Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA INTEGRATED– SEMESTER IV- EXAMINATION –WINTER-2023

Subject Code:2648603 Date: 06/01/2024

Subject Name: Computer Networking

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. **Use of simple calculators and non-programmable scientific calculators are permitted.**

Q.1 **(a)** Do as directed **07**

1. One difference between Multicasting and Broadcasting
2. Full form of WAN and PAN
3. What is Bit Rate and Baud Rate
4. Differentiate between Half duplex and Full Duplex
5. Show the Amplitude and wavelength in an analog signal.
6. What is piggybacking?
7. Full form of CSMA/ CA and CSMA/ CD

(b) Answer the following questions in brief: **07**

1. Draw and explain the scenario delayed duplication and retransmission in stop-and-wait protocol for noisy channel. [4]
2. Consider a noiseless channel with a bandwidth of 3000 Hz transmitting a signal with two signal levels. What can be the maximum bit rate? [3]

Q.2 **(a)** What is framing? Why framing is required? Explain any one method with example. **07**

(b) Explain Non persistent, 1-persistent and P-persistent CSMA protocol. **07**

OR

(b) Explain hidden station and exposed station problem in wireless network in detail. **07**

Q.3 **(a)** Draw and explain IEEE 802.3 (Ethernet) frame structure. **07**

(b) Calculate CRC for the data 10101010 and the generator polynomial is $x^2 + x$ **07**

OR

Q.3 **(a)** What is hamming code? Calculate hamming code for the message 11010100. **07**

(b) Explain parity check mechanism with its advantages and limitations. Take suitable example for explanation. **07**

Q.4 **(a)** Draw the link state packet and state the significance of Age field in Link state packet. Also explain the flooding mechanism used in link state routing algorithm. **07**

(b) Explain distance vector routing algorithm. Give example and justify why the count-to-infinity problem occurs? **07**

OR

Q.4 **(a)** Explain how congestion is managed in virtual circuit and datagram subnet? **07**

(b) Explain working of Dijkstra's shortest path algorithm with example. **07**

Q.5	**(a)**	Explain SMTP with MIME type.	**07**
	(b)	What is three-way handshake? Explain how three-way handshake solves delayed duplicate problem.	**07**

OR

Q.5	**(a)**	Explain Domain Name System (DNS) with the importance of resource record. Explain any four resource records.	**07**
	(b)	What are the duties of transport layer? Compare those with that of data link layer.	**07**

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