5E5024

B.Tech. V- Semester (Back) Examination, November - 2019
Electronics And Communication Engg.
5EC4A Analog Communication

Time : 3 Hours

Maximum Marks : 80
Min. Passing Marks : 24

Instructions to Candidates:

Attempt any five questions, selecting one question from each unit. All Questions carry equal marks. (Schematic diagrams must be shown wherever necessary. Any data you feel missing suitably be assumed and stated clearly. Units of quantities used/calculated must be stated clearly).

UNIT - I

1. a) What is mean by noise figure and how can it be calculated for an amplifier or receiver? (8)

    b) A low noise amplifier operates with a band width of 500 MHz and a noise figure of 1.78 dB. Compute the equivalent Noise temperature and Noise power. (8)

(OR)

1. a) What do you mean by modulation? What is the need of modulation? Explain in detail. (8)

    b) What is noise? Briefly write about the different types of noise. (8)

UNIT - II

2. a) Draw the block diagram of phase discriminator method of generating SSB signal. (8)

    b) A 10 KW carrier wave is amplitude modulated at 80% depth of modulation by a sinusoidal modulating signal. Calculate the sideband power, total power and the transmission efficiency of the AM wave. (8)

(OR)

2. a) Describe the mathematical analysis for coherent detection of baseband signal from SSB signal. (8)

    b) State the advantages, disadvantages and applications of AM. (8)

UNIT - III

3. a) Differentiate between FM and PM : How one can be generated from the other? (8)

   b) Explain Pre-emphasis and de-emphasis in FM broadcasting. (8)

(OR)

3. a) In a FM system, the modulating frequency $f_m = 1$ kHz, the modulating voltage $E_m = 2$ volt and the deviation is 6 kHz. If the modulating voltage is raised to 4 volt, then what is the new deviation? If the modulating voltage is further increased to 8 volt and modulating frequency is reduced to 500 Hz, what will be deviation? (8)

   b) Compare FM and AM systems. (8)

UNIT - IV

4. a) Derive an expression for SNR of FM demodulator. (8)

   b) Calculate figure of merit for single tone modulation in FM receiver. Take suitable assumptions if required. (8)

(OR)

4. a) With the help of block diagram, explain the noisy model of FM receiver. (8)

   b) Explain the term threshold effect and state its significance. (8)

UNIT - V

5. a) Explain Natural sampling and Flat top sampling. (8)

   b) Draw the circuit diagram of PAM modulation and explain this. (8)

(OR)

5. a) Discuss PPM demodulation using suitable diagram. (8)

   b) Compare PAM, PWM and PPM. (8)

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