Code: EC5T3

III B.Tech - I Semester – Regular Examinations - November 2015

DIGITAL COMMUNICATONS
(ELECTRONICS & COMMUNICATION ENGINEERING)

Duration: 3 hours   Max. Marks: 70

Answer any FIVE questions.   All questions carry equal marks

1 a) What is Companding? Explain the Companding in PCM.

7 M

b) A television (TV) signal with a band width of 4.2 MHz, is transmitted using binary PCM. The number of representation levels is 512. Calculate the following parameters   7 M
   i) The code word length
   ii) The final bit rate
   iii) The transmission band width assume that k=2.

2 a) Explain how QPSK signals are generated.   7 M

b) Bring out the differences between DPSK and DEPSK.   7 M

3 a) Explain the basic structure of a binary base band receiver with a neat block diagram.   7 M

b) Derive the error probability of coherent BPSK.　　　　7 M

4 a) What is spread spectrum modulation? Explain the
generation of PN Sequence.　　　　7 M

b) Explain the Applications of Direct Sequence Spread
Spectrum signals.　　　　7 M

5 a) Discuss in brief about Discrete messages.　　　　7 M

b) One of the five possible messages Q_1 to Q_5 having
probabilities 1/2 ,1/4,1/8,1/16 and 1/16 respectively, is
transmitted, calculate the average information.　　　　7 M

6 a) State and explain Shannon's Theorem.　　　　5 M

b) Plot channel capacity C versus B (Band width), with
S/η= constant for the Gaussian channel.　　　　4 M

c) If the channel band width B=5KHz, and a message is being
transmitted with R=10^6 bits per second. Find S/η **for**
R <= C.　　　　5 M

7 a) Briefly explain about BCH codes.　　　　5 M

b) Taking x^3 +x+1 as the generated polynomial for (7, 4) cyclic
linear block code. Determine the code vectors in systematic

form for the following message sequence. 9 M
    i) 1011
    ii) 1110
    iii) 1111

8 a) Compare the convolutional codes with linear Block codes.

6 M

b) Explain the time domain and frequency domain approach of convolutional encoder with an example. 8 M