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Total No. of Pages : 02

Total No. of Questions : 08

M.Tech.(Emb. Sys) (2016 & Onwards) (Sem.-1)**DATA COMMUNICATION NETWORKS****Subject Code : MTED-103****Paper ID : [74132]****Time : 3 Hrs.****Max. Marks : 100****INSTRUCTION TO CANDIDATES :**

1. Attempt any FIVE questions out of EIGHT questions.
2. Each question carries TWENTY marks.

Q1. (a) Group the OSI layers by function. What is peer to peer process?

(b) Explain WLAN and LAN network topologies in detail.

Q2. (a) Explain the meaning of the following terms relating to the CSMA/CD medium access control method :

- a. Broadcast mode
- b. Collision and Carrier sense

(b) Answer the following questions:-

- a. What is the polynomial representation of 101110?
- b. What is the result of shifting 101110 three bits to the left?
- c. Repeat part b using polynomials.
- d. What is the result of shifting 101110 four bits to the right?
- e. Repeat part d using polynomials.

Q3. (a) Compare and contrast byte-oriented and bit-oriented protocols. Which category has been popular in the past (explain the reason)? Which category is popular now (explain the reason)?

(b) Design a bidirectional algorithm for the Go-Back-N ARQ Protocol using piggy-backing. Note that both parties need to use the same algorithm.

- Q4. (a) In a CDMA/CD network with a data rate of 10 Mbps, the minimum frame size is found to be 512 bits for the correct operation of the collision detection process. What should be the minimum frame size if we increase the data rate to 100 Mbps? To 1 Gbps? To 10 Gbps?
- (b) Compare and contrast CSMA/CD with CSMA/CA.
- Q5. (a) What is the difference between a forwarding port and a blocking port?
- (b) A bridge uses a filtering table; a router uses a routing table. Can you explain the difference?
- (c) Which one has more overhead, a bridge, repeater, Gateway or a router? Explain your answer.
- Q6. (a) Briefly define subnetting and supemetting. How do the subnet mask and supemet mask differ from a default mask in classful addressing?
- (b) Change the following IP addresses from dotted-decimal notation to binary notation.
- 114.34.2.8
 - 129.14.6.8
 - 208.34.54.12
 - 238.34.2.1
- (c) An IPv4 datagram arrives with fragmentation offset of 0 and an M bit (more fragment bit) of 0. Is this a first fragment, middle fragment, or last fragment?
- Q7. (a) Compare the TCP header and the UDP header. List the fields in the TCP header that are missing from UDP header. Give the reason for their absence.
- (b) A client uses UDP to send data to a server. The data are 16 bytes. Calculate the efficiency of this transmission at the UDP level (ratio of useful bytes to total bytes).
- Q8. Explain why FTP does not have a message format. What do you think would happen if the control connection were accidentally severed during an FTP transfer?
- (a) How is HTTP similar to SMTP?
- (b) Show the effect of the following HTML segment.
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