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Question Paper Code: 34405

B.E. / B.Tech. DEGREE EXAMINATION, NOV 2019

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. List any two advantages and disadvantages of analog communication.
2. Distinguish between DSB-SCAM and SSB-SC-AM.
3. Draw the phasor diagram of FM signal.
4. Differentiate narrow band FM and wideband FM.
5. Write down the equation for time-averaged autocorrelation function.
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. Define pre-emphasis and De-emphasis.
9. Define Sampling theorem.
10. Define quantization error.

PART - B (5 x 16 = 80 Marks)

11. (a) Explain with the suitable diagrams the generation of AM using square law modulator and degeneration of AM using envelope detector. (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) With neat diagrams, explain the operation of slope detector for demodulating FM signal. (16)
13. (a) Consider a sinusoidal signal $X(t) = A\cos(2\pi f_c t + \theta)$. Assume θ is a random variable that is uniformly distributed over the interval $[-\pi, \pi]$. Find auto correlation. (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) (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) Discuss the external noises associated in receiver systems. (8)
(ii) Explain the noise in DSBSC systems using coherent detection. (8)
15. (a) (i) Describe time division multiplexing scheme with a typical example. (8)
(ii) Discuss the sampling process. (8)

Or

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