R16

Code No: 135AK

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year I Semester Examinations, November/December - 2018

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 advantages of digital communication over analog communication.	[2]
b)	What is aliasing and aperture effect and how to eliminate them?	[3]
c)	A source generates 4 messages with the probabilities 1/3,1/6,1/4,1/4. The successive messages limited by the sources are statistically independent. Calculate the entropy of the source.	[2]
d)	What are the convolutional codes? Explain.	[3]
e)	Write the properties of the matched filter.	[2]
f)	What is a correlative level coding?	[3]
g)	Compare the bandwidth requirements of (i) BPSK (ii) 8QAM (iii) 8PSK.	[2]
h)	For a tri bit input Q=0, I=0 and C=0(000). Determine the output phase for 8 PSK modulation.	[3]
i)	List the applications of the spread spectrum techniques.	[2]
j)	Write the properties of PN sequence.	[3]

PART - B

(50 Marks)

2.	Explain the different types of sampling and discuss each technique in detail with neat sketches.	[10]

OR

3.a)	Discuss the Delta modulation technique. Also discuss the noises in DM.	
b)	Discuss the quantization noise in PCM.	[5+5]
4.a)	Explain the Lempel-Ziv coding with an example.	
b)	Discuss the Matrix description of the linear bloc codes.	[5+5]

OR

5.a)	The generator polynomial of a (7,4) cyclic code is $G(P)=P^3+P+1$. Obtain all the code vectors for the code in non systematic and systematic form.	
b)	State the Shannon Hartley Law and discuss the properties of entropy.	[5+5]

6.a) Discuss the nyquist criteria for distortion less base band binary transmission.
b) Briefly explain the operation of the optimal linear receiver. [5+5]

OR

7.a) What is the principle of the adaptive equalizer ? Draw the structure.
b) Explain the geometric interpretation of the signals. [5+5]

8. Draw the QPSK modulator? And construct the truth table, phasor diagram and constellation diagram for it. [10]

OR

9. Explain the transmitter and receiver section of the DPSK techniques in detail. [10]

10.a) Explain the CDMA techniques.
b) What is the use of the spread spectrum techniques? [6+4]

OR

11. Explain in detail the types of frequency hoping spread spectrum techniques. [10]

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