Code No: 126AN **R13**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD
B.Tech III Year II Semester Examinations, May - 2016
DIGITAL COMMUNICATIONS
(Electronics and Communication Engineering)

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

Note: This question paper contains two parts A and B.
Part A is compulsory which carries 25 marks. Answer all questions in Part A. Part B consists of 5 Units. Answer any one full question from each unit. Each question carries 10 marks and may have a, b, c as sub questions.

PART - A (25 Marks)

1.a)	What are the drawbacks of delta modulation?	[2]
b)	Explain the need for non-uniform quantization in digital communication.	[3]
c)	Draw the Signal space Diagram of ASK.	[2]
d)	List out the Advantages of Pass band Transmission over Baseband transmission.	[3]
e)	Define Entropy.	[2]
f)	Derive the Expression for the Information Rate.	[3]
g)	Explain in one sentence about (i) Block Size (ii) Linear block codes.	[2]
h)	List out Properties of Cyclic Codes.	[3]
i)	Briefly explain about "Spread spectrum."	[2]
j)	What is Frequency hopping spread spectrum?	[3]

PART - B (50 Marks)

2.a) With neat block diagram, Explain the process of Sampling and Quantization in digital communication.
b) Derive the expression for the Quantization error. [5+5]

OR

3.a) Explain about the noise in PCM systems.
b) Write the comparison between PCM and Analog modulation techniques. [5+5]

4.a) With neat diagrams and equations, explain about PSK system.
b) Draw the space representation of BPSK. And also draw its waveforms? [5+5]

OR

5.a) The bit stream 1011100011 is to be transmitted using DPSK. Determine the encoded sequence and transmitted phase sequence.
b) Explain about DPSK system. And also give the comparison between DPSK and PSK. [5+5]

6.a) What is the need of pulse shaping for optimum transmission in baseband transmission? Explain.
b) What is meant by Cross talk? Explain in detail about the causes for cross talk. [5+5]

OR

7.a) Briefly explain about Variable length coding.
b) Explain in detail about Huffman coding and Lossy source code. [5+5]

8.a) Write short notes on Hamming codes.

b) Explain about Error detection and Correction capabilities of Hamming codes. [5+5]

OR

9.a) Explain how Parity checking can be used for error detection or error correction.

b) For a linear block code, prove with example that:

i) The Syndrome depends only on error pattern and not on transmitted code word?

ii) All error patterns that differ by a codeword have the same syndrome? [5+5]

10.a) Explain the role of code division multiple access technique in present generation?

b) Give a brief history about direct sequence spread spectrum. [5+5]

OR

11.a) Explain about PN-Sequences generation and their characteristics. [5+5]

b) What is meant by Synchronization? Why we require synchronization in spread spectrum? Explain in detail.

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