

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**

GUJARAT TECHNOLOGICAL UNIVERSITY**BE- SEMESTER-V (NEW) EXAMINATION – WINTER 2020****Subject Code:3150710****Date:01/02/2021****Subject Name:Computer Networks****Time:10:30 AM TO 12:30 PM****Total Marks: 56****Instructions:**

1. Attempt any FOUR questions out of EIGHT questions.
2. Make suitable assumptions wherever necessary.
3. Figures to the right indicate full marks.

		Marks
Q.1	(a) Explain how bit rate and baud rate are related with respect to Ethernet.	03
	(b) Differentiate between connection oriented versus connection less services in networks.	04
	(c) Explain the working of binary count down MAC layer protocol in detail.	07
Q.2	(a) Explain how multicasting differs from multiple unicasting in networks.	03
	(b) Discriminate fully qualified domain name from partially qualified domain name.	04
	(c) Explain the working of CSMA/CD protocol in detail.	07
Q.3	(a) A Bit stream 100100 is to be transmitted using standard CRC method with divisor value x^3+x^2+1 . Generate the CRC code word.	03
	(b) How switch device is different from the router?	04
	(c) Explain the problem of Count-to-infinity with example in distance vector routing algorithm.	07
Q.4	(a) What is meant by encapsulation at transport layer?	03
	(b) Explain flow and error control in TCP.	04
	(c) What do you mean by sub-netting and super-netting? Explain it with example	07
Q.5	(a) Explain NAT (Network Address Translation) as a solution to IP address depletion problem.	03
	(b) What is the minimum and maximum size of the TCP and UDP segment?	04
	(c) Explain leaky bucket algorithm for the network traffic shaping.	07
Q.6	(a) Is deadlock possible in TCP? If yes, when?	03
	(b) What is route aggregation? How it can be useful in Internet?	04
	(c) Explain the significance of the following flags present in TCP segment header: 1) URG 2) ACK 3) PSH 4) RST 5) SYN 6) FIN	07
Q.7	(a) How the Jitter is different from the delay in streaming applications?	03
	(b) Explain the following TCP socket system calls: 1) socket() 2) bind() 3) listen() 4) accept()	04
	(c) Give the well defined port number for the following protocols: 1) SMTP 2) DNS 3) HTTP 4) POP3 5) TELNET 6) HTTPS 7) SSH	07
Q.8	(a) Is data compression is necessary at the presentation layer of OSI reference model? Explain it with proper reason.	03
	(b) What do you mean by stream and datagram sockets?	04
	(c) Explain the hierarchical DNS system	07

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
Q.1	(a) Discuss throughput in the network.	03
	(b) Differentiate TCP/IP protocol stack and OSI Reference model of the computer network.	04
	(c) How does the reservation protocol work to control access of the medium? Discuss the disadvantages of it.	07
Q.2	(a) Define Unicasting, Multicasting and Broadcasting.	03
	(b) Discriminate fully qualified domain name from partially qualified domain name.	04
	(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.	07
	OR	
	(c) Explain the working mechanism of the binary countdown protocol. Which limitation of bitmap protocol is overcome by it?	07
Q.3	(a) Bit stream 10011101 is to be transmitted using the standard CRC method with divisor value x^3+1 . Generate the CRC code word.	03
	(b) Why the virtual circuit is to be set up for transmission of message in TCP protocol?	04
	(c) Explain Distance Vector routing protocol.	07
	OR	
Q.3	(a) How the encapsulation is done in the transport layer?	03
	(b) What is subnetting? Why is it required?	04
	(c) Explain Link State routing protocol.	07
Q.4	(a) How does store-n-forward technique work at network layer?	03
	(b) Discuss the various measures which are used to compute the cost between two routers of the network.	04
	(c) Explain TCP Congestion control in detail.	07
	OR	
Q.4	(a) How many subnets can be created for the subnet mask 255.255.255.224? Which IP address class these subnet does belong to?	03
	(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?	04
	(c) Explain User Datagram Protocol.	07
Q.5	(a) Why the data encryption is necessary at the presentation layer of OSI reference model?	03
	(b) How does chock packet technique work for congestion control?	04
	(c) What is POP3 protocol? How the limitations of POP3 protocols are overcome by IMAP?	07

OR

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

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

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

- 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**