

GUJARAT TECHNOLOGICAL UNIVERSITY**BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2022****Subject Code:3150710****Date:11-01-2023****Subject Name: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.

		Marks
Q.1	(a) Which of the OSI layers handles each of the following:	03
	i) Dividing the message into segments.	
	ii) Determining which route through the subnet to use.	
	iii) Dividing the transmitted bit stream into frames.	
	(b) Besides bandwidth and latency, what other parameter(s) is/are needed to give a good characterization of the quality of service offered by network used for	04
	(i) Online financial transaction traffic?	
	(ii) Video streaming traffic?	
	(c) Discuss the circuit switching versus packet switching approaches for moving data through a network of links and switches.	07
Q.2	(a) Justify the statement, “HTTP server is stateless”.	03
	(b) State the port number for the following application layer protocols.	04
	i) FTP ii) HTTP iii) SMTP iv) POP3	
	(c) Discuss the five layer internet protocol stack along with the functionalities of each layer in detail.	07
	OR	
	(c) Explain User Datagram Protocol (UDP) in detail and discuss how it differs from Transmission Control Protocol (TCP).	07
Q.3	(a) For the below mentioned internet applications protocol, mention the underlying transport protocol (TCP or UDP).	03
	i) Telnet ii) FTP iii) HTTP	
	(b) Discuss the count-to-infinity problem in distance vector routing algorithm with example.	04
	(c) Explain the class-full sub-netting with example.	07
	OR	
Q.3	(a) Define the term unicasting, multicasting, and broadcasting.	03
	(b) What is the significance of the following flags in TCP segment?	04
	i) URG ii) SYN iii) FIN iv) PSH	
	(c) Explain TCP Congestion mechanism in detail.	07
Q.4	(a) Explain the UDP checksum mechanism for error detection with example.	03
	(b) What is the relevance of Type of Service (ToS) and Time to Live (TTL) field in IPV ₄ packet?	04
	(c) Explain Link State Routing algorithm in detail.	07
	OR	
Q.4	(a) What are the three most important network-layer functions in a virtual-circuit network?	03
	(b) Explain Route Summarization or Route Aggregation in network layer.	04

- (c) Demonstrate the various error detection techniques at data link layer with example. **07**
- Q.5** (a) What is the purpose of Address Resolution Protocol (ARP) and Network Address Translation (NAT)? **03**
- (b) Explain the following static channel allocations mechanisms: **04**
i) TDMA ii) FDMA
- (c) Explain p-persistent CSMA protocol in detail. **07**
- OR**
- Q.5** (a) Data link protocols almost always put CRC in a trailer rather than in a header. Why? **03**
- (b) State the difference between bit rate and baud rate. **04**
- (c) Discuss the working of slotted aloha along with its efficiency in terms of channel utilization. **07**
