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15EC64

Sixth Semester B.E. Degree Examination, Dec.2019/Jan.2020
Computer Communication Networks

Time: 3 hrs.

Max. Marks: 80

Note: Answer any FIVE full questions, choosing ONE full question from each module.

Module-1

1 a. Mention the layers of TCP/IP protocol suite and explain briefly about layers and protocols in each layer. **(10 Marks)**
   b. Define bit stuffing. Perform bit stuffing for given data 000111111001111101000 assume flag as 01111110. **(06 Marks)**

OR

2 a. Explain stop and wait protocol. **(08 Marks)**
   b. (i) Define byte stuffing. **(02 Marks)**
      (ii) Perform byte stuffing for frame payload in which E is the Escape byte, F is the Flag byte, and D is the data byte other than an Escape or a Flag Character.

D	E	D	D	E	D	D	E	F	D	F	D

   (06 Marks)

Module-2

3 a. Explain 1-persistent, non-persistent and p-persistent methods of (CSMA) Carrier Sense Multiple Access. **(06 Marks)**
   b. Explain the Ethernet frame format of standard Ethernet. **(06 Marks)**
   c. In a standard Ethernet with the transmission rate of 10 Mbps, length of the medium is 2500 meters and size of the frame is 512 bits. The propagation speed of the signal in the cable is normally 2×10^8 mts/sec. Find :
      (i)   Propagation delay
      (ii) Transmission delay
      (iii) Number of frames that can fit in the medium
   (iv) Efficiency **(04 Marks)**

OR

4 a. Explain working of (CSMA/CD) carrier sense multiple access/collision detection. **(08 Marks)**
   b. Discuss polling as a controlled access technique. **(04 Marks)**
   c. A slotted ALOHA network transmits 200 bit frames using a shared channel with a 200 Kbps bandwidth. Find the throughput if the system (all stations together) produce.
      (i)   1000 frames/sec
      (ii) 500 frames/sec
      (iii) 250 frames/sec **(04 Marks)**

Module-3

5 a. What are the characteristics of wireless LAN? **(05 Marks)**
   b. Write a note on Piconet and Scatternet in Bluetooth. **(05 Marks)**
   c. Explain the characteristics of Virtual Local Area Network (VLAN) used to group stations. **(06 Marks)**

OR

6   a.   Explain the following interconnecting devices:
         (i)   Hub
         (ii) Link layer switch
         (iii) Router   **(06 Marks)**

    b.   What is NAT? Explain how NAT helps in Address depletion (Network Address Translation).   **(05 Marks)**

    c.   Find the spanning tree and logical connection between the switch.
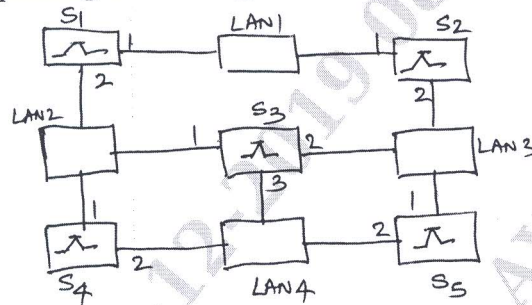
Fig.Q6(c)

S_1, S_2, S_3, S_4, S_5 are switches
(05 Marks)

Module-4

7   a.   Explain IPV4 datagram format.   **(08 Marks)**
    b.   Explain three phases of remote host and mobile host communication. **(08 Marks)**

OR

8   a.   Explain least cost tree using shared link state data base with suitable example.   **(10 Marks)**
    b.   With a neat diagram, explain general format of ICMP messages.   **(06 Marks)**

Module-5

9   a.   With a neat diagram, explain connection establishment, data transfer and connection termination in Transmission Control Protocol (TCP).   **(10 Marks)**

    b.   The following is the content of UDP (User Datagram Protocol) header in hexadecimal format CB84000D001C001C. Find:
         i)   What is the source port number?
         ii) What is the Destination port number?
         iii) What is the total length of the user datagram?
         iv) What is the length of the data?
         v)   Is the packet directed from a client to a server or vice versa?   **(06 Marks)**

OR

10 a.   Briefly explain TCP segment format.   **(10 Marks)**
    b.   Explain different field in user datagram packet format with a neat diagram.   **(06 Marks)**

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