R18

Code No: R18A0408

MALLA REDDY COLLEGE OF ENGINEERING & TECHNOLOGY

(Autonomous Institution – UGC, Govt. of India)

III B.Tech I Semester Supplementary Examinations, April 2023

Digital Communications

(ECE)

Roll No										

Time: 3 hours **Max. Marks: 70**

Note: This question paper Consists of 5 Sections. Answer **FIVE** Questions, Choosing ONE Question from each SECTION and each Question carries 14 marks.

***

SECTION-I

1	***A***	Describe the elements of a PCM system with the help of neat block diagram in detail.	**[8M]**
	B	What are the various quantization techniques? Explain about Companding.	**[6M]**
		OR	
2	***A***	Explain the operation of delta modulator and demodulator with the help of a neat block diagram.	**[8M]**
	B	What are the drawbacks in DM? How to overcome those effects?	**[6M]**

SECTION-II

3	***A***	Define Matched filter. Derive the expression for probability of error of Matched filter.	**[8M]**
	B	Compare probability of error of ASK, PSK,FSK systems	**[6M]**
		OR	
4	***A***	How to generate a BFSK Signal?	**[7M]**
	B	Describe the Non-coherent reception of BFSK .	**[7M]**

SECTION-III

5	***A***	Define the following	
		(i)Information	**[2M]**
		(iiEntropy	**[2M]**
		(iii)Information rate	**[2M]**
	B	For a binary source that emits equi-probable symbols, find the entropy .	**[8M]**
		OR	
6	***A***	Explain about Huffman coding procedure.	**[7M]**
	B	A discrete memory less source has an alphabet of four symbols with probabilities 0.25, 0.5,0.125 and 0.125 for its output, Compute the Huffman code for this source.	**[7M]**

SECTION-IV

7 ***A*** Consider a (6, 3) linear block code whose generator matrix is

$$G = \left(\begin{array}{ccc|ccc} 1 & 0 & 0 & 0 & 1 & 1 \\ 0 & 1 & 0 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 & 0 & 1 \end{array}\right)$$

		a) Find all the possible code words.	**[4M]**
		b) Find the parity check matrix.	**[2M]**
		C) Show how error can be detected and corrected.	**[2M]**
	B	Explain the Error detection and error correction capabilities of linear block codes.	**[6M]**
		OR	
8	***A***	List the Advantages and properties of Cyclic codes	**[7M]**
	B	Describe the syndrome calculation of cyclic codes.	**[7M]**
		SECTION-V	
9	***A***	Explain about decoding of convolutional codes using Viterbi algorithm.	**[8M]**
	B	Differentiate state diagram and Trellis diagram	**[6M]**
		OR	
10	***A***	What are the advantages of Convolutional codes over block codes?	**[7M]**
	B	Explain the generation of convolutional code in transform domain with one example.	**[7M]**

***