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317101

December, 2019
M.Tech. (CSE/CN) - I SEMESTER
Data Communication & Networks (MCN-18-101)

Time : 3 Hours]   [Max. Marks : 75

Instructions :

1. *It is compulsory to answer all the questions (1.5 marks each) of Part-A in short.*
2. *Answer any four questions from Part-B in detail.*
3. *Different sub-parts of a question are to be attempted adjacent to each other.*

PART - A

1. (a) Explain Master-Slave model for communication.

    (CO2) (1.5)

    (b) What are the types of guided transmission media?

    (CO1) (1.5)

    (c) Distinguish between baseband transmission and broadband transmission.   (CO2) (1.5)

    (d) Define Wavelength Division Multiplexing. (CO1) (1.5)

(e) Television channels are 6 MHz wide. How many bits/sec can be sent if four level digital signals are used? (CO3) (1.5)

(f) What services does data link layer provide to the Network layer? (CO3) (1.5)

(g) What is piggybacking? (CO2) (1.5)

(h) What is principle of optimality? (CO6) (1.5)

(i) What is Digital Signature? (CO3) (1.5)

(j) What do you mean by DDNS? (CO2) (1.5)

PART - B

2. (a) How Go-back-N ARQ performs the flow control? Derive the size of window at sender's and receiver's side. (CO4) (8)

(b) Consider an error free 128-kbps satellite channel used to send 1024-byte data frames in one direction and very short acknowledgements coming back the other way. What is the maximum throughput for window sizes of 1, 7, 15, and 127? Assume propagation delay = 270 ms. (CO5) (7)

3. (a) What is ALOHA protocol? Describe and compare Pure ALOHA and Slotted ALOHA protocols.

(CO2) (8)

(b) Explain the frame format of 802.4 standards. Explain how logical ring is maintained? What happens if a station accepts the token and crashes immediately?

(CO5) (7)

4. (a) What do you mean by forward error correction? Describe HDLC Frame format in detail. (CO4) (8)

(b) For a 4 Mbps Token ring LAN with propagation speed of 200 meter/μ sec, determine :

(i) What should be the minimum length of the ring?

(ii) What is the additional length gained by adding one station at a time? (CO3) (7)

5. (a) What are the main advantages and disadvantages of dynamic routing? Discuss the Distance Vector Routing. Compute the contents of each router's routing table for the following network : (CO6) (12)
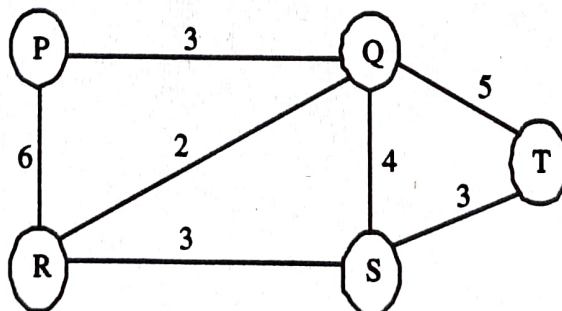
(b) What is count to infinity problem? Give remedies for it with examples. (CO6) (3)

6. (a) What is congestion? How does it affect the performance of the network? Explain congestion control by "Leakey Bucket" method. (CO5) (8)

(b) Compare the TCP header and the UDP header. List the fields in the TCP header that are missing from UPD header. Give the reason for their absence. (CO3) (7)

7. Write short notes on the following:

(i) VoIP.

(ii) SMTP.

(iii) Symmetric-key v/s Asymmetric-key cryptography. (CO2) (3×5=15)

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