Time : 3 Hrs   Total Marks: 80

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Instructions:

1) Question number 1 is compulsory.
2) Answer any three questions from remaining question
3) Assume Suitable data if required but justify the same.

Q1.   Answer any four questions

   1) With neat block diagram explain Digital Communication System.

   2) Differentiate between MSK and Offset QPSK.

   3) State and Explain Shannon's theorem for channel capacity.

   4) Explain the terms code redundancy, code rate, code efficiency and Hamming Bound.

   5) Differentiate between Frequency hopped spread spectrum(FHSS) and Direct sequence

   spread spectrum.

Q2.   1) Explain with neat diagram, transmitter. Receiver, waveforms, the BPSK modulation

   System.

   2) A discrete memoryless channel has an alphabets of five symbols, with the probabilities as

   As given below

S1	S2	S3	S4	S5
0.55	0.15	0.15	0.1	0.05

   Construct the Huffman code and find entropy and average code word length of the code.

   Also calculate code redundancy and efficiency of the code.

Q3.   1) A (7,4) linear block code has following generator matrix

   G=   1 1 0   1 0 0 0

         0 1 1   0 1 0 0

         1 1 1   0 0 1 0

         1 0 1   0 0 0 1

   i)   Write parity check matrix
   ii)   Generate all the code word
   iii)   Generate the decoding table for the single error pattern.

   2) Explain DPSK system with respect to transmitter. Receiver

Q4.   1) Explain with neat diagram the working of Integrate and Dump receiver. Derive the

expression for probability of error.

2) Explain with neat diagram frequency hopping spread spectrum, FH-MFSK and explain slow

hopping and fast hopping.

Q5.   1) What is Eye pattern. Explain the parameters observed from it with an illustration.

2) Draw signal space diagram for 16 QAM system and compare probability of occurrence of

error in it with QPSK system.

Q6.   Write short notes on followings(any two)

1)   Nyquist criteria for distortion less baseband transmission
2)   Convolution codes
3)   Direct sequence code division multiple array(DS-CDMA)
4)   Probability Models

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