

BT-4/M-24**44161****BASICS OF ANALOG COMMUNICATION****EEN-202A**

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt *Five* questions in all, selecting at least *one* question from each Unit. All questions carry equal marks.

Unit I

1. (a) What is meant by Noise ? Classify different types of Noise. Also mention reasons for these noises. Calculate thermal noise power available from any resistor at room temperature 290 K for a bandwidth of 2 MHz and also calculate noise voltage at 100 Ω resistor. 7
- (b) Define noise figure. Calculate noise figure as function of additional noise. 8
2. (a) Derive an expression for AM wave signal. Draw the spectrum. Label different components of the spectrum. 7
- (b) Differentiate between NBFM and WBFM. Explain, how WBFM can be generated through NBFM. 8

Unit II

3. (a) Discuss square law modulation technique for AM generation. 5
- (b) What are SSB signals ? Derive an expression for SSB signal. Explain the Frequency discrimination method for generating AM signals. 10
4. (a) Draw block diagram of Superheterodyne AM receiver and explain the function of each block. 8
- (b) Discuss working of envelope detectors used to detect AM signals. What types of distortions are produced due to presence of diode in it ? 7

Unit III

5. (a) Explain direct method of FM generation. 8
- (b) In frequency modulation, explain frequency deviation, percent modulation, phase deviation and modulation index. 7
6. (a) Explain the functionality of each block of phase shift discriminator. 7
- (b) What does a noise triangle illustrate ? How does pre-emphasis and de-emphasis help in reducing noise ? Draw circuits for pre-emphasis and de-emphasis and explain their working. 8

Unit IV

7. (a) Describe phase shift method of SSB generation. 7
(b) Write down expression for VSB-SC signals. Draw its spectrum and label it. Explain, how VSB signals are used in TV transmission. 8
8. (a) What are PAM signals ? Derive an expression for PAM signal. 8
(b) Differentiate between PPM and PWM signals. 7

