

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/MANAGEMENT/
COMMERCIAL PRACTICE, APRIL- 2023**

DIGITAL COMMUNICATION

[Maximum marks: 100]

(Time: 3 Hours)

PART – A

Maximum marks : 10

I (Answer *all* the questions in one or two sentences. Each question carries 2 marks)

1. List out two noises which affect the performance of PCM system.
2. Draw spectrum of QPSK signal.
3. Define Band Pass Data transmission.
4. State the amount of information.
5. What is mean by packet in data switching. (5 x 2 = 10)

PART – B

Maximum marks : 30

II (Answer any *five* of the following questions. Each question carries 6 marks)

1. State the Sampling Theorem and find the Nyquist rate and Nyquist interval for the message signal $x(t) = 10\cos(4000\pi t) + 20\cos(2000\pi t)$
2. Explain Adaptive Delta Modulation concept.
3. Describe generation of BPSK signal.
4. Derive the equation for entropy.
5. Explain parity bit error detection method.
6. Differentiate simplex, half duplex and full duplex data communication.
7. Describe digital signature. (5 x 6 = 30)

PART – C

Maximum marks : 60

(Answer one full question from each unit. Each full question carries 15 marks)

UNIT –I

- III. (a) Describe quantization process with a diagram. (9)
(b) Explain demodulation of PPM system. (6)

OR

- IV.(a) Explain the block diagram of PCM transmitter and receiver. (9)
(b) Describe slope overload and granular errors in Delta modulation. (6)

UNIT-II

- V. (a) Explain the features and detection of BFSK. (8)
(b) Illustrate the basic concept of MSK modulation with block diagram. (7)

OR

- VI. (a) Describe QPSK signal generation and its advantages over BPSK. (9)
(b) Explain Gaussian Minimum Shift Keying. (6)

UNIT-III

- VII.(a) Illustrate the Shanon-Fano algorithm with an example. (8)
(b) Explain block interleaving method for burst error correction. (7)

OR

- VIII.(a) Illustrate single bit error detection and correction in (7,4) Hamming code with an example. (9)
(b) Demonstrate Convolution code with necessary block diagram. (6)

UNIT-IV

- IX. (a) Compare circuit switching and message switching. (8)
(b) Describe RSA public key algorithm. (7)

OR

- X. (a) Describe different Automatic Repeat Request techniques. (9)
(b) Explain the concept of Time Division Multiplexing. (6)
