

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

P. Pages : 2

Time : Three Hours



AU - 3405

Max. Marks : 80

- Notes :
1. Answer **three** question from Section A and **three** question from Section B.
 2. Due credit will be given to neatness and adequate dimensions.
 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 brief CPFSK. What is h-parameter in CPSK. 6
b) What is memoryless modulation? Explain PAM scheme with derivation of energy signal and Euclidean distance. 7

OR

2. a) Discuss power spectrum of CPSK in detail. 6
b) Explain detail working of PSK. 7
3. a) Explain how matched filter and correlators are used in receiver of digital communication. 14

OR

4. a) Explain working of optimal receiver. 7
b) Determine the impulse response of matched filter. 7
5. a) What is carrier recovery and symbol synchronization in signal demodulator. 6
b) Explain performance characteristics of M-L estimators in detail. 7

OR

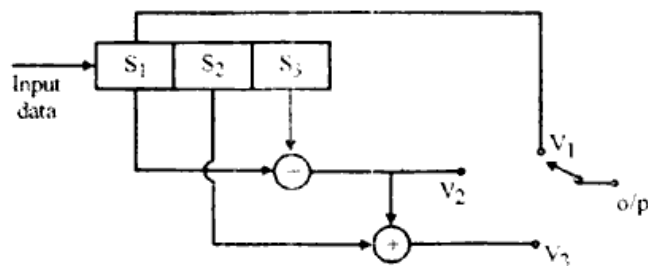
6. a) What is signal parameter estimation. Explain its necessity and importance in digital communication. 7
b) Explain Joint Estimation of carrier phase and symbol timing with the help of example. 6

SECTION - B

7. a) Compare Hard decision and soft decision decoding. 6
b) What is syndrome. Explain with example. 7

OR

8. a) The parity check matrix of (7, 4) block code is 8
- $$H = \begin{bmatrix} 1 & 1 & 1 & 0 & 1 & 0 & 0 \\ 1 & 1 & 0 & 1 & 0 & 1 & 0 \\ 1 & 0 & 0 & 1 & 0 & 0 & 1 \end{bmatrix}$$
- Find
- Generator matrix;
 - List of code vectors
 - Minimum Hamming distance between code vectors.
 - How many error can be detected and can be corrected.
- b) Define 5
- Code vectors in Linear block codes.
 - Hamming Distance.
 - Minimum distance (d_{min}).
 - Code efficiency.
9. a) For convolutional encoder shown in fig. Sketch the state diagram and Trellis diagram. 13
Find the output data sequence for input data sequence 10110.



10. a) What are the practical consideration in convolutional code? Explain with example. 6
- b) Explain sequential decoding for convolutional codes with example. 7
11. Explain optimum receiver for channels with ISI and AWGN along with suitable derivation. 14
- OR**
12. a) Explain M-ARY signaling scheme for band limited channels. 7
- b) Explain duobinary signal transmission in detail. 7

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