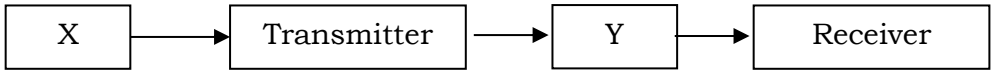
Work sheet-1

1. What are the thrtee basic units of a communication system?

2. Identify the parts X and Y in the following block diagram of a generalised communication system?



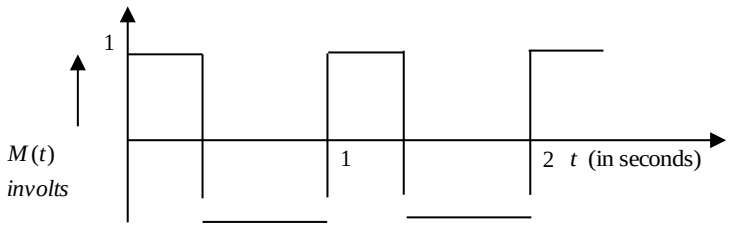
3.What type ofmodulation is requiredfor televiosion broad cast?

4. why is frequency modulation is prefered over amplitude modulation?

5. . Name te type of radio wave propagation involved when T V signal, broad cost b y a tall antena are intercepted directly by the receiver antena.

6. What is the purpose of modulating signal in tyransmission?

7. A modulating signal is a square wave as shown in figure.



8. c (t) = 2 sin (8πt) volts

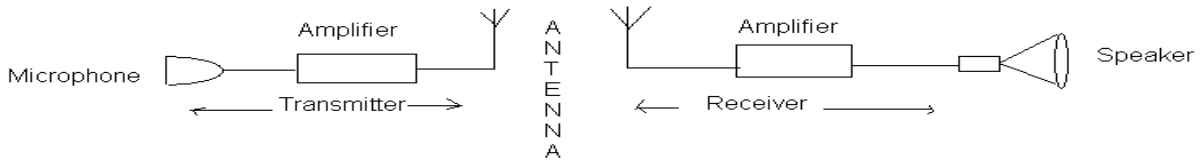
   a. Sketch the amplitude modulated waveform.
   b. What is the modulatiron index?

9. A Transmitting antenna at the top of the tower has height of 32m and the height of the receiving atenna is 50 m. What is the maximum distance between them for satis factory communication in LOS mode?

10. What does the tertm LOS communication mean? Name the types of wave used for communication. Give typical examples with the help of suitable figureof communication system for all three wave.

11. A T V tower has a height of 75 km . What is the maximum distance and area up to which TV transmission can be received? Assume radius of earth is 6400km.

12. A schematic arrangement for transmitting a message signal 20 Hz to 20 KHz is given below



Give two drawbacks from which this arrangement suffers. Describe briefly with the help of-A block diagram the alternative arrangement for the transmission and reception of the Message signal.

Work sheet-2

1.. Why short waves band are used for long distance broadcast?

2. What should be the length of dipole antena for a cartrier wave of frequency 600Mhz ?

3.A message has a band width of 5 Mhz.Suggest a possible communicationcation channelfor its transmission.

4. . A Carrier wave of peak voltage 20 V is used totransmit amessage signal. What should be the peak voltage of the modulatig signal in order to have a modulation indexof 80%?

5. Name the type of communication systems according to mode of the transmission.

6. a T V tower has a height of 500m at agiven place. If radius of earth is 6400km. what is its coverage range.

7.Distinguish between point to point and broadcast communication modes with example.

8. By What percentage will the transmission rangof a T V tower be affected when the height of the tower is increased by 21 %.

9. Explain Sky wave, space wave and ground wave propagation with suitable example.

10. What does the process of dectection of amplitude modulated mean .

Explain the function of detecterwith suitable block diagram.

11. What is amplitude modulation.Show graphiocally. Write its two limitations and two advantages.

12Define the term modulation. Explain Need of modulation. Name three different type modulationused for message signalusinng carrier wave. explain the meaning of any one of them.

WORKSHEET -3

One mark questions:

1. What do you mean by a transducer? Give one examples

2. Name the basic modes of communication systems.

3. What do you mean by the term demodulation?

4.For long distance Radio broadcast, we use short wave band only. Why?

5. Name the type of radio wave propagation involved with T.V. signals, broadcast by a tall antenna are intercepted directly by the receiver antenna.

6. Name the types of communication systems according to the mode of the transmission.

2 marks questions:

1. Give reasons for the following:
(I) Long distance radio broadcasts use shortwave bands.
(ii) Satellites are used for long distance TV transmission.

3. Suggest two methods by which range of T.V. transmission can be increased

4. . T.V. tower has a height of 100 m. How much population is covered by the T.V. broadcast if The average population density around the tower is 1000 km2 (radius of the earth = 6.37 x10^6 m).

5. Distinguish between ‘point to point’ and ‘broadcast’ communication modes. Give one example of each.

6. Define the term ‘modulation index’ for an AM wave. What would be the modulation index for an AM wave for which the maximum amplitude is ‘a’ while the minimum amplitude is ‘b’?

3 marks questions:

1.If the sum of the heights of transmitting and receiving antennae in line of sight of communication is fixed at h,show that the range is maximum when the two antennae have height h/2 each.

2. For an amplitude modulated wave, the maximum amplitude is found to be 10V while the minimum amplitude Is found to be 2V. Determine the modulation index; μ. What would be the value of μ if the minimum amplitude is zero volt?

3. Explain the following terms:
(i) Ground waves (ii) Space waves (iii) Sky waves.

5 marks question:

1. Derive an expression for the range into which signals transmitted by a T.V. tower can receive. What does the term LOS communication mean? Name the types of waves that are used for this communication. Which of the two-height of transmitting antenna and height of receiving antenna - can affect the range over which this mode of communication remains effective?

Work sheet – 4

1 mark questions

1. Sky wave transmission of electromagnetic wave cannot be used for TV transmission why?

2. What is the function transmitter in communication system?

3. How does the effective power radiated by an antenna vary with wavelength?

4. What is a transponder?

5. Suggest a possible communication channel for the transmission of a message signal which has a bandwidth of 5MHz.

2 marks questions

1. Distinguish between analog and digital signals.

2. What is space wave communication? Write the range of frequency suitable for space wave communication?

3. Why are the high frequency carrier wave used for transmission?

3 marks questions

1. Define modulation index for an AM? What would be the modulation index for which the maximum amplitude is a while the minimum amplitude is b?

2. A transmitting antenna at the top of tower has a height of 36m and the height of receiving antenna is 49m. What is the maximum distance between them for satisfactory communication in the LOS mode? (radius of earth = 6400Km.)

3. A transmitting antenna has a height of 100m. If the radius of earth = 6400Km. Find
   (i) distance up to which communication is possible on the surface of the earth.
   (ii) area covered by the signals.

Work sheet – 5

1 mark questions

1. What is the function of repeater in communication system?

2. What is the function of receiver in communication system?

3. Name the type of communication system according to the mode of transmission.

4. What is purpose of modulating a signal in transmission?

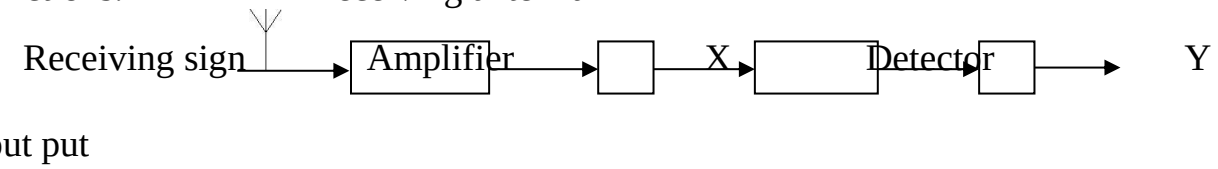
5. What is length of dipole antenna to transmit signal of frequency 200MHz.

2marks questions

1. Define modulation index. Why the amplitude of modulating signal kept less than amplitude of carrier wave?

2. Write two factors justifying the need of modulation for transmission of signal.

3. Block diagram of a receiver is shown in the figure (i) Identify X and Y (ii) Write their functions.

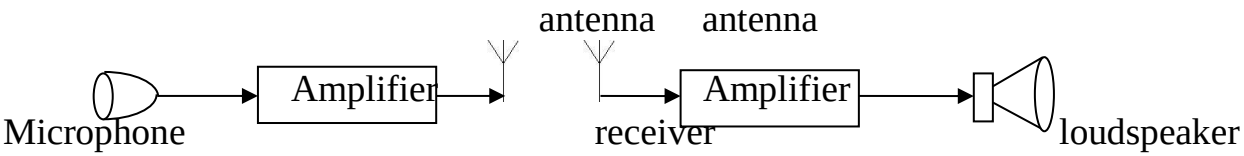


3marks questions

1. A carrier wave of peak voltage 20V is used to transmit a message signal. What should be the peak voltage of modulating signal in order to have modulation index of 80%?

2. Define amplitude modulation. Derive an equation for amplitude modulated carrier wave.What does this equation signify?

3. A schematic arrangement for transmitting a message signal (20 Hz to 20KHz) is given below :



Give two drawbacks from which this arrangement suffers. And draw the correct block diagrams