B.E 6th Semester – Section 2

Subject: Digital Communication (Minor 1)

Max. Marks-30 **Time: 90 minutes**

1. (a) Define bandwidth efficiency. Comment of the bandwidth efficiency of M-ary PSK signals for different values of M. 2

   (b) Define Hamming weight and Hamming distance. Find the hamming weight of 10110 and the hamming distance between 1111 and 0000. 2

   (c) What is the significance of syndrome vector in the context of error control coding. 2

2. (a) What is the advantage of M-ary QAM over M-ary PSK system? Obtain the constellation of QAM for M=4 and draw signal space diagram. 4

   (b) List the similarity of BPSK and BFSK. 2

   (c) A bit stream 1011111011 is to be transmitted using ASK, FSK, PSK and QPSK techniques. Draw the waveforms for the above mentioned digital modulation techniques. 4

3. (a) Draw and explain the functional description of digital communication system in detail.3

   (b) What is the difference between channel coding and source coding? What are the advantages of channel coding? 3

4. Generator matrix for (7,4) code is given below

   G= 1000101
   0100111
   0010110
   0001011

Find all corresponding code vectors. Minimum hamming distance. Error detection and Correction capability. Parity check matrix. Find error if the received code is (1000111). 8