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

Question Paper Code: 31547

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

Fifth Semester

Electrical and Electronics Engineering

01UEC523 – COMMUNICATION ENGINEERING

(Common to EIE and ICE)

(Regulation 2013)

Duration: Three hours Maximum: 100 Marks

Answer ALL Questions

PART A - (10 x 2 = 20 Marks)

1. Give the basic principle used in super heterodyne receivers.
2. Compare Narrowband FM and Wideband FM.
3. Define sampling theorem.
4. List the ways to reduce the slope overload distortion in DM.
5. Define entropy.
6. Calculate the Hamming distance between the following code words C_1= {1000111} and C_2= {0001011}.
7. Define near-far problem.
8. What is multiple access? Classify it.
9. List the types of sources and detectors used in optical fiber communication systems.
10. What is SCADA?

PART - B (5 x 16 = 80 Marks)

11. (a) (i) Derive an expression for the AM wave and derive its power relations. (8)

    (ii) Explain the generation of FM signal using reactance modulator with neat diagram. (8)

Or

(b) (i) Draw the block diagram for the modulation and demodulation of a VSB and explain the principle of operation with its spectrum. (10)

(ii) A carrier wave of 10 *MHz* is amplitude modulated to 50% level with a tone of 5000 *Hz*. Calculate the bandwidth and sketch the amplitude distribution of AM wave in frequency domain. Assume carrier amplitude as 10 *V*. (6)

12. (a) (i) Describe the working of transmitter and receiver of delta modulation with neat diagram. (10)

(ii) Compare PAM, PWM and PPM. (6)

Or

(b) Explain the working principle of ASK generator and detector with neat diagram. (16)

13. (a) (i) Apply the Shannon-Fano algorithm to a source which generates symbols x_1, x_2, x_3, x_4 with the probabilities 1/8, 1/2, 1/4 and 1/8 respectively. Calculate the code efficiency. (8)

(ii) A discrete memory less source has five symbols x_1, x_2, x_3, x_4 and x_5 with probabilities 0.4, 0.2, 0.2, 0.1 and 0.1 respectively. Construct a Huffman code for the source and calculate code efficiency. (8)

Or

(b) (i) Discuss linear block codes in detail. (10)

(ii) Describe bandwidth-SNR tradeoff problem. (6)

14. (a) Discuss in detail about CDMA technique and mention its advantages and disadvantages. (16)

Or

(b) (i) Describe SDMA technique in detail and mention its advantages and disadvantages. (10)

(ii) Compare FDMA, TDMA and CDMA. (6)

15. (a) Discuss broadly on the multiple access techniques used in satellite communication. (16)

Or

(b) (i) Describe briefly about the three types of optical fiber configurations. (10)

(ii) Draw the block diagram of a fiber optic communication system and explain. (6)

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