USN

10EC/TE71

Seventh Semester B.E. Degree Examination, Dec.2017/Jan.2018

Computer Communication Networks

Time: 3 hrs.   Max. Marks:100

Note: *Answer any FIVE full questions, selecting*
at least TWO questions from each part.

PART – A

1 a. Describe the ISO-OSI reference model of a computer network. Discuss the function of each layer.   **(10 Marks)**
   b. Match the following to one or more layers in OSI model:
       (i)   Route determination
       (ii)   Flow control
       (iii) Interface to transmission media
       (iv) Provides access for end user
       (v)   Format and code conversion services   **(05 Marks)**
   c. With necessary diagram, explain the DMT used in ADSL.   **(05 Marks)**

2 a. Explain with suitable examples:
       (i) Byte stuffing and unstuffing
       (ii) Bit stuffing and unstuffing.   **(10 Marks)**
   b. In a stop and wait ARQ system, the bandwidth of line is 1 Mbps and it takes 20 ms to make a round trip. What is the bandwidth delay product? If the system data frames are of 1000 bit length, what is the utilization percentage of link? What is the channel utilization percentage of link if the protocol that can send upto 15 K frames before stopping and worrying about acknowledgement?   **(05 Marks)**
   c. Explain the I-Frame and V-Frame in HDLC protocol.   **(05 Marks)**

3 a. Compare pure ALOHA with slotted ALOHA. What are the reasons for poor channel utilization in ALOHA systems? How the same is approved in CSMA?   **(08 Marks)**
   b. Mention the different types controlled access protocols used in multiple access protocols. Explain each briefly.   **(08 Marks)**
   c. Prove that a receiving station can get the data sent by a specific sender if it multiplies the entire data on the channel by the sender's chip code and then divided by its number of stations. (Assume N = 4).   **(04 Marks)**

4 a. Explain the four different types of Ethernet format briefly.   **(10 Marks)**
   b. With neat diagram of Bluetooth layer. Explain the three types of frames in base band layers.   **(10 Marks)**

PART – B

5 a. List the five different categories of connecting devices operating at different layers. Explain briefly.   **(10 Marks)**
   b. (i) What is the basis for membership in a VLAN?
       (ii) How are the station configured into different VLAN's?   **(10 Marks)**

6 a. Find the range of Address in the following blocks:
   (i) 123.56.77.32/29
   (ii) 200.17.21.128/27
   (iii) 17.34.16.0/23
   (iv) 180.34.64.64/30 **(10 Marks)**
   b. Explain the IPV4 datagram format. **(10 Marks)**

7 a. Explain the Dijkstra algorithm for the given network [Fig.Q7(a)]:
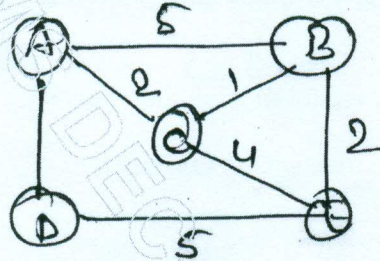

Fig.Q7(a) **(10 Marks)**
   b. Explain the different techniques used to forward packet from source to destinations. **(10 Marks)**

8 a. How does recursion resolution differ from iterative resolution? **(05 Marks)**
   b. Write short notes on:
   (i) User Datagram Packet Format (UDP)
   (ii) Features of TCP **(10 Marks)**
   c. Suppose a TCP connection is transferring a file of 5000 bytes, the first byte is numbered 10,001. What are the sequence number of each segment, if data are sent in five segments each carrying 1000 bytes? **(05 Marks)**

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