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10EC/TE71

Seventh Semester B.E. Degree Examination, Aug./Sept. 2020

Computer Communication Networks

Time: 3 hrs. Max. Marks:100

Note: ***1. Answer FIVE full questions, selecting atleast TWO questions from each part.***
2. Use of Handbooks /Charts/ Tables permitted.

PART – A

1 a. Discuss the responsibilities of the transport and physical layers with diagrams. **(08 Marks)**
b. With a neat diagram, explain the TCP/IP protocol suite in detail. **(07 Marks)**
c. Discuss the cable TV for data transfer. **(05 Marks)**

2 a. Explain the design, sliding window, window size of Go – Back – N ARQ protocol with relevant diagrams. **(10 Marks)**
b. In a stop – and – wait ARQ system, the band width of the line is 1 Mbps, 1 bit takes 20 ms to make a round trip.
i) What is the BW – delay product?
ii) What is the link utilization percentage if the number of frames are 1000?
iii) What is the link unitization percentage if the system can send 15 frames of 1000 bits long? **(03 Marks)**
c. Discuss the frame formats of three frames and explain the control field for S – frame. **(07 Marks)**

3 a. A pure ALOHA network transmit 200 bit frames on a shared channel of 200 Kbps. What is the throughput if the system produces?
i) 1000 frames/sec
ii) 500 frames/sec
iii) 250 frames/sec

Repeat the three cases for slotted ALOHA network. **(07 Marks)**
b. Explain the operation of CSMA/CD with its flow diagram, energy level, throughput. **(09 Marks)**
c. Explain the polling mechanism with its diagram. **(04 Marks)**

4 a. Discuss the goals and common implementations of fast Ethernet. **(07 Marks)**
b. Explain the frame format of 802.3 MAC frame. **(05 Marks)**
c. With a proper diagrams explain the hidden and exposed station problems and their effects. **(08 Marks)**

PART – B

5 a. Explain the following :

i) Bus back bone
ii) Star back bone
iii) Connecting remote LANs. **(06 Marks)**

b. What is a transparent bridge? Discuss the criteria to have a transparent bridge with relevant diagrams. **(10 Marks)**

c. Create a system of three LANs with four bridges. The bridges (B1 to B4) connect the LANs as follows :

i) B1 connects LAN1 and LAN 2
ii) B2 connects LAN1 and LAN 3
iii) B3 connects LAN2 and LAN3
iv) B4 connects LAN1, LAN2 and LAN3 choose B1 as the root bridge. Show the network, graph, spanning tree and blocking ports after applying spanning tree procedure. **(04 Marks)**

6 a. Discuss the datagram format of IPv4. **(07 Marks)**

b. Explain the transition strategies to move from IPv4 to IPv6. **(06 Marks)**

c. An ISP is granted a block of addresses starting with 150·80·0·0/16. The ISP needs to distribute these addresses to 3 groups of customers as follows :

i) The 1st group has 200 customers ; each needs 128 addresses
ii) The 2nd group has 400 customers ; each needs 16 addresses
iii) The 3rd group has 2000 customers ; each needs 04 addresses.

Design the sub blocks and find out how many addresses are still available after these allocations. **(07 Marks)**

7 a. Explain the types of routing table. Discuss the common fields in a routing table with its format. **(06 Marks)**

b. With relevant diagrams explain the concept of link state routing and 4 sets of actions to build a routing table. **(14 Marks)**

8 a. Explain the mechanism of client/server paradigm to achieve process-to-process communication. **(08 Marks)**

b. Discuss the name-address resolution. **(07 Marks)**

c. Discuss the data transfer of TCP connection. **(05 Marks)**

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