Reg. No. : | | | | | | | | | | |

Question Paper Code: 34405

B.E. / B.Tech. DEGREE EXAMINATION, DEC 2021

Fourth Semester

Electronics and Communication Engineering

01UEC405 – ANALOG COMMUNICATION

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions.

PART A - (10 x 2 = 20 Marks)

1. Give one commercial service that uses the VSB modulation technique. Justify the selection of VSB for that application.
2. Draw the frequency spectrum of AM.
3. Define Carson's rule for determining the bandwidth of an angle modulated wave?
4. Compare narrowband and wideband FM.
5. State central limit theorem.
6. Write the expression for the expectation of a continuous random variable X having a density function f(x).
7. Define and give the relationship between noise bandwidth and 3-db bandwidth.
8. Give the parameters used to evaluate the ability of a radio receiver.
9. State sampling theorem and define the term aliasing.
10. Differentiate uniform and non-uniform quantization.

PART - B (5 x 16 = 80 Marks)

11. (a) Demonstrate the schematic diagram of AM signal generator and detection using envelope detection. Draw the modulated and demodulated signals for under modulated, critically modulated and over modulated conditions. (16)

Or

(b) (i) Explain the coherent detection of DSB-SC wave with neat diagram. (8)

(ii) Draw and explain the operation of the frequency translation. (8)

12. (a) Explain the indirect method of generation of FM wave and any one method of demodulating an FM wave. (16)

Or

(b) With neat diagrams, explain the operation of slope detector for demodulating FM signal. (16)

13. (a) Explain Gaussian process. State and prove the properties of Gaussian process. (16)

Or

(b) (i) Derive and express power spectral density. (10)

(ii) Write short notes on

(1) Mean (2) Correlation (3) Covariance (6)

14. (a) Explain the operation of super heterodyne receiver with neat block diagram. Draw the time domain signal at the output of each block. (16)

Or

(b) (i) Discuss the external noises associated in receiver systems. (8)

(ii) Explain the noise in DSBSC systems using coherent detection. (8)

15. (a) State and prove the sampling theorem. (16)

Or

(b) Explain with neat sketch the generation of PWM and PPM. (16)