

Con. 2868-08.

(REVISED COURSE)

CO-9826

(3 Hours)

[Total Marks : 100

- N.B. :** (1) Question No. 1 is **compulsory**.  
 (2) Attempt any **four** questions out of remaining **six** questions.  
 (3) Assume **suitable** data if **required**.

- Q. 1 Answer the following. (Any Four) 20
- What is FM capture effect?
  - Write a note on FDM.
  - What is ISI? Discuss four primary causes of ISI.
  - Explain Harmonic distortion and Intermodulation distortion.
  - Compare different single sideband filters.
- Q. 2(a) For an electronic device operating at a temperature of  $17^{\circ}\text{C}$  with a bandwidth of 10 KHz, determine 10
- Thermal noise power in watts and dBm.
  - Rms noise voltage for a  $100\ \Omega$  internal resistance and a  $100\ \Omega$  load resistance
- (b) Draw and explain Delta modulation transmitter and receiver. What is slope overload distortion? 10
- Q. 3(a) Compare AM and FM in all respects. 10
- (b) Explain ISB with neat block diagram. 10
- Q. 4 (a) Draw a neat block diagram of Differential Pulse code modulation transmitter and receiver and explain the same. 10
- (b) Define FM and derive equation of FM wave. 10
- Q. 5 (a) Explain generation and demodulation of PAM signal with the help of suitable diagrams. 10
- (b) Explain the working of ratio detector with the help of voltage versus frequency response curve. 10
- Q. 6(a) Draw the schematic diagram of simplified medium – power transistor AM DSBFC modulator and explain the operation with the help of collector waveforms with no modulating signal and collector waveforms with a modulating signal. 10
- (b) Draw the block diagram of TRF radio receiver and explain the same. 10
- Q. 7(a) Explain indirect method of FM generation. 10
- (b) One input to a conventional AM modulator is a 500 KHz carrier with amplitude of  $20\ \text{V}_p$ . The second input is a 10 KHz modulating signal that is of sufficient amplitude to cause a change in the output wave of  $\pm 7.5\ \text{V}_p$ . Determine 10
- Upper and lower sideband frequencies
  - Modulation coefficient and percent modulation
  - Peak amplitude of the modulated carrier and the upper and lower frequency voltages
  - Expression of the modulated wave.