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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/secRepeat 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)

Important Note : 1. On completing your answers, compulsorily draw diagonal cross lines on the remaining blank pages.
2. Any revealing of identification, appeal to evaluator and /or equations written eg. 42+8 = 50, will be treated as malpractice.

PART - B

- 5 a. Explain the following :
- Bus back bone
 - Star back bone
 - 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 :
- B1 connects LAN1 and LAN 2
 - B2 connects LAN1 and LAN 3
 - B3 connects LAN2 and LAN3
 - 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 :
- The 1st group has 200 customers ; each needs 128 addresses
 - The 2nd group has 400 customers ; each needs 16 addresses
 - 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)
