Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

MCA - SEMESTER–IV • EXAMINATION – SUMMER 2015

Subject Code: 2640001 **Date:11/05/ 2015**

Subject Name: Fundamentals of Networking (FON)

Time:10:30 am - 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)** Write any seven in one or two sentences **07**

1) Name two layers not present in TCP/IP model and present in OSI
2) Routing is a job of which layer?
3) What is a network interface card?
4) The bridge operates at which layer?
5) What is a composite signal?
6) What is a noise?
7) What is an electromagnetic spectrum?
8) What is an access point?
9) What is a flag byte?

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

1) What is a time out event?
2) Write one important difference between selective repeat and go back n
3) What is a DCF mode in wireless communication?
4) Write any one improvement Ethernet provided over ALOHA and SLOTTED ALOHA
5) What is forwarding?
6) What is the job of a routing algorithm?
7) What is ordered delivery at transport layer?
8) What is a delayed duplicate?
9) What is the job of DNS?

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

1) What is a persistent connection in HTTP?
2) What is the role of a cookie in HTTP?
3) What is the full form of RED?
4) What is an admission control?
5) What is collision avoidance?
6) What is the role of redundant bits in error handling?
7) What is the difference between 802.16d and 802.16e?
8) Represent 1010 using amplitude modulation
9) Write one disadvantage of layering mechanism

(b) Write any two **07**

1) Give at least 4 important differences between broadcast and point to point networks
2) Give at least 4 important differences between analog and digital signaling
3) For a noiseless channel, if the media bandwidth is 2Mb and 4 levels are used, what is the MDR of a channel?

OR

(b) Write any two **07**

1) Explain how phase modulation is performed using an example
2) Explain why standardization of services is useful.
3) Write all three types of errors and explain each one.

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

1) Explain how preamble helps in synchronization
2) Write any four important differences between radio and microwave transmissions
3) Explain what a hidden station problem is.

(b) Write any two **07**

1) Explain how RTS-CTS exchange help solve exposed station problem
2) Explain in brief how OFDMA works
3) Explain why satellite communication for data prefers LEO over GEO

OR

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

1) What is a no monopoly idea? How framing helps?
2) How hamming code can be used to correct burst errors? Explain with example.
3) Why selective repeat requires exclusive sequence numbers in alternate cycles?

(b) Write any two **07**

1) Explain why a polynomial with x+1 as a factor never divide a polynomial with odd number of elements?
2) Differentiate between correction and detection process for errors.
3) Why TCP has chosen the sequence number which indicates a byte number offset of the payload from the beginning of the stream?

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

1) Explain why star topology is preferred in Ethernet.
2) Explain how binary exponential back off algorithm works.
1) Explain how PCF and DCF modes operate together in WiFi

(b) Write any two **07**

1) What are dual speed cards? (1), how auto negotiation helped Ethernet grow? (2.5)
2) Write all four service classes the 802.16 supports with suitable example
3) Give any four fields of 802.11 frame and explain their usage.

OR

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

1) Explain how multiple routing entries are aggregated at network layer with an example
2) How autonomy of routers help in case of router or a line failure? Give an appropriate example.
3) Give an example to explain how Distance Vector routing works

(b) Write any two **07**

1) What is the usefulness of sequence number and age fields in case of link state algorithm? (2) what are the refinements provided in LS (1.5)
2) Why routing in MaNet is harder than other networks? Explain.
3) Why MPLS is popular today? Give reasons.

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

1) Write any three duties of transport layer and explain.
2) How RTT is estimated in TCP?
3) Give names of at least 3 timers used by transport layer

(b) Write any two **07**

1) Explain why three way handshake is needed in TCP for connection establishment
2) Depict the connection close case which runs into trouble.
3) Explain what fast recovery is, by suitable example.

OR

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

1) Give at least three advantages of hierarchy used in DNS.
2) Name at least four different types of resource records used in DNS and explain their usage.
3) Explain the need for dynamic DNS using an example

(b) Write any two **07**

1) How HTTP works using query and response? Give an example.
2) How session variables are used in HTTP? Give an example.
3) Explain what a conditional download is.

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