

AU – 2867

Seventh Semester B. E. (Electronics and Tele. Engineering) Examination

DATA COMMUNICATION NETWORK

Paper – 7 XT 01

(USC – 10627)

P. Pages : 3

Time : Three Hours]

[Max. Marks : 80

- Note :** (1) Due credit will be given to neatness and adequate dimensions.
(2) Assume suitable data wherever necessary.
(3) Diagrams and Chemical equations should be given wherever necessary.
(4) Illustrate your answer wherever necessary with the help of neat sketches.
(5) Use pen of Blue Black ink/refill only for writing the answer book.

1. (a) Classify the communication networks based on topologies and state comparative points among them with architecture. How many connecting links required to connect 21 nodes with mesh topology 7
- (b) Draw the layer architecture of OSI reference model. How it different than TCP/IP reference model ? Also state the major duties performed by each layer. 7

OR

2. (a) What do you mean by communication network ? Classify the communication networks based on geographical scale. Discuss any two in detail. 7
 - (b) Distinguish between the OSI reference model and TCP/IP reference model with the help of protocol layer architecture. How many protocols contains in a network layer of TCP/IP protocol suit ? 7
3. (a) Explain with diagram SDV, PDU and SAP. Also describe the services offered by network supporting layers i.e. physical, data link and network layer. 6
 - (b) What is the need to have flow control procedure in networking ? What is error control ? Discuss the stop and wait flow control protocol with the help of flow diagram. 7

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OR

4. (a) Give the frame format of HDLC's I frame and S frame and explain role of major fields of them. 6
- (b) Obtain the Sender's and Receiver's window to elaborate normal operation with accumulative acknowledgement Ack 3 and next Ack 6 of sliding window, flow control with considering both window size of 2^k-1 where $k = 3$, K is the 3 bit field used to assign sequence numbers to the data frame and Ack frames, 7
5. (a) What is difference between the Persistent CSMA and Non persistent CSMA ? Also describe the persistent CSMA and Non persistent CSMA, CSMA/CD with the help of performance curve. 7
- (b) Prove that $S = G e^{-2G}$ where S = throughput and G is offered load. Also prove that the maximum throughput $G = 0.5$ in continuous ALOHA system. 6

OR

6. (a) Show that $\rho_{\max} = 36.4\%$ for slotted ALOHA and calculate the throughput if the offered load is 0.5 to 1.5 insteps of 0.2 and obtain the performance curve. 7
- (b) Classify in detail CSMA techniques and then explain P persistent CSMA with the help of flow chart. 6
7. (a) Describe the following networking devices with their place of operation. Also give few comparison points among them :
(i) Repeaters and Hubs.
(ii) Bridges and switches.
(iii) Routers.
(iv) Application and Transport gateways. 7
- (b) Explain centralised and distributed routing. 6

OR

8. (a) Classify the Routing algorithm and then describe the following shortest path routing algorithm, Flooding routing algorithm and distance vector routing algorithm. 7
- (b) Explain Dijkstra's Routing algorithm with examples. 6
9. (a) What is ATM ? What is ATM cell ? What is the difference between Ethernet frame and ATM Cell ? Describe the ATM reference model. 7
- (b) Describe IEEE802.4 a token Bus. 6

OR

10. (a) What are the advantages of ISDN and BISDN ? How they are different than other Network ? 7
- (b) Compare frame relay and x.25. 6
11. (a) Obtain the flow chart for identification of IP address if it is given in binary form and dotted decimal form. 7
- (b) Why the IP needs help of other protocols like ARP, RARP, OSPF, ICMP, etc. Also explain the role of ARP and RARS. 7

OR

12. (a) What do you mean by IP Datagram and IP datagram forwarding ? Also explain IPv4 Header format. 7
- (b) What kind of services provided by TCP and UDP ? In which layer of TCP/IP reference model they operates ? Why TCP refers as reliable transmission protocol ? 7

