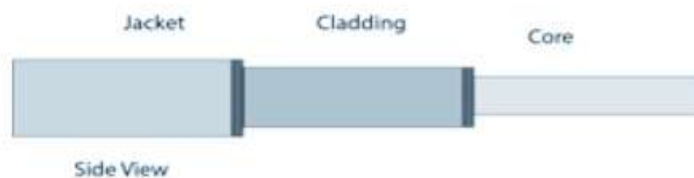
### ***C) FIBER CABLE OPTIC;***

Fiber optic is holds the optical fibers coated in plastic are used to send the data by pulses,

Fiber optic cable is a cable that is uses for electrical signals, Provide faster data transmission than copper wires, The plastic coating protection is giving heat, cold, electromagnetic interference from other types of wiring, like optical fiber. Fiber optic cable is contain are core cladding and jacket, The fiber optic cable provides more bandwidth, faster speed, long distance, Fiber optic cable is thinner and lightweight design cable.

#### **Characteristics of fiber optic nerve,**

Provides for data security .Immune to electromagnetic interference, Lightweight and small in diameter, wide bandwidth, water resistant supports data transmission over longer distances than copper core cable.



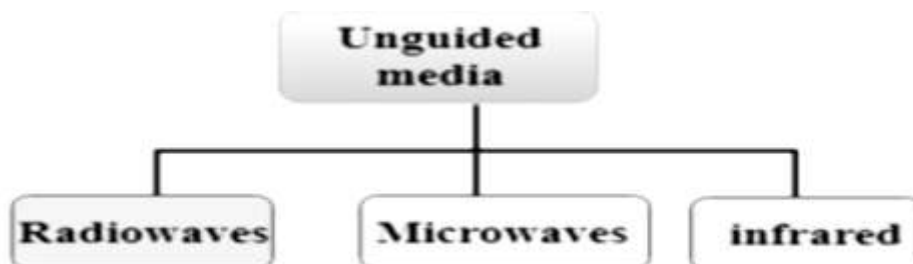
### **2) UNGUIDED MEDIA:**

In unguided media, air is the media through which the electromagnetic energy can flow easily, unguided transmission transmits the electromagnetic waves without using any physical medium. Therefore it is also known unguided media.

Unguided transmission media are wireless, such as infrared, radio waves, and microwaves.

The three main types of the following are. Radio waves, Microwaves, infrared waves,

#### **UNGUIDED MEDIA TYPES:**



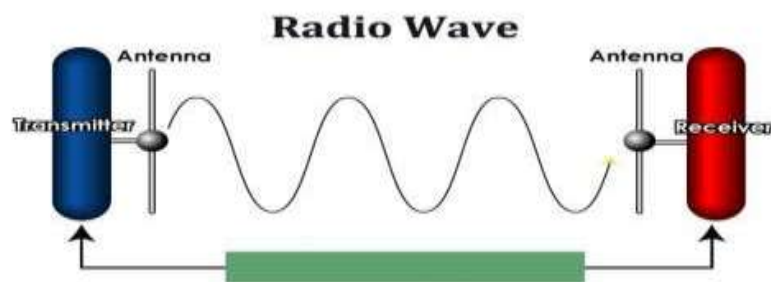
### ***A) RADIO WAVES,***

Electromagnetic waves above the frequency range of 3 kHz to 1 GHz are known as radio waves.

Radio waves are used in AM and FM broadcast systems, television, cordless phones, paging and a wide variety of other multi-casting applications. Radio waves are Omni-directional in nature. They use Omni-directional antennas for transmission electromagnetic signals.

#### **Characteristics of Radio waves,**

Radio waves are traveling light. This wave is equal to equality. Vibrates a wide range of frequency, which contains wide variety of protesters, microwave, infrared, light, UV, X-ray, and gamma rays, It can be reflected when they balance different media while breaking and offers repeatedly.



### ***B) MICRO WAVES,***

Electromagnetic wave frequencies are between 1 and 300 GHz are called micro waves. Micro waves are unidirectional, when an antenna transmits microwaves; this means that the sending and receiving antennas need to be aligned. The unidirectional property has an obvious advantage. A both or pair of antennas can be align without interfere with another pair of align antennas. The microwave band is relatively wider, almost 299 GHz. Wider sub-bands can be assigned and a high data rate is possible. Very high frequency microwaves cannot penetrate walls. This feature can be a disadvantage if the recipients are inside the building, used for long distance like telephone communication, carries 900 to 1000's of voice channels at the same time. It very costly that's a Disadvantage of micro waves, the microwave lines are two types of the following are, Terrestrial Microwave and satellite Microwave.

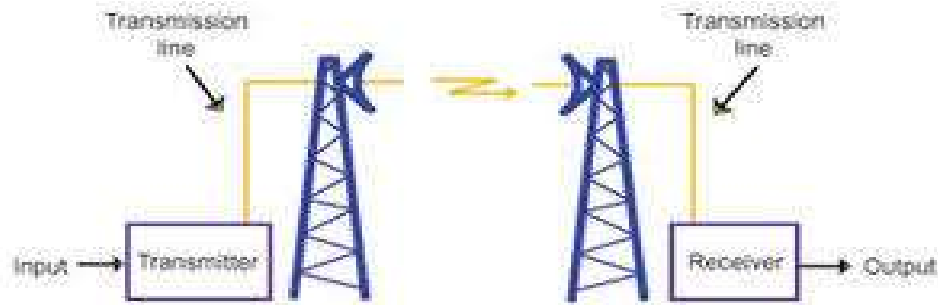
#### **Characteristics of Microwave,**

Frequency range: The frequency range are 4-6 GHz to 21-23 GHz.

Bandwidth: provides the bandwidth from 1 to 10 Mbps.

Short distance: cheaper for short distance.

Long distance: It is expensive as it requires a higher tower for a longer distance. loss of signal. It is affected by environmental conditions and antenna size.



### ***C) INFRARED WAVES,***

The frequencies of Infrared waves are 295 to 300 GHz to 400 THz, can be used for short-range communication, the high frequencies of Infrared waves are cannot penetrate walls.

This advantageous characteristic prevents interfere between one system and another, a short-range communication system in on room cannot be affected by another system in the next room.

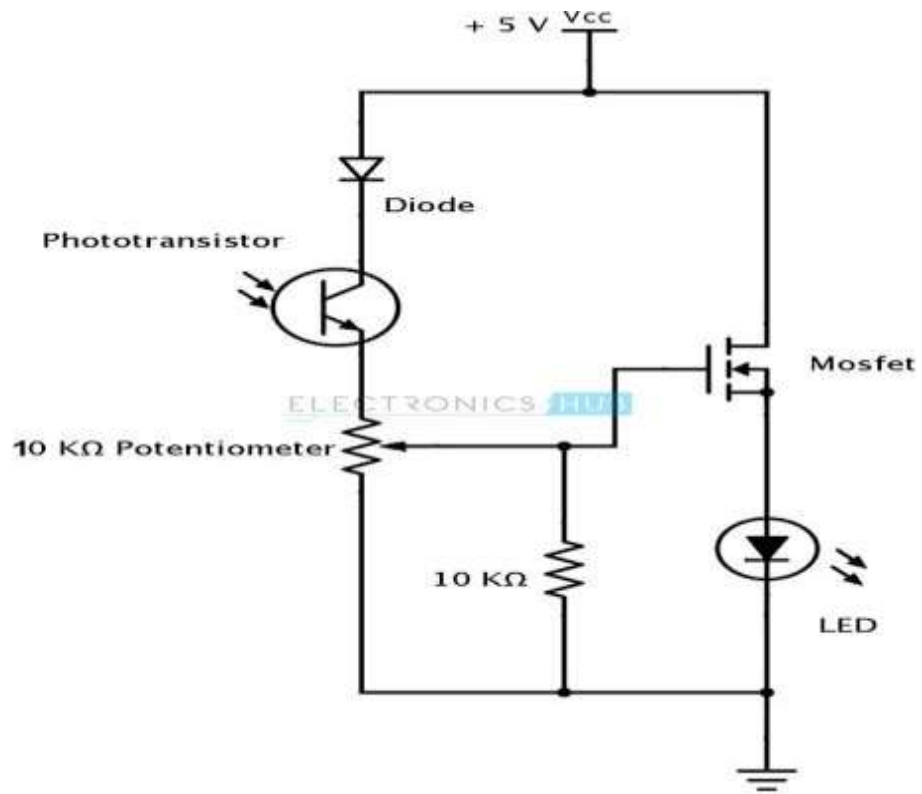
The infrared band, are 400 THz, and has excellent potential for data transmission. Such a wide bandwidth can be used to transmit digital data with a very high data rate.

Infrared signals are used for short-range communication in a closed area using line of sight propagation.

#### **Characteristics of Infrared line,**

It supports high bandwidth, and hence the data rate will be very high.

Infrared waves cannot penetrate the walls. Therefore, the infrared communication in one room cannot be interrupted by the nearby rooms; an infrared communication provides better security with minimum interference. Infrared communication is unreliable outside the building because the sun rays will interfere with the infrared waves.



**THE END**