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

Question Paper Code: 41403

B.E. / B.Tech. DEGREE EXAMINATION, MAY 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 bandwidth of a DSBSC signal is

   (a) fm (b) 2fm (c) fm + fc (d) 2(fm+fc)

2. The antenna current of an AM transmitter is 8A when only carrier is sent. It increases to 8.93A when the carrier is modulated by a single sine wave, find the percentage of modulation

   (a) 70.1 (b) 79.1 (c) 71 (d) 17

3. Frequency Shift Keying is used mostly in

   (a) telegraphy (b) telephony (c) satellite communication (d) radio transmission

4. Quantizing error occurs in

   (a) PAM (b) PCM (c) TDM (d) FDM

5. In hamming codes, the syndrome is given by

   (a) $S = XH^T$ (b) $H = SY^T$ (c) $S = YH^T$ (d) $S = HY^T$

6. 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

7. Direct Sequence Spread Spectrum is also called as

(a) TDMA (b) FDMA (c) CDMA (d) SDMA

8. Frequency Division Multiple Access method has

(a) Guard times (b) Guard bands (c) Both a & b (d) None of these

9. The angle subtended by earth at geostationary communication satellite is

(a) 51.4° (b) 120° (c) 17.34° (d) 60°

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

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

PART - B (5 x 2 = 10 Marks)

11. State the Carson's rule.

12. Define bit rate and baud rate.

13. Compare NRZ and RZ.

14. List the different types of handoffs.

15. Define numerical aperture.

PART - C (5 x 16 = 80 Marks)

16. (a) Explain the operation of Super heterodyne receiver and compare its performance with Tuned Radio frequency receiver. (16)

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) Explain Delta modulation and its demerits. Suggest a method to overcome the demerits of DM. (16)

Or

(b) Explain QPSK transmitter and receiver with block diagram. Also draw the constellation and phasor diagram of QPSK. (16)

18. (a) A database management system has following alphabet with probability of occurrence as shown below. Generate the Huffman code with minimum code variance. Determine the code variance and code efficiency. (16)

Symbol	S_0	S_1	S_2	S_3	S_4	S_5	S_6
Probability	0.125	0.0625	0.25	0.0625	0.125	0.125	0.25

Or

(b) Briefly discuss on various error control codes and explain in detail with one example for convolution code. (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) Define and explain SCADA. (8)

(ii) Develop the concept of satellite link design. (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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