

Roll No.

Total Pages : 3

BT-3/D-18

33006

ANALOG COMMUNICATION

Paper-ECE-203(E)

Opt : II

Time : Three Hours]

[Maximum Marks : 100

Note : There are total *eight* questions. Attempt *five* questions in all, selecting *one* question from each unit. Each question carries equal marks.

UNIT-I

1. (a) Determine expression for noise figure of cascaded amplifier and write final expression for multistage amplifier. (10)
- (b) An amplifier operating over the frequency range of 455 to 460 kHz has a 200 k Ω input resistor. What is the rms noise voltage at the input to this amplifier if ambient temperature is 27°C. (5)
- (c) Give classification of external noise. (5)
2. (a) Determine the Noise equivalent bandwidth of RC low pass filter whose frequency response is given by:
$$H(f) = \frac{1}{1 + j2\pi f RC} \quad (10)$$
- (b) Explain noise temperature in detail. (10)

UNIT-II

3. (a) Define modulation. What is the need for modulation? Derive an expression for instantaneous voltage of amplitude modulated signal. (10)
- (b) Discuss the third methods for SSB modulation. (10)
4. (a) With the help of a diagram explain principle of envelope detection used for the demodulation of AM signals. Also derive the expression for the time constant of envelope detector. (10)
- (b) Explain with the help of waveform vestigial sideband modulation. Give its advantages. (10)

UNIT-III

5. (a) Define modulation index for a FM system and show how it effects the spectrum of FM signal. (10)
- (b) Describe the reactance modulation method of FM generation. How is frequency stability obtained in this method? (10)
6. (a) Draw the circuit diagram of a radio detector and explain its operation. How is amplitude limiting obtained in this detector? (10)
- (b) Explain the effect of noise on carrier signal in FM. (10)

UNIT-IV

7. (a) Explain the working of a radio transmitter using low power level modulation system. (10)
- (b) Explain radio telephone transmitter, highlighting its special features like volume compressors, VODAS and privacy devices. (10)
8. (a) Write note on AM super heterodyne receiver. (10)
- (b) What is image frequency problem related with super heterodyne receiver and how it can be removed? Elaborate. (10)

