

National Institute of Open Schooling
Senior Secondary
Lesson 30 – Communication Systems
WORKSHEET – 30

Q.1 Communication is a basic characteristic of all living beings. Communication entails transmitting and receiving information from one individual/place to another. Observe your surroundings and comment how technology has affected communication.

Q.2 Continue to Q.1, you know that communication of information involves use of signals, which are classified on the basis of their origin and nature. Explain in your own words Model, Elements and Types of Communication System.

Q.3 In communication, we use different ways to transport the electrical signal from the transmitter to the receiver. Explain the mechanism of these transmissions and working of some common communication devices. For the following radio frequency bands, identify the wavelength range and the mode of propagation -

Radio Waves	Wavelength Range (m)	Mode of propagation
Short Wave		
Medium Wave		
Long Wave		

Q.4 An optical fiber is used to propagate light from one end to the other end of the fiber. If the refractive index of the core is 1.575 and the refractive index of the cladding is 1.515, at what max angle should light be launched inside the optical fiber so that it gets totally internally reflected. How would this launching angle be affected if the refractive index of the core is reduced to 1.56?

Q.5 At your homes you observe the cable TV networks. Find out the frequency range used for operating the following networks -

TV Network	Frequency Range
Tata Sky	
Dish TV	
Sun Direct	
Videocon D2H	
Hathway	
Den Networks	

Q.6 You want to make a call using your mobile phone to your friend staying in New York, USA from the place you are staying. Explain schematically how signal transmission will take place from your end to your friend.

Q.7. If the modulating signal in an AM system is given by $v_a(t) = 25 \sin(6.2 \times 10^4 t)$. The frequency of the side band is 5.5×10^6 Hz. Estimate the angular frequency of the carrier wave.

Q.8 Look at the following figures given below –

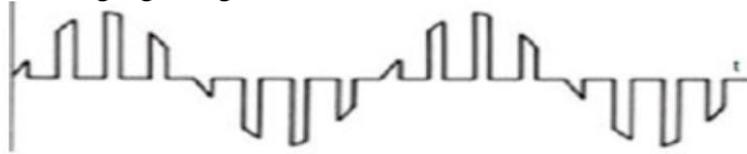


Figure - a

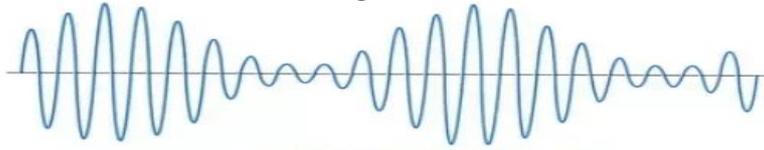


Figure - b

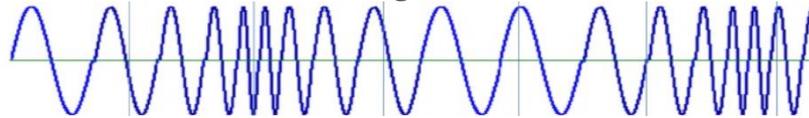


Figure - c

and answer the questions given below -

- a. Identify the kind of modulation.
- b. Communication mode where it is used

Q.9 The wireless communication between a transmitting and a receiving station utilizing the space around the earth, i.e. atmosphere is called space communication. The essential feature of space communication is that a signal emitted from an antenna of the transmitter has to reach the antenna of the receiver. Explain different ways of space communication; depending on the frequency of radio wave.

Q.10 From the radio station you are receiving AM signals. These signals are received by the radio set at your home. Explain in your own words with the help of block diagram how the signal is retrieved at your end by the process of demodulation.