



P.E.S. College of Engineering, Mandya - 571 401

(An Autonomous Institution affiliated to VTU, Belagavi)

Fourth Semester, B.E. - Electronics and Communication Engineering

Semester End Examination; May/June - 2019

Analog Communication

Time: 3 hrs

Max. Marks: 100

Note: Answer FIVE full questions, selecting ONE full question from each unit.

UNIT - I

- 1 a. Define Amplitude Modulation. Derive the expression on AM by both time domain and frequency domain representation with necessary waveforms. 10
- b. What is Hilbert transform? State any three properties of Hilbert transform. 4
- c. Derive the expression for the following : 6
 - i) Modulation index in terms of P_T and P_C
 - ii) Current relation of AM wave
- 2 a. Explain the generation of AM wave using SQUARE-LAW modulator along with relevant diagram and analysis. 10
- b. Explain the detection of message signal from amplitude modulated signal using an envelope detector and bring out the significance of RC time constant. 10

UNIT - II

- 3 a. With neat block diagram, explain the balanced modulator method of generating DSB-SC wave. 10
- b. With block diagram and related equation, explain coherent detection of a DSB-SC wave. What are its disadvantages? 10
- 4 a. List the advantages, disadvantages and applications of SSB-SC wave. 10
- b. With a neat transmitter and receiver block diagram, explain Quadrature amplitude modulation. 10

UNIT - III

- 5 a. Describe the generation of VSB-SC wave using filtering technique. 10
- b. With block diagram, explain multiplexer and demultiplexer in TV transmitter and receiver respectively. 10
- 6 a. Explain the coherent detection of VSB-SC wave. 10
- b. With a neat block diagram, explain the operation of FDM technique. 10

UNIT - IV

- 7 a. Define angle modulation. Describe with the help of block diagram schemes for generating; 10
 - i) FM wave using PM
 - ii) PM wave using FM
- b. Derive the equation for FM wave. Define modulation index, maximum deviation and bandwidth of FM signal. 10

- 8 a. Explain the generation of FM wave using direct method. 10
- b. Explain the demodulation of FM wave using PLL. 10

UNIT - V

- 9 a. Define the following terms :
 - i) Shot noise ii) Thermal noise 10
 - iii) White noise iv) Noise figure
- b. For a linear two port device, derive an equation for equivalent noise temperature. 10
- 10 a. Describe the noise in SSB-SC receiver. 10
- b. With a block diagram and equivalent circuit, explain preemphasis and deemphasis. 10

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