

**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-V (NEW) EXAMINATION – WINTER 2021****Subject Code:3150710****Date:27/12/2021****Subject Name: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.

- Q.1** (a) What is topology? Explain star topology in brief. **03**  
(b) Explain various delay which are occur in data packet transmission. **04**  
(c) Explain functionality of Repeater, Hub, Bridge, Switch, Router and Gateway. **07**
- Q.2** (a) Write short note on Domain Name System (DNS). **03**  
(b) What is HTTP? Differentiate its persistent and non-persistent types with request-response behavior of HTTP. **04**  
(c) Draw the layered architecture of OSI reference model and write at least two services provided by each layer of the model. **07**
- OR**
- (c) Explain DHCP and Email in detail. **07**
- Q.3** (a) Explain Physical Address, IP address, Port Address in brief. **03**  
(b) Compare IPv4 and IPv6. **04**  
(c) Explain Distance Vector Routing Algorithm. **07**
- OR**
- Q.3** (a) Discuss the principles of Reliable Data Transfer. **03**  
(b) Give difference between connection oriented and connectionless services. **04**  
(c) What do you mean by congestion and overflow? Explain the slow-start component of the TCP congestion-control algorithm. **07**
- Q.4** (a) Explain packet fragmentation with example. **03**  
(b) Write a short note on broadcast and multicast routing. **04**  
(c) What is IP address? Explain sub netting with example. **07**
- OR**
- Q.4** (a) Give differences between TCP and UDP. **03**  
(b) What is socket? Explain its importance at transport layer protocols. **04**  
(c) Discuss transport layer multiplexing and demultiplexing concepts. **07**
- Q.5** (a) Discuss CSMA/CD Protocol. **03**  
(b) Explain CRC code generation with example. **04**  
(c) Describe Go Back N and Selective Repeat protocol. **07**
- OR**
- Q.5** (a) Discuss parity check for error detection in data transfer. **03**  
(b) What do you mean by random access protocols? Explain slotted ALOHA in brief. **04**  
(c) Draw and explain Ethernet Frame Structure. **07**

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**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-V (NEW) EXAMINATION – SUMMER 2021****Subject Code:3150710****Date:15/09/2021****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
<b>Q.1</b>	(a) Discuss throughput in the network.	<b>03</b>
	(b) Differentiate TCP/IP protocol stack and OSI Reference model of the computer network.	<b>04</b>
	(c) How does the reservation protocol work to control access of the medium? Discuss the disadvantages of it.	<b>07</b>
<b>Q.2</b>	(a) Define Unicasting, Multicasting and Broadcasting.	<b>03</b>
	(b) Discriminate fully qualified domain name from partially qualified domain name.	<b>04</b>
	(c) How the p-persistent is different from 1-persistent in CSMA/CD? Explain how the Backoff time is set in the case of collision.	<b>07</b>
	OR	
	(c) Explain the working mechanism of the binary countdown protocol. Which limitation of bitmap protocol is overcome by it?	<b>07</b>
<b>Q.3</b>	(a) Bit stream 10011101 is to be transmitted using the standard CRC method with divisor value $x^3+1$ . Generate the CRC code word.	<b>03</b>
	(b) Why the virtual circuit is to be set up for transmission of message in TCP protocol?	<b>04</b>
	(c) Explain Distance Vector routing protocol.	<b>07</b>
	OR	
<b>Q.3</b>	(a) How the encapsulation is done in the transport layer?	<b>03</b>
	(b) What is subnetting? Why is it required?	<b>04</b>
	(c) Explain Link State routing protocol.	<b>07</b>
<b>Q.4</b>	(a) How does store-n-forward technique work at network layer?	<b>03</b>
	(b) Discuss the various measures which are used to compute the cost between two routers of the network.	<b>04</b>
	(c) Explain TCP Congestion control in detail.	<b>07</b>
	OR	
<b>Q.4</b>	(a) How many subnets can be created for the subnet mask 255.255.255.224? Which IP address class these subnet does belong to?	<b>03</b>
	(b) What is process-to-process delivery in transport layer? Why do we require it though host-to-host delivery is provided by the network layer?	<b>04</b>
	(c) Explain User Datagram Protocol.	<b>07</b>
<b>Q.5</b>	(a) Why the data encryption is necessary at the presentation layer of OSI reference model?	<b>03</b>
	(b) How does chock packet technique work for congestion control?	<b>04</b>
	(c) What is POP3 protocol? How the limitations of POP3 protocols are overcome by IMAP?	<b>07</b>

OR

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|------------|------------------------------------------------------------------------------------------------|-----------|
| <b>Q.5</b> | <b>(a)</b> Why data compression is necessary at the presentation layer of OSI reference model? | <b>03</b> |
|            | <b>(b)</b> Differentiate Congestion control and flow control.                                  | <b>04</b> |
|            | <b>(c)</b> Explain MIME structure for electronic mail.                                         | <b>07</b> |

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**GUJARAT TECHNOLOGICAL UNIVERSITY****BE - SEMESTER-V(NEW) EXAMINATION – SUMMER 2022****Subject Code:3150710****Date:09/06/2022****Subject Name: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**

- |            |     |                                                                                                                                                     |           |
|------------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------|-----------|
| <b>Q.1</b> | (a) | What is the difference between a host and an end system?<br>List several different types of end systems.                                            | <b>03</b> |
|            | (b) | Explain IP Address, Physical Address and Port Number in Brief.                                                                                      | <b>04</b> |
|            | (c) | Draw the layered architecture of OSI reference model and write at least two services provided by each layer of the model.                           | <b>07</b> |
| <b>Q.2</b> | (a) | Explain the role of Domain Name Server (DNS) in Internet?                                                                                           | <b>03</b> |
|            | (b) | Explain functionality of Repeater, HUB, Bridge, Switch, Router and Gateway.                                                                         | <b>04</b> |
|            | (c) | How end-to-end congestion control is provided by TCP.                                                                                               | <b>07</b> |
|            |     | <b>OR</b>                                                                                                                                           |           |
|            | (c) | Consider the 7-bit generator, G=10011, and suppose that D has the value 1010101010. What is the value of R?                                         | <b>07</b> |
| <b>Q.3</b> | (a) | Discuss parity check for error detection in data transfer.                                                                                          | <b>03</b> |
|            | (b) | List and briefly describe three types of switching fabrics used in Routers. Which, if any, can send multiple packets across the fabric in parallel? | <b>04</b> |
|            | (c) | Describe Go Back N and Selective Repeat protocol.                                                                                                   | <b>07</b> |
|            |     | <b>OR</b>                                                                                                                                           |           |
| <b>Q.3</b> | (a) | Give difference between connection oriented and connection less services.                                                                           | <b>03</b> |
|            | (b) | Why do HTTP, FTP, SMTP, and POP3 run on top of TCP rather than on UDP? Name one application that uses UDP and why?                                  | <b>04</b> |
|            | (c) | Explain RDT 2.0.                                                                                                                                    | <b>07</b> |
| <b>Q.4</b> | (a) | Give difference between flow control verses Congestion Control.                                                                                     | <b>03</b> |
|            | (b) | What is HTTP? Differentiate its persistent and non-persistent types with request-response behavior of HTTP.                                         | <b>04</b> |
|            | (c) | Explain distance vector routing algorithm.                                                                                                          | <b>07</b> |
|            |     | <b>OR</b>                                                                                                                                           |           |
| <b>Q.4</b> | (a) | Explain CSMA/CD Protocol.                                                                                                                           | <b>03</b> |
|            | (b) | Why are different inter-AS and intra-AS protocols used in the Internet?                                                                             | <b>04</b> |
|            | (c) | Explain Link-State routing algorithm.                                                                                                               | <b>07</b> |

- Q.5** (a) Explain in brief socket, multiplexing and demultiplexing. **03**  
(b) How DHCP protocol works? **04**  
(c) Explain TCP segment structure and justify the importance of its field values. **07**
- OR**
- Q.5** (a) Describe how a botnet can be created, and how it can be used for a DDoS attack. **03**  
(b) What do you mean by random access protocols? Explain slotted ALOHA in brief. **04**  
(c) Explain IPv4 datagram format and importance of each field **07**