NORTH-EX PUBLIC SCHOOL
(Senior secondary, affiliated to CBSE)
School block, Jain Nagar, Sector-38, Rohini, Delhi-81
CLASS XII (COMPUTER SCIENCE)

*Note- Before reading about the topic you must check this link which will help you in understanding the topics.
You can download this or if you do not have facility to get printout then you can ask your ward to copy it in a simple notebook and must do exercise in the notebook.

TOPIC: - Transmission Media with Worksheet 4

Unguided Media: An **unguided transmission** transmits the electromagnetic waves without using any physical **medium**. Therefore, it is also known as wireless **transmission**. In **unguided media**, air is the **media** through which the electromagnetic energy can flow easily.

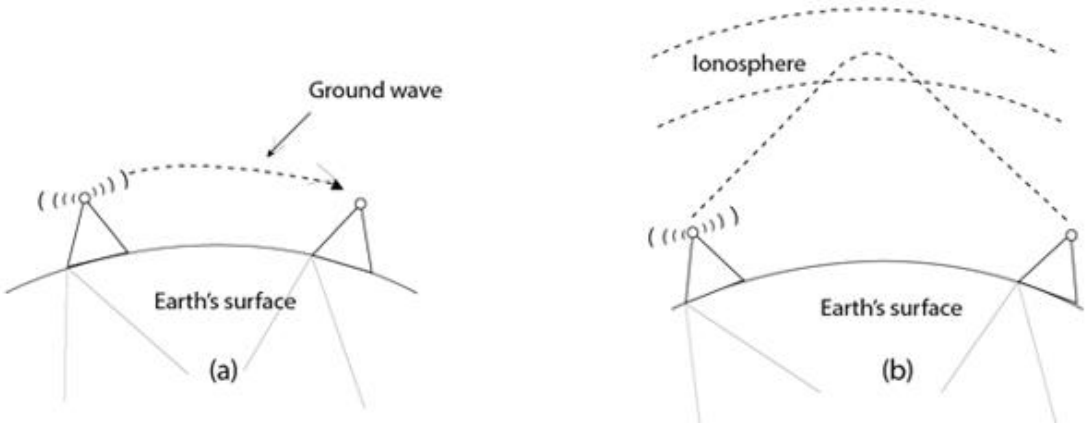
We can categorize wireless transmission into the following groups,

- Radio waves
- Micro waves
- Satellite waves

1. **Radio Waves:** Radio waves are electromagnetic waves and are omnidirectional. When an antenna transports radio waves they are propagated in all directions in free space which means the sending and receiving antennas do not have to be aligned that is any receiving antenna can receive that transmitted wave.
   The frequency of radio waves about 30 hertz (Hz) to 300 gigahertz (GHz) and like all other electromagnetic waves radio waves travel at the speed of light in vacuum.
   Examples of radio waves are television, AM and FM radio, cordless phones etc.

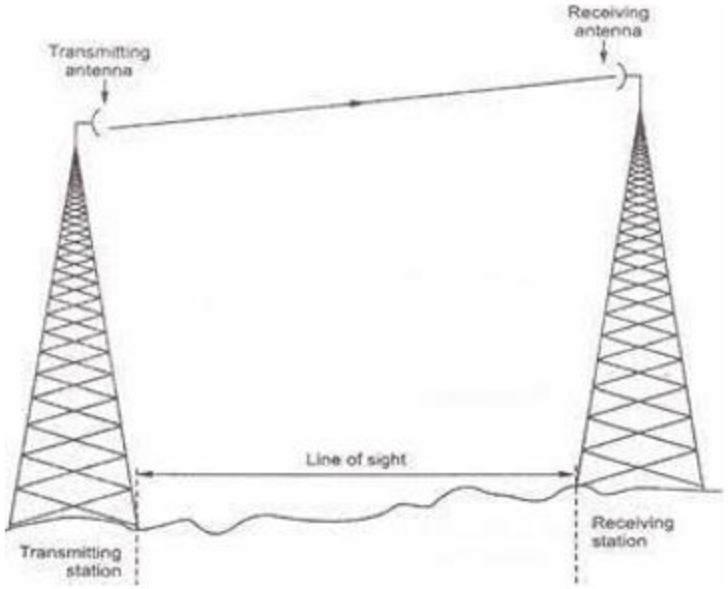
Advantages and Disadvantages

- Radio waves are easy to generate and penetrate buildings also can travel long distances.
- Radio waves cover a large area and can penetrate the buildings. By this, an AM radio can receive signals inside a building.
- This can also be disadvantageous because we cannot isolate a communication just inside or outside a building. Cause of this, governments strictly legislate the use of radio transmitters.



2. **Micro Waves:** Micro Waves includes a line of sight transmission that is the sending and receiving antennas that **need to be properly aligned with each other**. The **distance is directly proportional to the height of the antenna which is covered by the signal**. In mobile phone communication and television distribution, these are majorly used.

   Cellular phones and wireless LANs are using Micro Waves.



Microwave Transmission

Advantages

- Microwave transmission is cheaper than using cables.
- It does not require any land for the installation of cables that is free from land acquisition.

- Microwave transmission provides easy communication.

Disadvantages

- Bandwidth is limited in microwave transmission.
- A signal can be moved out of phase and any environmental change such as rain, wind can distort the signal so these signals are susceptible to weather conditions.

3. **Satellite:** A satellite is an entity that revolves around the earth at a certain height. Satellite communication offers more flexibility than fiber optic and cable systems. We can transmit signals from any point on the globe by using satellite transmission. The satellite receives the signal that is transmitted from the earth station, and it amplifies these signals. It is retransmitted the amplified signal to another earth station.

   Satellite transmission is much like the line-of-sight transmission in which one of the stations is a satellite orbiting the earth. Signals still travel in straight lines in satellite transmission

   Advantages of Satellite

- High-quality communication available to undeveloped parts of the world without requiring a huge investment in the ground-based infrastructure.
- It is used in a variety of applications such as radio/TV signal broadcasting, weather forecasting, radio/TV signal broadcasting, mobile communication and mobile, and wireless communication applications.

Disadvantages of Satellite

- The manufacturing cost is very high of satellite and very expensive to launch a satellite.
- Transmission can go down in bad weather.

WORKSHEET 4

Attempt all questions in your notebook

Q1) What do you understand by unguided media?

Q2) What is radio waves? Write its advantage & disadvantage.

Q3) Write advantages & disadvantages of microwave transmission.