

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.
