Code No: **R31046** **R10** **Set No. 1**

III B.Tech I Semester Supplementary Examinations, May - 2017

DIGITAL COMMUNICATIONS

(Electronics and Communication Engineering)

Time: 3 hours **Max. Marks: 75**

Answer any FIVE Questions
All Questions carry equal marks

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1 a) Explain the advantages of digital communication systems over analog systems.
b) With neat sketch explain the principle and operation of DPCM.

2 a) Compare BPSK, QPSK and DPSK.
b) With neat sketch explain the generation of DEPSK.

3 a) With neat sketch explain Base band signal receiver
b) Find the error probability of ASK and BPSK

4 a) Define the following
i)Information ii) Entropy iii) Rate of Information iv) Channel Capacity
b) In a message conveyed through a long sequence of dots and dashes, the probability of occurrence of a dash is two third of that of dot. The duration of a dash is four times that of a dot. If a dot losts for 10msec and the same time is allowed between symbols, determine
i)The information in dot and dash ii)Average information in dot-dash code
iii)Average information rate

5 a) A source is transmitting the symbols A and B with probabilities 1/16 and 15/16 respectively. Calculate the Entropy of the source and the required channel capacity using the simplest code and also coding efficiency.
b) State and prove the Shannon Heartley theorem

6 a) One of five possible message Q_1 to Q_5 having probabilities 1/4, 1/2, 1/8, 1/16, 1/16 respectively are transmitted. Generate Huffman code and Calculate the coding efficiency
b) Explain the trade-off between bandwidth and S/N.

7 a) Matrix description of Linear Block codes
b) With an example explain the error correction capability using Hamming codes

8 a) What is the significance of Trellis structure? Explain
b) With neat sketch explain the procedure for Syndrome calculation.

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