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DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/ COMMERCIAL PRACTICE, NOVEMBER - 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	Calculate the minimum sampling rate required to sample a signal made up of constituent frequencies 1000 Hz, 1800 Hz, and 2000 Hz.	M1.02	A
2	Define quantization.	M1.02	R
3	List any two advantages of DPCM over PCM.	M1.04	R
4	State the use of guard time and guard band in multiplexing.	M2.02	R
5	List any two data transmission method.	M2.03	R
6	State the need for coding.	M3.03	R
7	List any two error detection and correction code.	M3.04	R
8	Name any two multiple access techniques.	M4.02	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 the need for digital communication systems.	M1.01	R
2	Differentiate Quantization noise and Quantization Error.	M1.02	U
3	With necessary diagrams, explain the concept of companding.	M1.03	U
4	Differentiate Slope Overload and Granular Noise, in delta modulation.	M1.04	U
5	Draw and explain the concept of DPSK.	M2.02	U
6	Explain Shannon Hartley theorem.	M3.01	U
7	Explain the importance of multicarrier communication.	M4.02	U
8	Explain pseudo noise sequences.	M4.01	U
9	Describe Importance of Orthogonally Spaced Subcarriers.	M4.03	U
10	Compare FHSS and DSSS.	M4.02	U

PART C

Answer all questions. Each question carries seven marks.

(6 x 7 = 42 Marks)

		Module outcome	Cognitive level
III	Draw and explain different sampling techniques.	M1.02	U
	OR		
IV	Explain the basic elements in a PCM system.	M1.03	U
V	Explain generation and detection of BFSK.	M2.01	U
	OR		
VI	Compare synchronous and asynchronous communication in data transmission methods.	M2.03	U
VII	Compare ASK, BFSK and BPSK.	M2.01	U
	OR		
VIII	Draw and explain the concept of TDM system.	M2.02	U
IX	Encode a binary word 11001 into even parity hamming code.	M3.04	A
	OR		
X	Calculate information carrying capacity for bandwidth 4kHz and SNR 20dB.	M3.01	A
XI	Write the principle of convolutional code with example.	M3.04	U
	OR		
XII	List and explain the features of hamming code.	M3.04	U
XIII	Compare TDMA and FDMA.	M4.02	U
	OR		
XIV	Explain the working of CDMA RAKE receiver.	M4.03	U

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