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Question Paper Code: AEC005



INSTITUTE OF AERONAUTICAL ENGINEERING

(Autonomous)

B.Tech IV Semester End Examinations (Supplementary) - June, 2018

Regulation: IARE – R16

Analog Communications

Time: 3 Hours

(ECE)

Max Marks: 70

Answer ONE Question from each Unit

All Questions Carry Equal Marks

All parts of the question must be answered in one place only

UNIT – I

- (a) Explain linear time invariant system. [7M]

(b) Explain convolution and write the advantages of LTI system. [7M]
- (a) What is continuous-time system and classification of systems based on the properties. [7M]

(b) Define stability and causality. Write the properties of auto correlation. [7M]

UNIT – II

- (a) Explain the operation of the envelope detector with circuit diagram and wave form. [7M]

(b) Define amplitude modulation and write standard equation for its spectrum with a neat sketch. [7M]
- (a) Give comparison of amplitude modulation techniques [7M]

(b) Explain the operation of quadrature carrier multiplexing scheme with transmitter and receiver diagram. [7M]

UNIT – III

- (a) Explain the generation of Single Side Band modulated signal using frequency discriminator method with neat block diagram and waveforms and necessary mathematical expressions. [7M]

(b) Compare AM, DSBSC and SSBSC modulation schemes in terms of power, bandwidth, modulation efficiency, carrier suppression and applications. [7M]
- (a) Explain Vestigial Side Band Modulation with the help of waveforms and mathematical expressions. What is the need for VSB transmission? What is the transmission bandwidth? [7M]

(b) Explain the demodulation of SSBSC wave using synchronous detector with necessary block diagram and mathematical expressions. [7M]

UNIT – IV

7. (a) What are the advantages of frequency modulation? Give relationship between frequency and phase modulation. [7M]
- (b) With a block diagram approach, explain the generation of wideband FM wave by first generating narrowband FM wave. [7M]
8. (a) Determine Fourier transform for $\exp(t - 3) + \exp(t + 3)$. [7M]
- (b) Explain the operation of discriminator with circuit diagram and characteristics for the demodulation of FM signals. [7M]

UNIT – V

9. (a) With a circuits and characteristics, explain the importance of pre-emphasis and de-emphasis in FM system. [7M]
- (b) A 400watt carrier is modulated to a depth of 75% calculate the frequency the total power in modulated wave. [7M]
10. (a) What is local oscillator? Explain intermediate frequency amplifier. [7M]
- (b) Explain Super heterodyne receiver with a neat block diagram. [7M]

