Code No: 56026 **R09**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY, HYDERABAD
B. Tech III Year II Semester Examinations, May - 2015
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) State and prove the Hartley Shannon law and explain its importance.
b) Write a note on the advantages and disadvantages of a digital communication system. [8+7]

2.a) A TV signal of bandwidth 4.2MHz is transmitted using binary PCM with the number of representation level of 512. Calculate the following:
i) Code word length ii) final bit rate iii) transmission bandwidth
b) Describe the Delta modulation with a neat sketch. [8+7]

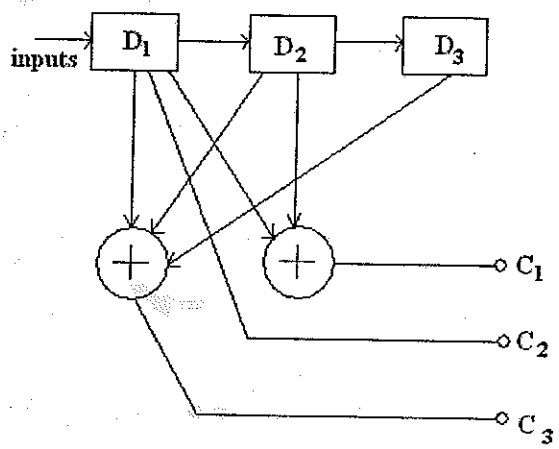
3.a) Describe the working principle of QPSK with the help of a neat diagram.
b) Discuss non-coherent FSK detector in detail. [8+7]

4.a) Describe about the base-band signal receiver with the help of a neat sketch.
b) Write a short note on eye diagram. [8+7]

5.a) State and prove the condition for maximum entropy.
b) Show that $H(Y/X) \leq H(Y)$ with equality if and only if X and Y are independent. [8+7]

6.a) Find the (7,4) linear block code for the message bits 1101 with the generator polynomial $G(D) = 1+D^2+D^3$.
b) Describe the encoding, syndrome and decoding of cyclic codes in detail with neat sketches. [8+7]

7.a) Sketch the code tree for the convolutional encoder shown in figure.



b) Describe the viterbi algorithm for maximum-likelihood decoding of convolution codes. [7+8]

8.a) What are various spread spectrum techniques. Write the advantages of spread spectrum technique?
b) Write a short note on code division multiple access technique in detail. [8+7]
