

R13

No: 126AN

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]

Write short notes on Hamming codes.

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

OR

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.

b) What is meant by Synchronization? Why we require synchronization in spread spectrum? Explain in detail. [5+5]

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