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

Question Paper Code: 45040

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

Fifth Semester

Electrical and Electronics Engineering

14UEC523 - COMMUNICATION ENGINEERING

(Common to Electronics and Instrumentation Engineering and Instrumentation and Control Engineering)

(Regulation 2014)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 1 = 10 Marks)

1. The noise interference is more in

   (a) AM (b) PM (c) FM (d) Both (a) & (c)

2. The _____ signal can be detected with the help of synchronous detector.

   (a) SSB (b) DSB-SC (c) SSB-SC (d) none of these

3. Which is not digital modulation system?

   (a) PCM (b) DM (c) PAM (d) ADM

4. Frequency shift keying is used mostly in

   (a) Satellite Communication (b) Telephony
   (c) Telegraphy (d) Radio Transmission

5. The entropy of a source with a symbol set containing 64 symbols each with a probability $P_i = 1/ 64$ is

   (a) 3 bits/symbol (b) 4 bits/symbol (c) 8 bits/symbol (d) 6 bits/symbol

6. The binary sequence is converted into _____ signal by using the encoder

(a) NRZ (b) RZ (c) Both (a) & (b) (d) None of these

7. CDMA is

(a) Similar to FDMA (b) Similar to TDMA
(c) Combination of both (d) None of these

8. The baud rate is defined as

(a) The no of samples per second (b) The no. of revolutions per second
(c) Both (a) and (b) (d) None of these

9. For global communication, the number of satellites needed is

(a) 1 (b) 3 (c) 10 (d) 5

10. Example of power limited communication channel is

(a) Co-axial cable (b) Cellular channel (c) Satellite (d) PSTN

PART - B (5 x 2 = 10 Marks)

11. What is AM Vestigial sideband?

12. Calculate the capacity of a standard 4 kHz telephone channel with a 30 dB signal to noise ratio.

13. Compare NRZ and RZ.

14. Draw the block diagram of typical FDMA system?

15. What is meant by acceptance angle?

PART - C (5 x 16 = 80 Marks)

16. (a) (i) With a neat sketch, explain the operation of Armstrong frequency modulation system. (10)

(ii) Draw the block diagram for generation of a SSB signal using balanced modulators and phase shifters and explain it. (6)

Or

(b) Using suitable Mathematical analysis show that FM modulation produces infinite sidebands. Also deduce an expression for the frequency modulated output and its frequency spectrum. (16)

17. (a) With neat sketch explain the generation of delta modulated signal and derive the expression for SNR. (16)

Or

(b) With a neat block diagram explain the PCM modulation and demodulation. Derive the processing gain of the DPCM. (16)

18. (a) Briefly discuss on various error control codes and explain in detail with one example for convolution code. (16)

Or

(b) Apply the Shannon – Fano algorithm to a source which generates symbols x1, x2, x3, x4 with the probabilities 1/8,1/2,1/4 and 1/8 respectively and calculate the coding efficiency. (16)

19. (a) With neat block diagram explain the frequency division multiple access technique. Discuss its application in communication. (16)

Or

(b) Explain CDMA with necessary block diagrams. (16)

20. (a) (i) Explain the characteristics of sources and detectors used in optical fiber link with the following parameters. (8)

(ii) Draw the block diagram of optical fiber communication link and explain. (8)

Or

b) Explain Optical Fiber Communication link with a neat block diagram. List the advantages and disadvantages of Optical Fiber Communication. (16)

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