

## **CHAPTER-15**

### **COMMUNICATION SYSTEM**

#### **One mark questions**

1. What is communication in electronics? (K)
2. Name the Indian scientist who has contributed to electronic communication. (K)
3. Who invented radio communication? (K)
4. What is a transmitter in communication? (K)
5. Give an example for a transmitter used in communication. (U)
6. What is a microphone? (K)
7. Name the device which converts sound signal into electrical signal. (K)
8. What is the purpose of using a transmitter in communication system? (U)
9. Which are the three essential elements used in communication? (U)
10. What a channel/medium in communication consists of? (U)
11. What is a carrier wave in communication? (K)
12. What is a signal in communication? (K)
13. Expand 'BCD' in communication. (K)
14. What does 'ASCII' represent in communication? (K)
15. What is 'noise' in communication? (U)
16. What is attenuation in communication system? (U)
17. Mention any one example for point to point communication. (K)
18. What is a transducer in communication? (U)
19. What function does a 'receiver' do in communication? (K)
20. What is attenuation in communication? (U)
21. What is amplification of signal in communication? (K)
22. Is amplification necessary in communication system? (K)
23. At what stage the amplification of the signal is done in communication? (K)
24. What does the word 'range' mean in communication system? (K)
25. What is the meaning of the term 'frequency band width' in communication? (K)
26. What is 'modulation' in communication? (K)
27. What is the need of modulation in communication? (U)
28. Which are the different types of modulation? (K)
29. What does 'demodulation' mean in communication? (U)
30. What is modulation index? (K)
31. What is the function of a 'repeater' in communication? (U)
32. What for the repeaters are used in communication? (U)
33. Give the audible range of frequency. (K)
34. What is the value of band width usually allocated for transmission of a TV signal? (K)
35. Mention the value of bandwidth for co-axial cable transmission medium. (K)

36. From which layer of the earth's atmosphere, radio waves are reflected? (K)
37. On what factor does the size of the antenna depend? (K)
38. For a given antenna, how does the effective power radiated by the antenna vary with wavelength? (U)
39. Mention one advantage of frequency modulation (FM) over amplitude modulation (AM). (U)
40. What is phase modulation in communication? (U)

### **Two mark questions**

1. Which are the two basic modes of communication system? (K)
2. Write the block diagram of a generalized communication system. (S)
3. Mention any two communication systems which make use of space wave mode of propagation. (U)
4. Explain how transmission of electromagnetic waves takes place using sky waves. (U)
5. Which are the two types of signal used in communication? (K)
6. In digital electronics what does '0' / '1' corresponds to? (U)
7. Give the value of frequency and bandwidth for a speech signal. (K)
8. Explain how troposphere interacts with the propagating electromagnetic wave. (U)
9. Explain how D-part of stratosphere interacts with the propagating electromagnetic wave. (U)
10. Explain how E-part of stratosphere interacts with the propagating electromagnetic wave. (U)
11. Explain how mesosphere interacts with the propagating electromagnetic wave. (U)
12. Explain how thermosphere interacts with the propagating electromagnetic wave. (U)
13. Write the formula for the distance to the radio horizon of the transmitting antenna and explain the terms. (U)
14. What is the meaning of the word 'translation' in communication system? Why is it required? (U)
15. Mention the different types of pulse modulation in communication. (K)
16. What are the significant characteristics of a pulse? (K)
17. Draw block diagram of a receiver in communication. (S)
18. Draw a block diagram of transmitter in communication. (S)
19. Draw a block diagram of a simple modulator for obtaining an AM signal in communication. (S)

### **Three mark questions**

1. Explain how transmission of electromagnetic waves takes place using ground waves. (U)
2. Explain how transmission of electromagnetic waves takes place using sky waves. (U)
3. Explain how transmission of electromagnetic waves takes place using space waves. (U)
4. What is modulation index? What is its maximum value and why is it so? (U)
5. Explain why modulation is necessary in communication. (U)
6. Explain amplitude modulation process using a sinusoidal signal as modulating signal. (U)
7. Explain how amplitude modulated wave is detected. (U)

**Numerical problems.**

1. In a line of sight (LOS) communication mode a transmitting antenna at the top of a tower has a height of 36 m, and a receiving antenna at a height of 49m. Calculate the maximum distance between them for satisfactory communication. Given radius of the earth 6400 Km. (A)  
**[46.51 Km]**
2. A carrier wave of frequency 2.5 MHz and peak voltage of 25 V is used to modulate a message signal of frequency 20 KHz and peak voltage of 10 V. calculate the modulation index and the side bands produced. (A) [   
**0.4, (2.57—2.48)MHz]**
3. A carrier wave of peak voltage 12V is used to transmit a message signal. What should be the peak voltage of the modulating signal in order to have a modulation index of 75%. (A)  
**[9V]**
4. A T.V transmitting antenna is 77m tall. How much service area can it cover if the receiving antenna is at the ground level? (A)  
**[28.16X10<sup>8</sup> m<sup>2</sup>]**

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