

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

DATA 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. List any two data representation forms.
2. Define bandwidth of a composite signal.
3. List two techniques for digital to analog conversion.
4. Name two types of antennas used for microwave communication.
5. Define the term *burst error*.

(5 x 2 = 10)

PART-B

[Maximum Marks: **30**]

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

1. Describe various components of a data communication system.
2. Discuss the salient features of LAN, WAN and MAN.
3. Define the terms *amplitude*, *frequency* and *phase* of a waveform with suitable diagrams.
4. Discuss various types of transmission impairments.
5. State the characteristic features of radio waves.
6. Describe the structure of a coaxial cable with a neat diagram.
7. State the services provided by Point to Point Protocol (PPP).

(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. Draw a neat diagram of the ISO-OSI reference model and explain the functions of the Physical, Data link, Network and Transport layers. (15)

OR

- IV. Explain the features, merits and demerits of various network topologies. (15)

UNIT – II

- V. a. Explain FDM and WDM with neat diagrams, illustrating the processes of multiplexing and demultiplexing. (10)
b. Explain asynchronous transmission mode with diagram. (5)

OR

- VI. a. Explain amplitude, frequency and phase modulation techniques with neat diagrams. (9)
b. Explain synchronous transmission mode with diagram. (6)

UNIT- III

- VII. a. Explain the structure, types, categories and applications of Twisted Pair cable. (10)
b. State the advantages of optical fiber cable over metallic cables. (5)

OR

- VIII. a. State the characteristics of virtual circuit networks. (5)
b. Explain the physical structure of a circuit-switched network, with the help of a diagram. Describe the various phases of communication over this network with an example. (10)

UNIT - IV

- IX. a. Draw the formats of various types of HDLC frames and explain each field. (8)
b. Explain the framing process in bit-oriented framing protocol with a diagram. (7)

OR

- X. a. Draw the format of a PPP frame and explain each field. (8)
b. Illustrate the configurations and transfer modes provided by HDLC protocol. (7)
