M.E COMMUNICATION SYSTEMS

COM502 MODERN DIGITAL COMMUNICATION TECHNIQUES

2009 REGULATIONS

DURATION: 3Hrs **Max Marks : 100**

Part – A (10 x 2 = 20 Marks)

Answer all questions

1. Define Power Spectral density.
2. Name two memoryless digital modulation methods.
3. What is an AWGN channel?
4. What is an optimal detection of Binary signals?
5. Write the DPSK bit stream of 1101110.
6. What is a noncoherent detection?
7. Differentiate between soft decision decoding and hard decision decoding.
8. Why linear block codes are called so?
9. Design a convolutional coder of constraint length 6 and rate efficiency ½.
10. Define Hamming distance and Hamming weight.

Part – B (5 x 16 = 80 Marks)

11. (a) Explain Pulse Amplitude Modulation and Quadrature Amplitude Modulation in detail .

(or)

(b) Derive the power density spectrum of CPFSK signal and explain its features.

12. (a) Discuss in detail about Matched filter demodulator and discuss its properties.

(or)

(b) Explain the optimal detection of power limited signals and derive the error probability .

13. (a) Explain an optimum reception of CPM signals and dicuss its performance.

(or)

(b) Explain the optimum reception of differential PSK signal. Derive the expression for its bit error probability.

14. (a) (i) Explain the properties of Linear Block codes.

(ii) Discuss the hard decision decoding of Linear Block Codes.

(or)

(b) Write notes on (i) BCH codes and (ii) Reed Solomon codes

15. (a) Explain Viterbi algorithm with suitable example.

(or)

(b) Write notes on (i) Turbo Codes and (ii) Punctured Convolutional Codes.