Enrollment No./Seat No.:

GUJARAT TECHNOLOGICAL UNIVERSITY

Bachelor of Engineering - SEMESTER - IV EXAMINATION - WINTER 2025

Subject Code: 3143201 **Date: 15-11-2025**

Subject Name: Data Communication & Computer Networks

Time: 02:30 PM TO 05:00 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.**

			Marks
Q.1	**(a)**	Define data communication and list its components.	**03**
	(b)	Differentiate circuit-switched and packet-switched networks.	**04**
	(c)	Explain the OSI reference model with neat diagram.	**07**
Q.2	**(a)**	Define analog signal, digital signal, and their differences.	**03**
	(b)	Explain ASK, FSK, and PSK techniques.	**04**
	(c)	Explain Go-Back-N and Selective Repeat ARQ with diagram.	**07**
		OR	
	(c)	Explain HDLC protocol and its frame format.	**07**
Q.3	**(a)**	What is a frame? Mention its importance.	**03**
	(b)	Explain Distance Vector Routing algorithm.	**04**
	(c)	Explain TCP vs UDP and their header formats.	**07**
		OR	
	(a)	Define error detection and error correction.	**03**
	(b)	Explain Link State Routing algorithm.	**04**
	(c)	Discuss IPv4 and IPv6 packet formats in detail.	**07**
Q.4	**(a)**	Define CSMA/CD protocol.	**03**
	(b)	Explain ICMP and its role in IP.	**04**
	(c)	Explain Ethernet (IEEE 802.3) working with frame format.	**07**
		OR	
	(a)	Explain Stop-and-Wait ARQ with a timing diagram.	**03**
	(b)	Explain firewall and IPSec mechanisms.	**04**
	(c)	Explain Frame Relay and ATM protocols.	**07**
Q.5	**(a)**	Define SMTP and POP3 protocols.	**03**

(b)	Explain FTP and HTTP protocols.	**04**
(c)	Explain SNMP architecture with example.	**07**

OR

(a)	Write short note on public-key cryptography.	**03**
(b)	Explain symmetric key algorithms – DES & AES.	**04**
(c)	Explain RSA algorithm with example.	**07**

***