B.E. (Electronics Engineering / Elect. Telecommunication / Elect. Communication Engineering)
Fifth Semester (C.B.S.)

Communication Electronics

P. Pages : 2 **NRJ/KW/17/4466/4471**

Time : Three Hours * 0 4 0 3 * Max. Marks : 80

Notes :
1. All questions carry marks as indicated.
2. Solve Question 1 OR Questions No. 2.
3. Solve Question 3 OR Questions No. 4.
4. Solve Question 5 OR Questions No. 6.
5. Solve Question 7 OR Questions No. 8.
6. Solve Question 9 OR Questions No. 10.
7. Solve Question 11 OR Questions No. 12.
8. Due credit will be given to neatness and adequate dimensions.
9. Illustrate your answers whenever necessary with the help of neat sketches.

1. a) What is modulation? What are the needs of modulation in a communication system? Explain in detail. **7**

b) Derive an expression for amplitude modulated wave. Draw necessary waveforms. **7**

OR

2. a) Draw the block diagram of phase shift method for SSB generation and explain how the carrier and the unwanted sideband are suppressed. **7**

b) An audio frequency signal $10\sin 2\pi x500t$ is used to amplitude modulation of the carrier of $50\sin 2\pi x10^{5}t$. calculate. **7**

1) Modulation index
2) BW required
3) Amplitude of each side band frequency
4) Side band frequency
5) Total power delivered to the load of 600 Ω.

3. a) Explain in brief the following in relation of frequency modulation. **7**

1) Maximum frequency deviation
2) Modulation index
3) Frequency spectrum and bandwidth
4) Pre-emphasis

b) Explain the working principle of Armstrong type of frequency modulation with simple diagram. **6**

OR

4. a) A carrier is frequency modulated by a 4KHz sine wave resulting in an FM signal having a maximum frequency of 107.218 MHz and minimum frq^{n} of 107.196 MHz find. **7**

1) Carrier swing
2) Carrier frequency
3) Frequency deviation
4) Modulation index

b) Describe the relation between FM & PM. **6**

5. a) Give the difference between flat-top sampling and natural sampling. **6**

b) Explain how PWM signal is generated using monostable multivibrater and using slicing circuit. Explain with necessary waveforms. **7**

OR

6. a) Explain in detail pulse code modulation what are the basic feature of a PCM system. **7**

b) What are the drawback of Delta modulation? And how to overcome it. **6**

7. a) Explain signal to noise ratio what is the significance of signal to noise ratio in the communication system. **7**

b) Explain in detail. **6**

1) Flicker noise. 2) Cosmic noise.

OR

8. a) Derive an expression for noise figure for a two stage amplifier. **8**

b) An amplifier has a bandwidth of 4MHz with 10 KR as input resistor calculate the noise voltage at the input to this amplifier if the room temperature is 25°C.

9. a) Explain the basic principle used in superheterodyne radio receiver. What are the advantages of this receiver over TRF Receiver? **7**

b) Explain Chara of radio receiver. **6**

1) Selectivity
2) Sensitivity
3) Fidelity

OR

10 a) A Receiver is tuned to 555KHz and its oscillator frq^{n} is 1010KHz find. **7**

1) What is image frequency.
2) Calculate the rejection ratio if Q of RF section is 40
3) What will be the rejection ratio at 20MHz signal.

b) Draw and describe the operation of foster Seeley discriminator. **6**

11. a) Explain time division multiplexing & code division multiplexing. **7**

b) Explain the block diagram of optical communication system. **7**

OR

12. Write short note on **any three.** **14**

1) FDM. 2) Co-axial cable.
3) Submarine cables. 4) Short & medium haul system.

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