Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER– IV• EXAMINATION – SUMMER 2016

Subject Code: 2640001 Date: 25-05-2016
Subject Name: Fundamentals of Networking (FON)
Time: 10.30a.m. To 01.00p.m. Total Marks: 70

Q.1 (a) Write any seven in one or two sentences **07**

1. Write one disadvantage of layering system
2. _____ layer provides first end to end connectivity from bottom
3. Multiple user interfaces are required at _____ layer
4. The network which connects other networks is known as _____
5. Write one advantage of home networks
6. Give one important difference between point to point and broadcast networks
7. The first wireless network was _____
8. Constellation patterns are important when _____ signaling is used
9. The frequency of the first harmonic is known as _____

(b) Write any seven in one or two sentences **07**

1. When the angle at the beginning of the signaling cycle is changed, it is known as _____ modulation
2. _____ is used in the beginning of the frame for synchronization
3. _____ required double baud rate than the bit rate
4. The fiber optic cable is based on _____ principle
5. What is bit stuffing?
6. What is the term to describe sending ack of a received frame with frame which is being sent?
7. The binary exponential back-off algorithm contains word exponential to indicate something. What is it?
8. When a laptop communicates directly to another laptop in a wireless way, it is called _____ mode
9. A compressed video requires _____ service in 802.16

Q.2 (a) Write any seven in one or two sentences **07**

1. Give an example of how one can aggregate multiple routing entries
2. Virtual circuit is an example of _____ forwarding mechanism
3. What is an optimality principle?
4. Why BGP is not vulnerable to count to infinity problem?
5. Explain the idea behind admission control algorithm for congestion control.
6. What is a tag in MPLS?
7. Explain how transport layer provides real time delivery of data?
8. Write one service that the Internet Transport layer is not providing but should provide.
9. Why constants for calculating RTT are in multiple of 2?

(b) Write any two **07**

1. What is the problem with delayed duplicates? Explain how that can be solved using RTC.
2. Explain how load balancing in the web servers is done using DNS resource records
3. Write and describe any four Bluetooth profiles.

OR

(b) Explain the complete process of browsing a website. Clearly show the role of each layer at the sender, receiver and each intermediary. **07**

Q.3 **(a)** Write any two **07**

1. Explain at least four reasons for home networking not yet becoming popular
2. Write four differences between broadcast and point to point networks
3. Explain the difference between a router and a switch as an interconnecting device

(b) Write any two **07**

1. Explain what a Fourier component is and how a square signal is transmitted over a line using multiple components.
2. A line is of 2 Mb is used for transmission with four signal levels. What is the maximum data rate of that channel?
3. Explain the statement, “multiplexing happens at each layer”.

OR

Q.3 **(a)** Answer (1) is compulsory, Write any one from (2) and (3), **07**

1. Explain how a character A with ASCII value 65 can be converted to an 11 bit value in hamming code mechanism for one bit error handling (4)
2. Change one bit and show how the receiver will correct that error (3)
3. Explain where error correction scores over error detection (3)

(b) Answer (1)is compulsory, Write any one from (2) and (3), **07**

1. Explain how division by a generator polynomial is done (4)
2. Show how error is caught using CRC based on padded data and division rules. (3)
3. Explain when one can use error detection. (3)

Q.4 **(a)** Write any two **07**

1. Explain how hidden station and exposed station problems are solved by RTS-CTS
2. With an example, explain why when the error rate is higher, hop by hop error checking is better.
3. Explain how duplicates frames at data link layer should be handled. Provide the reason for the same.

(b) Write any two **07**

1. Describe different channel access policies used by various MAC layers
2. Explain the need of four address fields in the 802.11 and show how those fields and two flags are used during the transmission.
3. What is a VLAN aware switch? How it is different from a normal switch?

OR

Q.4 **(a)** Write any two **07**

1. Explain the process of classless routing.
2. How NAT is used to provide more addresses than actual number of addresses?
3. Differentiate between DV and LS routing algorithms

(b) Write any two **07**

1. Explain how MPLS works. How it is different than VC?
2. Explain how round trip time is calculated in TCP. How timeout value is decided?
3. When the connection closing protocol used by TCP fails? Explain with example.

Q.5 **(a)** Write any two **07**

1. Explain what fast recovery is, with a suitable example.
2. Write at least two important differences between transport and data link layer
3. How TCP manages the issues of
    a. User not closing connections
    b. Ignoring delayed duplicates
    c. Inactive connections for a long period

(b) Write any two **07**

1. Explain how wireless communication using satellite is possible. Explain why LEO is better than GEO for data communication
2. What is the advantage of Selective Repeat over Go Back N? Give proper example to explain
3. How DCF and PCF mode can coexist in a single cell?

OR

Q.5 **(a)** Write any two **07**

1. What are the desired properties of DNS?
2. Explain the role of cookies in HTTP
3. Explain the Bluetooth frame structure and each field of it

(b) Write any two **07**

1. Explain how phase modulation can be used for data communication.
2. Write four applications of sensor networks
3. Explain how layering helps replacing a component.

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