

(3 Hours)

[Total Marks : 100

- N.B. : (1) Question No.1 is compulsory.
 (2) Attempt any four questions out of remaining six questions.
 (3) Figures to right indicates full marks.

1. Write short notes on any four of the following :—
 - (a) Types of Electronic Communication system. 20
 - (b) Need of modulation.
 - (c) Noise Triangle.
 - (d) Sampling Theorem for band pass signals.
 - (e) Multiple access techniques.
2. (a) Derive an expression for AM. Hence plot the frequency spectrum. 8
- (b) A modulating signal $20 \sin(2\pi \times 10^3 t)$ is used to modulate a carrier signal $40 \sin(2\pi \times 10^5 t)$. Find the modulation index, sideband components and bandwidth. 8
- (c) For 100% modulation, find out the transmission efficiency. 4
3. (a) What are the different methods of generating AM? Explain any one in detail. 10
- (b) Explain the working of balanced modulator for DSBSC generation. 10
4. (a) Explain the characteristics of a radio receiver in detail. 10
- (b) Draw a neat block diagram of super heterodyne receiver with waveforms at each stage and explain the working. 10
5. (a) Explain the working of Foster Seeley discriminator. What is the drawback? How it is overcome in Ratio detector? 10
- (b) What do you mean by indirect method of FM generation? Explain Armstrong method of FM generation. 10
6. (a) Give a transistorized circuit for PWM generation. How do we get PPM from PWM? 10
- (b) Discuss the working of PCM system with a neat block diagram. 10
7. (a) For a digital data 1101100101, if $f_b = 1 \text{ KHz}$ and $f_c = 2 \text{ KHz}$. Draw BASK, BPSK and BFSK waveforms. 10
- (b) What are the advantages of multiplexing techniques? Explain FDM in detail. 10