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

Question Paper Code: 41044

B.E. / B.Tech. DEGREE EXAMINATION, APRIL 2015.

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. Define Amplitude Modulation.
2. Distinguish between DSB-SCAM and SSB-SC-AM.
3. Define modulation index of an FM.
4. Differentiate narrow band FM and wideband FM.
5. Write down the equation for time-averaged autocorrelation function.
6. State central limit theorem.
7. Define noise figure.
8. Give the characteristics of superheterodyne radio receiver.
9. State Sampling theorem.
10. What is compander?

PART - B (5 x 16 = 80 Marks)

11. (a) Explain any one type of generation and demodulation of AM. (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 any one type of generation and demodulation of FM signal. (16)

Or

(b) How will you generate narrow band and wideband FM? (16)

13. (a) (i) Explain the properties of Gaussian process. (10)

(ii) Consider the sum of random process $Z(t) = X(t) + Y(t)$. The random processes $X(t)$ and $Y(t)$ have zero mean, and they are individually stationary. Determine the power spectral density of $Z(t)$. (6)

Or

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

(ii) Write short notes on
(1) Mean (2) Correlation (3) Covariance (6)

14. (a) (i) Derive the expression of noise in DSB-SC system using coherent detection. (10)

(ii) Explain in detail about FM threshold effect. (6)

Or

(b) (i) Draw the block diagram of superheterodyne radio receiver and explain its each block. (8)

(ii) Explain in detail about pre-emphasis and de-emphasis. (8)

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

Or

(b) (i) Explain the principles of time-division multiplexing, with a neat sketch. (8)

(ii) Explain the generation and demodulation of PAM signal. (8)