

**COMPUTER COMMUNICATION NETWORKS**

Time: 3 hrs

Max. Marks:100

**PART-A**

- 1 a. Explain OSI model, with a neat block diagram. Consider a source, destination machine and some intermediate nodes for discussion.(10M)  
b. How addresses employed (used) in internet employing TCP/IP protocol can be classified?(2M)  
c. What is DSL technology? List the different DSLs available. Discuss salient features of ADSL. (8M)
- 2 a. What is framing? How frames can be classified? Explain bit stuffing with the help of an example.(6M)  
b. What is the meaning of datalink control? Explain stop-and-wait ARQ, using a suitable block diagram.(10M)  
c. In a stop-and wait ARQ system the bandwidth of the line is 1Mbps and 1 bit takes 20 ms to make a round trip. What is the bandwidth delay product? If the system data frames are 1000 bit in lengths, what is the percentage utilization of the link? (4M)
- 3 a. A slotted ALOHA network transmits 200 bit frames using a shared channel with 200 kbps bandwidth. Find the throughput if the system produces 500 frames/sec. (3M)  
b. A network using CSMA/CD has a bandwidth of 10 Mbps. If the maximum Propagation time is 25.6μsec, what is the minimum size of the frame? (3M)  
c. Explain token passing method of controlled access of the channel.(6M)  
d. What is channelization in the context of multiple access? What are the various available channelization techniques? List the properties of orthogonal sequences used in CDMA. (8M)
- 4 a. Explain 802.3 MAC frame format.(6M)  
b. An ethernet MAC sublayer receives 38 bytes of data from upper layer. How many bytes of padding must be added to the data? (2M)  
c. Explain two different kinds of services as define in IEEE 802.11 (6M)  
d. What is fast Ethernet? Explain autonegotiation. What are the purposes of using this feature in design of fast Ethernet.(6M)

**PART-B**

- 5 a. What are the five different categories of connecting device, based on the layer at which they operate in a network? Explain each of them. (10M)  
b. Differentiate between a bus backbone network and star backbone network. (6M)  
c. Explain the concept of VLAN, in brief. (4M)
- 6 a. What is the need of transition from IPV4 to IPV6? What are the strategies devised by IETF to help the transition? (12M)  
b. Find the error, if any, in the following IPV4 addresses:  
1) 75.45.301.14 2) 221.34.7.8.20 (2M)  
c. What is classless addressing in IPV4? What is a mask? Explain. (6M)
- 7 a. Explain Dijkstra algorithm. Apply the same to node 'A' of the graph shown in Fig.7[a] and prepare routing table for node A.

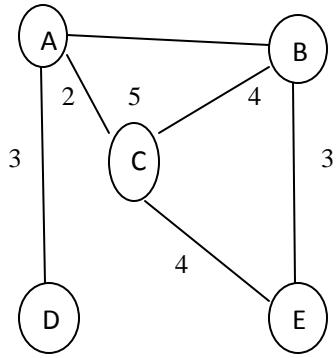


Fig. 7[a] Topology of network

- b. What is tunneling in case of multicast routing? Explain multicast backbone of routers using concept of tunneling? (6M)
  - c. Write in brief, any four applications of multicasting. (8M)
- 8 Write short notes on any two of the following:
- a. UDP
  - b. TCP segment format
  - c. IPV4 datagram format. (20 M)

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