Seat No.: _____ Enrolment No.

GUJARAT TECHNOLOGICAL UNIVERSITY

BE- SEMESTER–VII (NEW) EXAMINATION – WINTER 2020

Subject Code:2171008 **Date:28/01/2021**

Subject Name:Data Communication and Networking

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 Physical address, Logical address and Port number with example.	**03**
	(b)	Identify which layer of TCP/IP protocol suite will perform following function? a) Transmission of frames from one computer to another b) Ensures end to end delivery c) Data security d) Internetworking	**04**
	(c)	Explain the 802.11 Architecture and Protocol Stack.	**07**
Q.2	**(a)**	A computer network consists of 20 stations. Determine number of links required if a) Mesh topology is used b) Suppose that four stations are designated as hubs, each fully interconnected with the others. The remaining 16 stations are equally distributed to the hubs such that any one station is connected to only one hub. Determine the number of links.	**03**
	(b)	For the following applications which of you would select from TCP/UDP as transport layer protocol? a) Packet voice b) File Transfer c) Remote login d) Multicast communication	**04**
	(c)	Explain HLDC Protocol with modes of operation, Frame structure and Frame types.	**07**
Q.3	**(a)**	Which protocol will be used in the following scenario? a) If host 'A' on network is trying to identify "whether host 'B' is live" b) At the time of booting host receives IP address from the server c) Translate MAC address into IP address	**03**
	(b)	Explain RSVP—The Resource reservation Protocol.	**04**
	(c)	Explain framing. Enlist all four methods of generating frames and discuss any two methods with diagram and their limitations.	**07**

Q.4	**(a)**	Explain Flooding.	**03**
	(b)	Discuss function of following protocols. a) ARP b) ICMP c) SMTP d) RTP	**04**
	(c)	What do you mean by collision? Explain CSMA/CD protocol.	**07**
Q.5	**(a)**	A computer on a 6 Mbps network is regulated by a token bucket. The token bucket is filled at a rate of 1 Mbps. It is initially filled to capacity with 8 megabits. How long can the computer transmit at the full 6 Mbps?	**03**
	(b)	Discuss count to infinity problem of Distance vector routing.	**04**
	(c)	Explain IPv4 Header fields with necessary diagrams.	**07**
Q.6	**(a)**	Explain fragmentation with appropriate example.	**03**
	(b)	Let IP address: 154.16.52.16, and subnet mask: 255.255.240.0 Find: (a) Number of subnets possible on this network. (b) Number of hosts possible on each subnet. (c) Host 154.16.52.16 is on which subnet? (d) Range of addresses of the subnet consisting host.	**04**
	(c)	Explain Link state Routing algorithm. Also give the differences between link state routing and distance vector routing.	**07**
Q.7	**(a)**	Explain email architecture and email protocols.	**03**
	(b)	Discuss Voice over IP and Video streaming in briefly. Also comment on their QoS requirements.	**04**
	(c)	Draw and explain all fields of TCP segment header. Also state functions of each flag.	**07**
Q.8	**(a)**	Explain UDP protocol.	**03**
	(b)	Discuss TCP connection establishment with appropriate diagram.	**04**
	(c)	List various authentication mechanisms. Explain any one mechanism in detail.	**07**

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