

Principles of communication Engg.
(3 Hours) **15**

[Total Marks : 80]

- NB:** 1) Question No. 1 is compulsory.
2) Attempt any three questions from the remaining six questions.
3) Figures to the right indicate full marks.
4) Assume suitable data.

1. (a) Explain various types of noise in communication system. 05
 (b) Derive equation for AM. 05
 (c) Explain PWM generation with waveform. 05
 (d) When modulating frequency in FM system is 300kHz, modulating voltage is 2.5 V and modulation index is 70, Calculate maximum deviation and bandwidth. What is modulation index when modulating frequency is reduced to 200KHZ and modulating voltage is increase to 3.5 V? 05

2. (a) Draw and explain the block diagram of SSB generation using phase shift method to generate LSB. 10
 (b) A modulating signal $5\sin(2\pi \cdot 10^3 t)$ is used to modulate a carrier signal $12\sin(2\pi \cdot 10^5 t)$. Find the modulation index, sideband components, bandwidth for 100% modulation, transmission frequency and sideband powers for $R=50$ ohms. 10

3. (a) Explain In-direct method for FM generation in detail. 10
 (b) Draw and explain block diagram of Super-heterodyne receiver. 10

4. (a) Explain generation and detection of PPM in detail. 10
 (b) Explain the working of Foster Seeley Discriminator. What is the drawback? How it is overcome? 10

5. (a) Explain ADM with a neat block diagram and waveform. 10
 (b) Explain FDM in detail. 10

6. Write short note on (any four) 20
 - (a) AM Tracking
 - (b) Companding techniques
 - (c) Compare ASK and FSK
 - (d) DPCM transmitter
 - (e) AM Envelope detector