

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-VII (NEW) EXAMINATION – WINTER 2024****Subject Code:2171008****Date:30-11-2024****Subject Name: Data Communication and Networking****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.

		MARKS
Q.1	(a) Give comparison between packet switching and circuit switching.	03
	(b) Identify which layer of TCP/IP protocol suite will perform the following function? (i) Transmission of frames from one computer to another. (ii) Ensures end to end delivery (iii) Data security (iv) Internetworking	04
	(c) Explain addressing at network layer. How different classes are defined for addressing at network layer? What do mean by sub-netting and super netting?	07
Q.2	(a) List functions of data link layer.	03
	(b) Define topology. Discuss any two types of network topology with diagram.	04
	(c) Explain various methods of framing with appropriate diagram.	07
	OR	
	(c) What is the need of sliding window? Explain Go back N mechanism.	07
Q.3	(a) Explain following terms. (i) Spanning tree (ii) Flooding (iii) Fragmentation	03
	(b) Explain ARP operation, packet format and encapsulation.	04
	(c) Explain Link state routing algorithm with appropriate diagram.	07
	OR	
Q.3	(a) Explain the Internet Control Message Protocol (ICMP).	03
	(b) Explain addressing mechanism in IEEE 802.11 standard for wireless LAN	04
	(c) Explain Distance Vector Routing with appropriate diagram.	07
Q.4	(a) Discuss Leaky bucket algorithm.	03
	(b) State function of Gateway, Router, Bridge and Switch.	04
	(c) Explain the channel allocation problem and its solution in detail.	07
	OR	
Q.4	(a) What is fast Ethernet?	03
	(b) List the techniques available to improve Quality of Service and Explain any one technique in detail.	04
	(c) Write the functions of Media Access Control sub layer. Explain pure ALOHA and Slotted ALOHA.	07

- Q.5** (a) What do you understand by www, http and DNS? **03**
(b) Define cryptography. Explain any one method of symmetric key cryptography. **04**
(c) Write short note on TCP segment header. Also discuss function of flags. **07**
- OR**
- Q.5** (a) During TCP transmission let receiver has a 4096-byte buffer. If a sender transmits a 2048-byte segment, show TCP window management with appropriate diagram. **03**
(b) Explain RSA algorithm with example. **04**
(c) Explain following. **07**
(i) Architecture and services of Electronic Mail.
(ii) UDP operation
