

Q.P. Code :26507

[Time: 3 Hours]

[ Marks:80]

Please check whether you have got the right question paper.

N.B: 1) Question 1 is compulsory and Solve any three from the remaining five questions

2) Assume suitable data if necessary.

3) Figures to the right indicate full marks.

- Q.1 Answer any **four questions** from the following: 20
- Explain the advantages of superhetrodyne receiver.
  - What is phase modulation?
  - Discuss the need for modulation in wireless communication system.
  - Explain electromagnetic frequency spectrum.
  - Compare FDM and TDM.
- Q.2 a) With a neat circuit diagram and waveforms, explain the working of Double side band full carrier AM. 10
- b) A sinusoidal carrier has amplitude of 10v and frequency 30 KHz is amplitude modulated by a sinusoidal voltage of amplitude 3v and frequency 1 KHz. Modulated voltage is developed across a  $50\Omega$  resistance. i) Write the equation for modulated wave and draw the modulated wave indicating  $V_{max}$ ,  $V_{min}$  ii) Determine modulation Index. And calculate total power in the modulated wave iv) Draw the spectrum of modulated wave. 10
- Q.3 a) With the help of a neat circuit diagram, explain the working of Frequency discriminator. 10
- b) With a neat block diagram ,discuss the working of Linear Delta modulation, its advantages and disadvantages 10
- Q.4 a) Explain the different characteristics of radio receiver. 10
- b) State Sampling theorem. Explain the two sampling techniques. What is aliasing error? How is it overcome? 10
- Q.5 a) Explain Pulse Code Modulation & comment on PCM bandwidth. 10
- b) Discuss the generation and demodulation of PWM signal. For a sinusoidal modulating signal, draw PPM, and PWM pulses. 10
- Q.6 Write short notes on any **four**: 20
- FM wave generation using Armstrong method
  - ISB Transmission
  - Pre emphasis and De emphasis circuits with waveforms
  - AGC in superhetrodyne receiver.
  - Noise triangle

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