TED (21) – 5043D
(REVISION-2021)

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Reg.No……
Signature…….

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/ MANAGEMENT/COMMERCIAL PRACTICE, APRIL - 2024

DIGITAL COMMUNICATION

[Maximum Marks:75] [Time: 3 Hours]

PART - A

I. Answer all the following questions in one word or one sentence. Each question carries 'one' marks.

(9 x 1 = 9 Marks)

		Module Outcome	Cognitive level
1	PCM stands for ……	M1.03	R
2	When converting an analog signal into digital signal, the process that comes after sampling is …….	M1.02	R
3	List the two types of noise in delta modulation.	M1.04	R
4	If the amplitude of the carrier is switched depending on the input digital signal it is called ……	M2.01	R
5	The two types of multiplexing techniques are……. and …….	M2.02	R
6	Define entropy.	M3.01	R
7	Give an example of error detection and correction code.	M3.04	R
8	…….. is a type of spread spectrum in which the frequency of the transmitted signal changes according to a specific pattern.	M4.01	R
9	Name any two multiple access techniques.	M4.02	R

PART - B

II. Answer *any eight* questions from the following. Each question carries 'Three' marks. **(8 x 3 = 24 Marks)**

		Module Outcome	Cognitive level
1	State sampling theorem.	M1.02	R
2	Explain companding.	M1.03	U
3	List any three advantages of digital communication system.	M1.01	R
4	Describe the principle of DPCM.	M1.04	U
5	Draw the waveforms of QPSK.	M2.01	U
6	Mention any 3 requirements of coding.	M3.03	R

7	Describe pseudonoise sequences.	M4.01	U
8	Explain CDMA.	M4.02	U
9	Define OFDM.	M4.03	R
10	Mention any 3 features of DSSS.	M4.01	R

PART - C

Answer all the questions from the following. Each question carries 'seven' marks.

(6 x 7 = 42 Marks)

		Module Outcome	Cognitive level
III.	Draw the block diagram of a digital communication system and specify the function of each block.	M1.01	R
	OR		
IV.	Draw and explain the block diagram of PCM system.	M1.03	U
V.	Explain with neat diagram the generation and reception of BFSK.	M2.01	U
	OR		
VI.	Compare TDM and FDM.	M2.02	U
VII.	Explain with neat diagram the generation and reception of BPSK	M2.01	U
	OR		
VIII.	Describe Simplex, Half duplex and Full duplex data transmission methods.	M2.03	U
IX.	The parity check matrix of a (7,4) linear block code is given by $H=\begin{bmatrix}1 & 1 & 1 & 0 & 1 & 0 & 0\\ 1 & 1 & 0 & 1 & 0 & 1 & 0\\ 1 & 0 & 1 & 1 & 0 & 0 & 1\end{bmatrix}$ Find the generator matrix G.	M3.04	A
	OR		
X.	Find the Shannon Fano codes for the information X having symbols x_1, x_2,x_3,x_4,x_5 and x_6 with message probabilities 0.3, 0.2, 0.25, 0.08, 0.12 and 0.05. Also find H(x).	M3.03	A
XI.	Explain convolutional coding of error detection.	M3.03	U
	OR		
XII.	Explain error detection and correction ability of Hamming code.	M3.04	U
XIII.	Compare FDMA and TDMA.	M4.02	U
	OR		
XIV.	Explain FHSS with neat diagram.	M4.01	U

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