R16

Code No: 135AK

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, December - 2019

DIGITAL COMMUNICATIONS

(Common to ECE, ETM)

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 as sub questions.

PART – A

(25 Marks)

1.a)	Why is pre-filtering done before sampling?	[2]
b)	What is slope overload? How it is reduced?	[3]
c)	Write about Lempel-ziv coding.	[2]
d)	What is cyclic code and List the properties of cyclic codes.	[3]
e)	Discuss about digital subscriber lines.	[2]
f)	List the interferences made from the eye pattern.	[3]
g)	How can BER of a system be improved?	[2]
h)	Distinguish coherent and non-coherent reception.	[3]
i)	What is Processing Gain?	[2]
j)	Discuss the merits of frequency hopping spread spectrum.	[3]

PART – B

(50 Marks)

2.a) Explain (i) Impulse sampling and (ii) Natural sampling.
b) Describe and illustrate delta modulation and its quantization error. [5+5]

OR

3.a) Explain how Adaptive Delta Modulation performs better and gains more SNR than delta Modulation.
b) A delta modulator with a fixed step size of 0.75V, is given a sinusoidal message signal. if the sampling frequency is 30 times the nyquist rate, determine the maximum permissible amplitude of the message signal if slope overload is to be avoided. [5+5]

4.a) Explain the properties of syndrome.
b) Explain channel coding theorem. [5+5]

OR

5.a) Writes short notes on: i) Entropy ii) Mutual information.
b) Explain about Information Capacity Theorem. [5+5]

6.a) What is matched filter? Derive the expression for the impulse response of a matched filter.

b) Explain correlative coding in detail. [5+5]

OR

7.a) Discuss about Gram-Schmidt orthogonalization procedure.

b) Write short notes on Eye pattern and Inter symbol interference. [5+5]

8.a) Derive the probability of error for PSK.

b) Explain the principle of DPSK system with the help of suitable circuit. [5+5]

OR

9.a) Describe with diagrams the generation and detection of coherent binary FSK.

b) Compare the performance of various coherent and non-coherent digital detection systems. [5+5]

10.a) Describe about generation of PN sequence and its properties.

b) Discuss about synchronization in spread spectrum. [5+5]

OR

11.a) With necessary diagram explain direct sequence spread spectrum.

b) Describe Slow and Fast Frequency Hopping. [5+5]

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