| 2109230104 |

DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, APRIL - 2025

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 1 mark

(9 x 1 = 9 Marks)

		Module outcome	Cognitive level
1	List the different types of sampling techniques.	M1.02	R
2	Bandwidth of PCM signal depends on………rate.	M1.03	R
3	In………..Communication method the signal is transmitted in one direction at a time.	M2.02	R
4	Define synchronous communication system.	M2.03	R
5	State Shannon Hartley theorem.	M3.01	R
6	Name any two error detection and correction codes.	M3.04	R
7	Define CDMA.	M4.02	R
8	What is pseudo noise sequence?	M4.01	R
9	Define OFDM.	M4.03	R

PART B
II. Answer any eight questions from the following. Each question carries 3 marks.

(8 x 3 = 24 Marks)

		Module outcome	Cognitive level
1	Explain companding process.	M1.03	U
2	Explain non uniform quantization.	M1.02	U
3	List the necessity of digital communication.	M1.01	R
4	Explain slope overload.	M1.04	U
5	List any three application of FDM.	M2.02	R

6	Generate parity check matrix for the given (7,4) code.
	 G = 1 0 0 0 1 0 1
	     0 1 0 0 1 1 1
	     0 0 1 0 1 1 0
	     0 0 0 1 0 1 1
		M3.04	A

7	Explain frequency hop spread spectrum	M4.01	U
8	List the importance of orthogonally spaced subcarrier.	M4.03	R
9	Write note on Rake receiver.	M4.02	R
10	Write notes on the importance of multicarrier communication.	M4.03	R

PART C
Answer all questions. Each question carries seven marks

(6 x 7 = 42 Marks)

		Module outcome	Cognitive level
III	Draw and explain the block diagram of PCM.	M1.03	U
	OR		
IV	Explain Adaptive Delta modulation with diagram.	M1.04	U
V	Compare ASK,FSK, and PSK.	M2.01	U
	OR		
VI	Explain different data transmission methods.	M2.02	U
VII	Compare synchronous and asynchronous data transmission methods.	M2.03	U
	OR		
VIII	Compare TDM and FDM.	M2.02	U
IX	A 7 bit hamming code is received as 110001101. Assume even parity and state whether the received code is correct or wrong.	M3.04	A
	OR		
X	Explain the need of coding.	M3.03	U
XI	Explain about Hamming codes.	M3.03	U
	OR		
XII	Determine the set of code words for the (6,3) code with generator matrix. $$G = \begin{matrix} 1\ 0\ 0\ 0\ 1\ 1 \\ 0\ 1\ 0\ 1\ 0\ 1 \\ 0\ 0\ 1\ 1\ 1\ 0 \end{matrix}$$	M3.04	A
XIII	Explain FDMA.	M4.02	U
	OR		
XIV	Explain about direct sequence spread spectrum.	M4.01	U

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