Program: B. Tech.   **Branch: CSE,ECE, CM andICSE**   **Semester: VI**

Subject: Computer Networks(CS 2202)

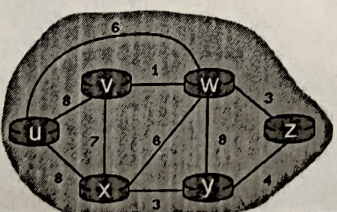**Date: 16.04.2025**   **Time: 10.00-11.30AM**

Time Duration: 1.5 Hours   **Max. Marks: 50**

Note: All questions are compulsory.

All sub-questions of a question must be written at one contiguous place.

Q.No	Questions	Marks	CO	BL	PI
1	Answer the following questions briefly: (a) A network on the Internet has a subnet mask of 255.255.240.0. What is the masking size and maximum number of hosts that it can accommodate? (b)Explain the count-to-infinity problem in the Distance Vector Routing Protocol (c) Convert the IP address whose hexadecimal representation is C22F1582 to dotted decimal notation. (d) Explain the functionality of ICMP. (e)List the services offered by the Network Layer.	5*2=10	3 ,4	L1, L2, L4	
2(a)	Consider a network scenario where multiple stations are contending for access to a shared communication medium in a LAN. Applying the principles of 1-persistent, non-persistent, and p-persistent CSMA as a medium access strategy, explain the working method of various stations using suitable diagrams in all these three cases.	6	2	L2	
2(b)	Expalin the bluetooth architecture.	4	3	L2	
3(a)	Construct the Link Sate packets for the graph diagram in 3(b)	3	3	L6	
3(b)	Give Dijkstra's algorithm, and find the least cost path from source node u to all other destinations. Show your work in tabular format 	3	3	L2	
3(c)	Explain briefly Pure and Slotted Aloha? Compare their performance trade-offs.	4	2	L2	

Question			
4(a) An IP datagram of size 1000 bytes arrives at a router. The router has to forward this packet on link whose MTU (maximum transmission unit) is 100 bytes. Assume that the size of the IP header is 20 bytes. Compute the number of fragments that the IP datagram will be divided into for transimission.	3	3	L5
4(b) How does NAT work(Answer in maximum in 4 sentences with a neat diagram)? Give two problems with NAT.	4	3	L1
4(c) Describe tunneling in IPv6 with an example	3	3	L2
5(a) Compare and contrast Wi-Fi and Wi-Max	3	3	L6
5(b) The B router uses the following routing table: **Destination Subnet Mask Interface** 192.168.0.0 255.255.0.0 a 192.168.10.0 255.255.255.0 b 192.168.10.128 255.255.255.128 c 192.168.10.144 255.255.255.240 d A packet with the destination address 192.168.10.158 arrives at the router. On which interface will it be forwarded? Justify the answer	3	3	L1
5(c) Draw the structure of IPv4 header format and explain the significance of the fields in it.	4	3	L2