Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA Integrated – SEMESTER V –EXAMINATION – SUMMER 2016

Subject Code:4450603 **Date:16/05/2016**

Subject Name: Fundamentals of Networking

Time: 10:30 TO 1:00 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)** Explain the following **07**

1. Which are the communication modes in 802.11 wireless networks?
2. Write one major difference between TCP and UDP.
3. Define Delayed Duplicate.
4. What is the need of Time-To-Live (TTL) in packets?
5. Give one advantage of Piggybacking.
6. Write full form of RED.
7. Write example of fully qualified domain name.

(b) Define the following terms **07**

1. Bandwidth
2. Harmonics
3. Home Network
4. Noise
5. Fin-2 wait timer
6. Cookies
7. Switching

Q.2 **(a)** Write any one major difference between **07**

1. PCF and DCF
2. GEO and LEO
3. 802.11 a and 802.11g
4. Classic and Fast Ethernet
5. Connection Oriented and Connection less forwarding
6. Fast recovery and fast retransmit
7. Persistent and non persistent connection

(b) Define a Computer Network. Explain categories of Computer Networks in detail. **07**

OR

(b) **07**

1. Define baud rate. If the Signal to Noise ratio is 3, for a 4Mb channel, what is the maximum data rate? [3]
2. What is a Hidden station problem? How RTS and CTS help to resolve this problem? [4]

Q.3 **(a)** **07**

1. Explain the Go-Back-N protocol. [4]
2. Calculate an even parity hamming code for the message 1110101 [3]

(b) Explain Distance Vector Routing algorithm with Count-To-Infinity problem **07**

OR

Q.3 **(a)** **07**

1. Explain Bit stuffing framing technique with example. [3]
2. Given Message is $M(X)= x^5 + x^4 + x + 1$ and Generator is $G(X)= x^3 + 1$ Compute CRC. [4]

(b) Explain Link State Routing algorithm. Explain the importance of Age field. **07**

Q.4	**(a)**	Why does Random Early Detection discard packets at random in network layer? Why it is needed?	**07**
	(b)	Explain 802.11 frame structure in detail.	**07**

OR

Q.4	**(a)**	Define seven different timers used for TCP implementation. Explain their purpose in brief.	**07**
	(b)	1. What are the two modes of 802.16? [2] 2. What are the service classes in 802.16? [5]	**07**
Q.5	**(a)**	What is DNS? What is the primary purpose of DNS? What are the desirable properties of DNS?	**07**
	(b)	Explain the problem of delayed duplicate in two-way handshake mechanism. Discuss Three-Way Handshake mechanism for connection establishment in TCP.	**07**

OR

Q.5	**(a)**	What is WWW? Give the structure of HTTP query and its response. Also give four examples of HTTP header. Explain persistent connection with HTTP 1.1.	**07**
	(b)	1. Write short note on VLAN [4] 2. Explain Hardware extension with respect to Gigabit Ethernet. [3]	**07**

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