

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-V EXAMINATION – WINTER 2025****Subject Code:3150710****Date:21-11-2025****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

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|------------|---|-----------|
| Q.1 | (a) Discuss throughput in Computer Network. | 03 |
| | (b) Enlist types of delay and define them all. | 04 |
| | (c) Write functions of: Repeater, Hub, Gateway, Bridge, Switch and Router | 07 |
| Q.2 | (a) Compare IPV4 and IPV6. | 03 |
| | (b) Compare virtual circuit and datagram. | 04 |
| | (c) Describe Distance Vector Routing Algorithm. | 07 |
| | OR | |
| | (c) Describe Link state Routing Algorithm. | 07 |
| Q.3 | (a) Why HTTP server is stateless? | 03 |
| | (b) Discuss Multiplexing and De multiplexing at Transport layer. | 04 |
| | (c) Compare TCP and UDP. | 07 |
| | OR | |
| Q.3 | (a) Define the term: Unicast, Multicast and Broadcast. | 03 |
| | (b) Explain the following TCP socket system calls:
socket(), bind(), listen(), accept(). | 04 |
| | (c) Describe TCP segment structure. | 07 |
| Q.4 | (a) Define: bit rate and baud rate. | 03 |
| | (b) Discuss NAT(Network address Translation) as solution to IP address depletion problem. | 04 |
| | (c) Describe roles and responsibilities of DNS. | 07 |
| | OR | |
| Q.4 | (a) What is count to infinity problem? | 03 |
| | (b) Write note on E-mail. | 04 |
| | (c) Describe Go back n and selective repeat protocol. | 07 |
| Q.5 | (a) Discuss taking turn protocol. | 03 |
| | (b) Compare Persistent and non Persistent HTTP. | 04 |
| | (c) Describe CSMA protocol with Collision Detection. | 07 |
| | OR | |
| Q.5 | (a) Discuss slotted Aloha. | 03 |
| | (b) Write functionalities of ARP. | 04 |
| | (c) Describe CRC for error detection. | 07 |

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-V (NEW) EXAMINATION – WINTER 2024****Subject Code:3150710****Date:02-12-2024****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) Define the Following Terms: 1 Local area network 2.Throughput 3.Repeater	03
	(b) Explain various types of delay occur in transmission.	04
	(c) List down different types of topology and explain any three topologies with advantages and disadvantages.	07
Q.2	(a) Write a short note on DNS and its resolution techniques.	03
	(b) Differentiate Circuit Switching and Packet Switching	04
	(c) Define HTTP and compare its persistent and non-persistent types with request-response behavior.	07
	OR	
	(c) Explain SMTP protocol in details.	07
Q.3	(a) List down various services provided at transport layer	03
	(b) Provide the Port number and Transport layer Protocol associated with the following Application Layer Services: 1. Telnet 2. SMTP 3. HTTP 4.DNS	04
	(c) Explain TCP Congestion control in detail	07
	OR	
Q.3	(a) How the encapsulation is done in the transport layer?	03
	(b) Explain flow control and Error Control.	04
	(c) Write short note on User datagram protocol.	07
Q.4	(a) Enlist IP address range and subnet mask value for class A, B and C. How many hosts can be connected for the 188.21.0.0 network?	03
	(b) Compare virtual circuit networks and datagram networks	04
	(c) Describe Go Back N and Selective Repeat protocol.	07
	OR	
Q.4	(a) Differentiate connection oriented and connection less services.	03
	(b) Explain the following system calls. (i) socket () (ii) bind ()	04
	(c) Draw and Explain IPv4 Datagram header fields.	07
Q.5	(a) Describe the distinctions between multicasting and multiple unicasting within network communication.	03
	(b) A CRC 100110001 is received by the receiver. The divisor value is 1101. Show that error is detected at the receiver side.	04
	(c) Define the term random access protocols? Explain slotted ALOHA in brief.	07

OR

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|------------|---|-----------|
| Q.5 | (a) An ISP is providing 150.80.0.0/16 block to 2600 customers. What will be the assigned IP address 1002th customers if it provided in the sequence by that ISP. | 03 |
| | (b) Explain bit stuffing with an example. | 04 |
| | (c) Explain importance of TCP segment structure and its fields. | 07 |

Seat No.: _____

Enrolment No. _____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2023

Subject Code:3150710

Date:11-12-2023

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.
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4. Simple and non-programmable scientific calculators are allowed.

		MARKS
Q.1	(a) What is protocol? How it is different than standard?	03
	(b) Explain different networking devices.	04
	(c) Draw and explain different layers of OSI Model.	07
Q.2	(a) Find transmission delay for transmission of 1500 bytes (12000 bits) using a transmission rate of 100Mbps.	03
	(b) Differentiate between connection oriented and connection less service.	04
	(c) Explain different types of CSMA with suitable example.	07
	OR	
	(c) Explain HTTP and DNS in detail.	07
Q.3	(a) Explain the term piggybacking and congestion.	03
	(b) Compare Datagram and virtual circuit.	04
	(c) What is IP address? Explain different classes of IP address.	07
	OR	
Q.3	(a) What is the functionality of Router, Bridge and Gateway?	03
	(b) What is subnet? What are the benefits of creating subnets?	04
	(c) Generate CRC code for message 1101010101. Given generator polynomial is x^4+x^2+1 .	07
Q.4	(a) What is store and forward packet switching?	03
	(b) What are the services provided to transport layer by the network layer?	04
	(c) Explain distance vector routing with suitable example.	07
	OR	
Q.4	(a) Explain the problem of Count-to-infinity with example.	03
	(b) Discuss optimality principle with example.	04
	(c) Explain Link state routing with suitable example.	07
Q.5	(a) Explain LRC with suitable example.	03
	(b) Compare IPV4 and IPV6.	04
	(c) Explain the hierarchical DNS system.	07
	OR	
Q.5	(a) Explain flow and error control in TCP.	03
	(b) Compare TCP and UDP.	04
	(c) Write note on: 802.3 Ethernet.	07

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.
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		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**
