GUJARAT TECHNOLOGICAL UNIVERSITY
MCA – SEMESTER IV - EXAMINATION –SUMMER-2021

Subject Code: 3640002   **Date: 04-08-2021**
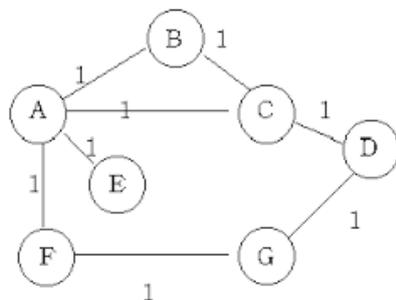**Subject Name: Basic Computer Science-3 (Computer Networking)**
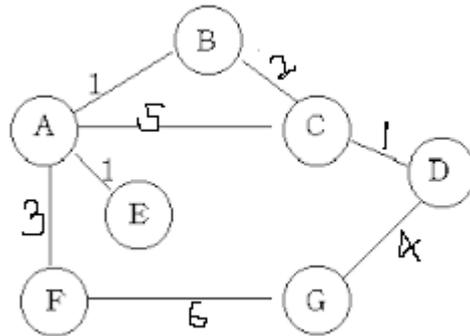**Time: 10:30 AM to 01:00 PM**   **Total Marks: 70**
Instructions:

    1. Attempt all questions.
    2. Make Suitable assumptions wherever necessary.
    3. Figures to the right indicate full marks.

Q.1	**(a)**	Answer the following questions:	**07**
	1.	Define Optimality Principle for routing.	
	2.	Define cumulative Acknowledgement.	
	3.	Differentiate Intra-cell and Inter-cell transmission.	
	4.	Write the meaning of Delayed Duplicates.	
	5.	Define Scatternet.	
	6.	Write main technical difference between Hub and Switch.	
	7.	What is a composite signal?	
	(b)	Answer the Following Questions:	
	1.	Give one advantage and disadvantage of layering	**02**
	2.	Write two main duties of Network Layer and Physical Layer.	**02**
	3.	Compare Data Link Layer with Transport Layer.	**03**

Q.2	**(a)**	How error handling is done at Data Link Layer? Explain any one Error Correcting Algorithm in detail. Take an example of a sender who wants to send a message 1011101, but there is an error during transmission and the 2nd bit changes to 1. How the receiver will correct the data?	**07**
	(b)	Assume that the given subnet is a wireless network where a node 'A' wants to communicate to node 'G'. How Routing will take place using Adhoc On-demand Distance Vector Algorithm? Show at least one route request packet entry.	**07**

OR

(b) Consider the following network and explain the distance vector routing algorithm with routing tables of each router. Discuss the route selected by node 'A' to send a packet to node 'G'. **07**

Q.3 **(a)** Write a short note on
  (i) Radio Waves. **04**
  (ii) ISM Bands **03**
(b) (i) Define Network and write applications of Computer Networks. **03**
(ii) What is the difference between Connection Oriented and Connectionless communication? **04**

OR

Q.3 **(a)** (i) Write a short note on Wireless Communication using Satellite **04**
(ii) Explain the role of Access Point in Wireless System **03**
(b) (i) Differentiate Half Duplex and Full Duplex Communication channel. **02**
(ii) Explain Working of Aloha and Slotted Aloha **05**

Q.4 **(a)** (i) Explain with example the Hidden Station and Exposed Station problems. **04**
(ii) Write three main differences between 802.11 and 802.16 **03**
(b) (i) What is Flooding? Compare it with Forwarding. **04**
(ii) Explain use of Sequence Number and Age fields in Link State Packets. **03**

OR

Q.4 **(a)** (i) When the Binary Exponential Back-off Algorithm is used? How it works? **04**
(ii) Explain CSMA/CD principle with different sensing variants. **03**
(b) What is Sliding Window Protocol? Compare sending and receiving window size for Selective Repeat and Go-Back-N protocols. Also compare the working of these protocols for bidirectional communication. **07**

Q.5 **(a)** What is DNS? How it Works? Explain advantages of Hierarchical Namespace. **07**
(b) (i) What is RTT? How it is calculated at Transport Layer? **04**
(ii) Explain TCP Sequence Number **03**

OR

Q.5 **(a)** Explain Persistent Connection with HTTP 1.1. **07**
Differentiate between Get and Post methods used with Http.
What is the difference between Cookies and Session Variables?
(b) Explain the Connection Establishment and Connection Release Process handled at Transport Layer. **07**

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