M.E. Second Semester (Electrical & Elect.) (New-CGS)
13292 : Elective-I : Digital Communication : 2 EEEME 4

P. Pages : 2

Time : Three Hours

AW - 3845

Max. Marks : 80

Notes : 1. Due credit will be given to neatness and adequate dimensions.
2. Assume suitable data wherever necessary.
3. Illustrate your answer necessary with the help of neat sketches.
4. Use of pen Blue/Black ink/refill only for writing the answer book.

SECTION - A

1. a) Explain in detail working of PSK. — 6

   b) What is memoryless modulation? Explain PAM scheme with derivation of Energy signal and Euclidean distance. — 7

OR

2. a) What is the need of digital modulation? Explain in short how the digitally modulated signals are represented? — 6

   b) Explain in brief CPFSK. What is h-parameter in CPSK. — 7

3. a) Explain the probability of errors in AWGN channels. — 7

   b) Write in short the comparison of digital signaling methods. — 7

OR

4. a) Determine the impulse response of matched filters. — 7

   b) Explain the working of optional receiver. — 7

5. a) Explain joint estimation of carrier phase and symbol timing with the help of example. — 6

   b) What is carrier recovery and symbol synchronization in a signal demodulator. — 7

OR

6. a) Based on M-1 criteria: Determine a carrier phase estimation for binary ON-OFF keying modulator. — 7

   b) In regards to carrier and symbol synchronization, explain in short signal parameter estimation. Also comment on its necessity. — 6

SECTION - B

7. a) Compare hard decision and soft decision decoding. — 6

AW - 3845

1

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b) Define: 7
  i) Code vectors in linear block codes.
  ii) Hamming distance
  iii) Minimum distance
  iv) Code efficiency

OR

8. a) State the general properties of linear block codes.   6

    b) Write short notes on: optimum soft decision decoding of linear block codes.   7

9. Sketch the convolution encoders for the following codes.   13
    i) Rate 1/2, K = 5 maximum free distance code.
    ii) Rate 1/3, K = 5 maximum free distance code
    iii) Rate 2/3, K = 5 maximum free distance code.

OR

10. a) Explain sequential decoding for convolutional codes with example.   7

    b) What do you mean by punctured convolutional codes. Explain the importance of same in   6
    digital communication.

11. a) What do you mean by linear equalization? Explain in detail.   7

    b) Explain M-ary signaling scheme for band limited channels.   7

OR

12. Explain the 4 - level duobinary signal transmission in detail.   14

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