

[Time: 3 Hours]

[Marks: 80]

Please check whether you have got the right question paper.

- N.B:
1. Question No 1 is compulsory.
 2. Attempt any three questions from remaining five questions.
 3. Figures to right indicate **full** marks.
 4. Assume suitable data.

- Q.1 a) Compare AM and FM 05
 b) Explain PCM transmitter with waveform. 05
 c) Discuss various types of noise in communication system 05
 d) Derive expression for AM. Also plot the frequency spectrum. 05
- Q.2 a) Explain working of diode ring modulator for DSBSC generation with proper waveforms. Also states advantages of DSBSC over DSBFC. 10
 b) A modulating signal $05\sin(2\pi*1\text{KHz})$ is used to modulate a carrier signal $12\sin(2\pi*100\text{KHz})$. Find the modulation index, sideband components, bandwidth, transmission efficiency and sideband powers for $R=50$ ohms. 10
- Q.3 a) Describe working of Foster Seeley Discriminator with neat diagram. States its drawback. How it is overcome? 10
 b) Explain selectivity and sensitivity characteristics of AM receiver. 05
 c) When modulating frequency in FM system is 200 Hz, modulating voltage is 2.0 V and modulation index is 80. Calculate maximum deviation. What is modulation index when modulating frequency is reduced to 150 Hz and modulating voltage is increase to 3.0 V? 05
- Q.4 a) Explain generation and detection of PPM with waveforms. 10
 b) Draw and explain block diagram of Super-heterodyne receiver. 10
- Q.5 a) Describe working of ADM with a neat block diagram and waveforms. 10
 b) What is FDM? Describe FDM transmitter and receiver in detail. Also state its advantages and disadvantages. 10
- Q.6 Write short note on (Any Four) 20
 a) Compare ASK, FSK and PSK
 b) Quantization
 c) AFC
 d) AM tracking
 e) VSB