(Please write your Exam Roll No.) Exam Roll No. 6022560214

END TERM EXAMINATION

FIFTH SEMESTER [B.TECH] DECEMBER- 2016

Paper Code: ETEC-303 **Subject: Digital Communication**

Time: 3 Hours **Maximum Marks: 75**

Note: Attempt any five questions including Q.No1 which is compulsory. Select one question from each unit.

Q1 Attempt all:

(a) Discuss the properties and statistical characteristics of AWGN Channel. **(5)**

(b) Represent the data 010011110 in Bipolar Return to Zero line coding format and AMI Line coding Format. **(5)**

(c) Differentiate between Strict Sense Stationary (SSS) and Wide Sense Stationary (WSS) Random Processes with proper example. **(5)**

(d) Explain the carrier recovery technique using Costas Receiver with help of block diagram. **(5)**

(e) Obtain the relation for bandwidth requirement of FSK Modulated signal. **(5)**

UNIT-I

Q2 Explain the significance of Companding in Digital systems. Discuss the following compression techniques. **(12.5)**

(i) μ-Law Compression

(ii) A-Law Compression

Q3 With the help of Block diagrams explain the functionality of ADM Transmitter and receiver. Interpret the signal representation after each block. **(12.5)**

UNIT-II

Q4 Discuss about the following entities used for statistical analysis of Random signals.

(i) Power Spectral Density

(ii) Joint PDF

(iii) Marginal PDF

Give the relevant mathematical treatment. **(12.5)**

Q5 Obtain the relation of Probability Density Function (PDF) of Gaussian distribution. Discuss the role of central limit Theorem in the analysis of Gaussian distribution. **(12.5)**

UNIT-III

Q6 Discuss analysis of following digital Receivers. **(12.5)**

(a) Correlator Receiver

(b) Maximum Likelihood Receiver

Q7 How would avoid Inter Symbol Interference (ISI) in Base band Digital Communication systems. Discuss in detail about any one of the methods to minimize ISI. How eye pattern is useful in determining ISI? **(12.5)**

UNIT-IV

Q8 Discuss the functioning of QPSK modulator and Demodulator with the help of Block Diagram. Draw the constellation diagram and obtain relation for Band width of QPSK signal. **(12.5)**

Q9 Write short notes on the following:-

(a) M-ary Schemes along with merits and Demerits **(6)**

(b) G-MSK Modulation Scheme **(6.5)**

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