Code No: 126ZN **R15**

JAWAHARLAL NEHRU TECHNOLOGICAL UNIVERSITY HYDERABAD

B. Tech III Year II Semester Examinations, April - 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) State Sampling theorem. [2]
b) Mention the merits of DPCM. [3]
c) Define ASK. [2]
d) What is meant by DPSK? [3]
e) What is intersymbol interference in baseband binary PAM systems? [2]
f) What is the necessity of adaptive equalization? [3]
g) What is meant by systematic and non-systematic codes? [2]
h) What is meant by linear code? [3]
i) Define spread spectrum communication. [2]
j) What is frequency hop spread spectrum modulation? [3]

PART - B

(50 Marks)

2.a) Draw the block diagram of digital communication system and explain each block in detail.
b) Mention the advantages of digital communication over analog communication. [5+5]

OR

3.a) Explain the term quantization.
b) Find the output signal power due to quantization noise in PCM system. [5+5]

4.a) Explain with neat diagram BFSK transmitter and receiver.
b) Give a comparison between FSK and PSK schemes. [6+4]

OR

5.a) Explain coherent ASK and non coherent ASK schemes.
b) Draw a diagram of DPSK transmitter. [6+4]

6.a) Explain how the residual effects of the channel are responsible for ISI.
b) Explain about three tap reset equalizer. [5+5]

OR

7.a) What is nyquist pulse shaping?
b) Explain the role of cosine roll off spectrum in Nyquist pulse shaping with necessary waveforms and spectra. [5+5]

8.a) What is a convolutional code? How is it generated? [5+5]

b) Explain in detail convolutional coder with a suitable example.

OR

9. The parity check bits of an (8, 4) block code are generated by
C5= d1 +d2+d4
C6= d1+d2+d3
C7= d1+d3+d4
C8= d2+d3+d4
Where d1, d2, d3 and d4 are message bits. Find
a) The generator matrix and parity check matrix for this code. [5+5]
b) The minimum weight of this code.

10.a) Draw the block diagram of a spread spectrum system. [5+5]

b) Explain Frequency hopping spread spectrum.

OR

11. Explain PN sequences generation and characteristics. [10]

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