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

Question Paper Code: 50435

B.E. / B.Tech. DEGREE EXAMINATION, MAY 2017

Third Semester

Electronics and Communication Engineering

15UEC305 - ANALOG COMMUNICATION

(Regulation 2015)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (5 x 1 = 5 Marks)

1. In pulse amplitude modulation

   (a) Amplitude of the pulse train is varied
   (b) Width of the pulse train is varied
   (c) Frequency of the pulse train is varied
   (d) None of the above

2. The ratio of actual frequency deviation to the maximum allowable frequency deviation is called

   (a) Multi tone modulation (b) Percentage modulation
   (c) Phase deviation (d) Modulation index

3. The noise due to random behavior of charge carriers is

   (a) Shot noise (b) Partition noise
   (c) Industrial noise (d) Flicker noise

4. Pre emphasis is done

   (a) Before modulation (b) Before transmission
   (c) Before detection at receiver (d) After detection at receiver

5. In PWM signal reception, the Schmitt trigger circuit is used

   (a) To remove noise (b) To produce ramp signal
   (c) For synchronization (d) None of the above

PART - B (5 x 3 = 15 Marks)

6. What are the needs for modulation in order to carry the low frequency message signal to a longer distance, the high frequency carrier signal is combined with it.

7. Compare FM and AM.

8. Define random variables with examples.

9. Why pre-emphasis/ de-emphasis not used for conventional AM broadcast?

10. Define Pulse width modulation and pulse position modulation.

PART - C (5 x 16 = 80 Marks)

11. (a) What is the principle of Amplitude modulation? Derive expression for the AM wave and draw its spectrum. (16)

Or

(b) Draw a block diagram and discuss in detail about phase shift method to generate Single Side Band (SSB). (16)

12. (a) Draw a phasor diagram and explain in detail about indirect method for frequency modulation transmitter. (16)

Or

(b) Describe the frequency analysis of Angle modulated waves. Explain their Bandwidth requirements. (16)

13. (a) Differentiate the performance of Strict Sense Stationary (SSS) process and Wide Sense Stationary (WSS) process. (16)

Or

(b) Write short notes on correlation function. State properties of autocorrelation and cross-correlation functions. (16)

14. (a) With neat block diagram explain the operation of FM Super heterodyne receiver and amplitude limiting. (16)

Or

(b) An audio signal having a 5 kHz bandwidth is transmitted using an SSC-SC system. The channel introduces a 50-dB power loss and the noise in the channel is additive white Gaussian with two sided PSD of 10^{-9} W/Hz. What is the required transmitter power so that the receiver output SNR is 40 dB. (16)

15. (a) Explain in detail about the concept of Pulse Amplitude Modulation (PAM) and also mention its advantage and its application. (16)

Or

(b) State and prove sampling theorem. (16)