

**DIPLOMA EXAMINATION IN ENGINEERING/TECHNOLOGY/
MANAGEMENT/COMMERCIAL PRACTICE, NOVEMBER – 2023**

DIGITAL COMMUNICATION

[Maximum Marks: **100**]

[Time: **3 Hours**]

PART-A

[Maximum Marks: **10**]

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

1. Differentiate bit rate and baud rate.
2. Draw the output waveform of a pulse width modulator.
3. What is the basic difference between BPSK and QPSK?
4. What is CRC?
5. Differentiate Synchronous and asynchronous transmission.

(5 x 2 = 10)

PART-B

[Maximum Marks: **30**]

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

1. Explain slope overload and granular noise with suitable diagram.
2. Differentiate the principles of ASK, FSK and PSK.
3. Explain even parity check method in error detection with suitable example.
4. Explain various types of ARQ.
5. List the advantages, disadvantages and applications of FDM.
6. With an example, explain hamming code.
7. Calculate the minimum sampling rate for an audio signal.

(Audio range 20Hz -20KHz). Calculate data rate for 10bits/sample.

(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. Explain Delta modulation with block diagram. (7)
- b. Explain the steps involved in the process of Pulse Code Modulation. (8)

OR

- IV. a. Explain DPCM modulator and demodulator with block diagrams. (9)
- b. Explain sampling theorem and Nyquist rate. Mention its significance. (6)

UNIT – II

- V. a. Draw the waveform representation for the digital data 10011010 for ASK, FSK and PSK modulation systems. (Use sine wave as carrier wave). (10)
- b. Explain the advantages of digital communication system over analog communication system. (5)

OR

- VI. a. Explain the production of BPSK and QPSK with the help of diagrams. (10)
- b. Explain Minimum Shift Keying Technique. (5)

UNIT- III

- VII. a. Explain the types of errors occurred in digital data communication systems. (7)
- b. Compare VRC and LRC with examples. (8)

OR

- VIII. a. Explain the steps involved in checksum generation and detection. (8)
- b. Explain the significance of 4 bit redundancy bits with ASCII in hamming code generation. (7)

UNIT - IV

- IX. a. Explain circuit switching, message switching and packet switching. (9)
- b. Differentiate ARQ and Forward Error Correction techniques. (6)

OR

- X. a. Compare FDM and TDM. (8)
- b. Explain various data transmission modes. (7)
