Reg. No. :

## Question Paper Code: 31403

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

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. What are the various types of AM?

2. Compare Narrowband FM and Wideband FM.

3. Define sampling theorem.

4. State the principle concept of DPCM.

5. Define entropy.

6. State the significance of hamming distance.

7. Define near-far problem.

8. List the advantage of spread spectrum communication.

9. What are the losses in optical fibers?

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)

(b) (i) Illustrate the generation of SSB-SC using phase shift method. (8)

(ii) Explain the working principle of Armstrong transmitter. (8)

12. (a) Illustrate with the neat sketch working principle of PCM system. (16)

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) Briefly discuss on various error control codes with an example. (16)

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

Or

(b) Narrate the concept of slow frequency hopping and fast frequency hopping with a neat sketch. (16)

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

Or

(b) Brief the concepts of SCADA. (16)

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