

Seat No./Enrollment No.: _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 4 – EXAMINATION – SUMMER 2026

Subject Code: 3143201

Date: 21/05/2026

Subject Name: DATA COMMUNICATION AND COMPUTER NETWORKS

Time: 10:30 AM TO 01:00 PM

Total Marks: 70

Instructions:

- 1. Attempt all questions.**
- 2. Make suitable assumptions wherever necessary.**
- 3. Figures to the right indicate full marks.**
- 4. Simple and non-programmable scientific calculators are allowed.**

- Q.1**
- (a) What are the key goals of a computer network? **03**
 - (b) Explain the concept of Data Rate and Baud Rate. **04**
 - (c) Draw and explain the TCP/IP protocol architecture. Describe the protocols associated with each layer. **07**
- Q.2**
- (a) Briefly differentiate Go Back N (GBN) and Selective Repeat (SR) Protocol. **03**
 - (b) Differentiate Serial transmission and Parallel transmission. **04**
 - (c) Explain Cyclic Redundancy Check with Example: Suppose the original data is 11100 and divisor is 1001. **07**
- OR
- Q.2**
- (c) Explain distance vector routing and Link State routing with example. **07**
- Q.3**
- (a) Explain ASK, FSK, and PSK for digital-to-analog conversion. **03**
 - (b) Explain Classful IP Addressing scheme for IPv4. **04**
 - (c) What is high level data link control (HDLC)? Explain HDLC frame format in detail. **07**
- OR
- Q.3**
- (a) Write a short note on SNMP. **03**
 - (b) Describe Physical addresses, logical addresses, and port addresses. **04**
 - (c) Explain the role and functioning of the Transport Layer protocols. **07**
- Q.4**
- (a) Differentiate between Broadcasting and Multicasting. **03**
 - (b) What is network topology? Explain the different network topologies. **04**
 - (c) Describe ATM architecture in detail. **07**
- OR
- Q.4**
- (a) Explain any one controlled access protocol. **03**
 - (b) Explain IEEE standards 802.4 and IEEE standards 802.5. **04**
 - (c) What is Aloha Protocol? Explain Types of Aloha Protocols. **07**
- Q.5**
- (a) What is firewall? List out types of firewalls. **03**
 - (b) Draw Structure of E-mail. Explain Working of E-mail. **04**

(c) Describe functions and working of HTTP protocol in detail. **07**

OR

- Q.5**
- (a)** What is the use of FTP? **03**
 - (b)** Describe Symmetric-key cryptography with diagram. **04**
 - (c)** Explain RSA algorithm with an example. **07**
