

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE, NOVEMBER – 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’ mark.

(9 x 1 = 9 Marks)

		Module Outcome	Cognitive level
1.	State sampling theorem.	M1.02	R
2.	Define quantization.	M1.02	R
3.	List the any two types of sampling.	M1.02	R
4.	Name the modulation scheme which is called as on-off keying.	M2.01	R
5.	Give any one application of half duplex data transmission mode.	M2.03	R
6.	Define entropy.	M3.01	R
7.	List any two error correcting codes.	M3.03	R
8.	State Shannon-Hartley theorem.	M3.01	R
9.	Define spread spectrum.	M4.01	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 the necessity of Digital Communication System.	M1.01	R
2.	Explain the types of quantization.	M1.02	U
3.	Describe DPCM.	M1.04	U
4.	Compare DM & ADM.	M1.04	U
5.	Draw the wave form and write notes on FSK.	M2.01	U
6.	A parity check code has the parity check matrix. $[H] = \begin{bmatrix} 1 & 0 & 1 & 1 & 1 & 0 & 0 \\ 1 & 1 & 0 & 1 & 0 & 1 & 0 \\ 1 & 1 & 1 & 0 & 0 & 0 & 1 \end{bmatrix}$ Construct the generator matrix.	M3.02	A
7.	Describe the importance of spread spectrum techniques in communication.	M4.01	U
8.	Write notes on TDMA.	M4.02	U
9.	Write notes on Pseudo-Noise sequences.	M4.01	U
10.	Describe OFDM.	M4.03	R

PART-C

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

(6 x 7 = 42 Marks)

		Module Outcome	Cognitive level
III.	Explain PCM. OR	M1.03	U
IV.	Explain the noises in Delta modulation with suitable diagrams.	M1.04	U
V.	Illustrate ASK modulator and draw the input & output waveforms. OR	M2.01	U
VI.	Compare TDM & FDM.	M2.02	U
VII.	With suitable diagrams explain simplex & Full duplex modes of data transmission. OR	M2.03	U
VIII.	Explain the concept of QPSK with waveforms.	M2.01	U
IX.	Write notes on:- 1. Need for coding in digital communication. 2. Linear block codes OR	M3.03	U
X.	Explain error detection using parity bit method.	M3.03	U
XI.	Solve for channel capacity for a satellite TV channel with SNR = 20dB & video bandwidth = 10MHz. OR	M3.02	A
XII.	A 7-bit hamming code is received as 1010111. Assume odd parity & state whether the received code is correct or wrong. If wrong locate the bit in error & correct it.	M3.04	A
XIII.	Illustrate Frequency-hop spread spectrum technique. OR	M4.01	U
XIV.	Illustrate CDMA-RAKE Receiver.	M4.02	U
