



RV COLLEGE OF ENGINEERING®
Department of Computer Science and Engineering
CIE-II : Question Paper (OPEN BOOK/OPEN WEB)

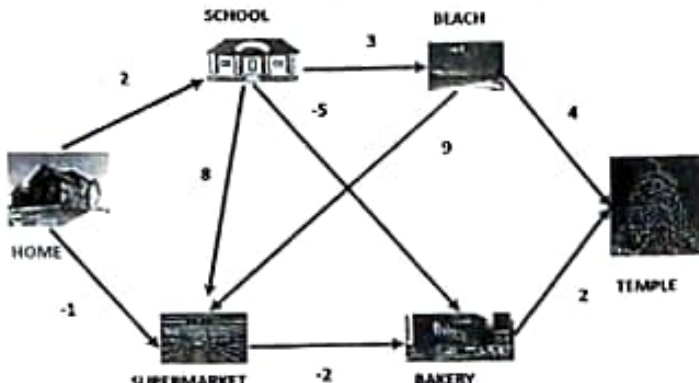
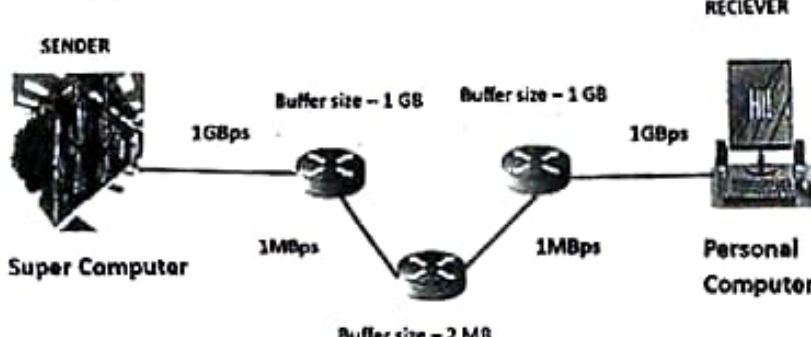
Course : (Code)	COMPUTER NETWORKS (CY245AT))	Semester : IV
Date : May 2025	Duration : 120 minutes	Staff : CSE/ISE/AI-ML
Name :	USN :	Section : CSE/ISE/AI-ML

Answer all questions

PART A

Sl.no	Questions	Marks	L1-L6	CO
1.	Calculate the number of packets generated due to flooding in the network given in Part B question No 1. To route the packets from Home to all other locations, calculate the number of packets generated at every place and total number of packets generated in the network.	2	3	3
2	Draw a multicast spanning tree which transmits packets from node A to Group 1, 2 and 3 simultaneously to all 3 groups (tree common to reach all 3 groups). GROUP1 nodes: A, E, C, H. GROUP2 nodes: A, B, E. GROUP3 nodes: C,G,J	2	3	3
3.	Draw Reverse path forwarding tree for diagram given in PART B Question No.1 for a path from home to BEACH via BAKERY (from home visiting bakery to reach BEACH) assuming all are POSITIVE edges.	2	4	5
4.	Draw 2 unique sink trees for node E for diagram given below: 	2	3	3
5.	Write all possible unique paths in spanning trees from B to E covering all the nodes for graph given in PART A Question No 4.	2	4	4

Part B

Sl. no	Questions	Marks	L1-L6	CO
1	<p>Apply a suitable routing algorithm and find the shortest path from Home to all the other locations. Draw the adjacency matrix for the given network model.</p> 	10	3	2
2	 <p>Observe the diagram of datagram subnet above and answer the following</p> <ol style="list-style-type: none"> Identify the all-probable reasons for congestion in a network topology Identify the necessity for flow control List all the possible solutions to control the congestion and justify how the particular solution solve the problem 	10	3	3
3	<p>For the network diagram given in PART A Question No. 4, populate the routing table entries for all the nodes using Distance vector routing and answer the following scenarios:</p> <ol style="list-style-type: none"> The initial routing table entries for the given graph in PART A Question No 4. Show the routing table entries after good news that, there is an edge with distance value 1 from C to D. Show the routing table entries after the edge from D to E crashes and leads to a count-to-infinity problem. 	10	3	5

4.a	<p>Write hierarchical routing table for one of the routers in subnet 13.0.0.0. Assume IP addresses and hop count as the metric.</p>	4	3	4
4.b	<p>In your perspective, identify any 2 most important/significant metrics needs to be monitored which plays an important role to identify congestion and to have control over the congestion in the datagram subnet and justify why the suggested metric plays a significant role for the following scenarios:</p> <ol style="list-style-type: none"> At any moment in the network, there is less memory available for queuing packets in a very long queue in router. At any moment in a network the one of the routers in a heavily loaded path crashes. 	6	4	1
5.a	<p>Justify that, for the network diagram given in Question 5 b) Figure 2, for the path from Server to User E, hop-by-hop Choke packets take action against congestion more quickly than the Choke packet.</p>	4	4	1
5.b	<p>Observe the network and Identify one of the best suitable and efficient routing methods (Choose among these: Broadcasting, Flooding, Link state routing and Multicasting) for each of the three networks shown in Figures. Also explain how it works and justify why it is suitable for the relevant network?</p> <p>Figure 1.</p> <p>Figure 2.</p>	6	4	1

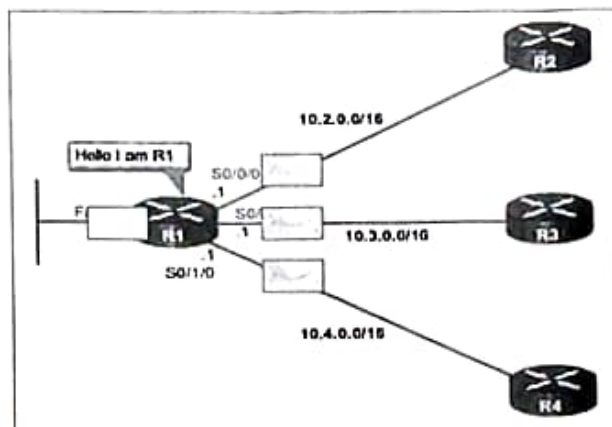


Figure 3. a

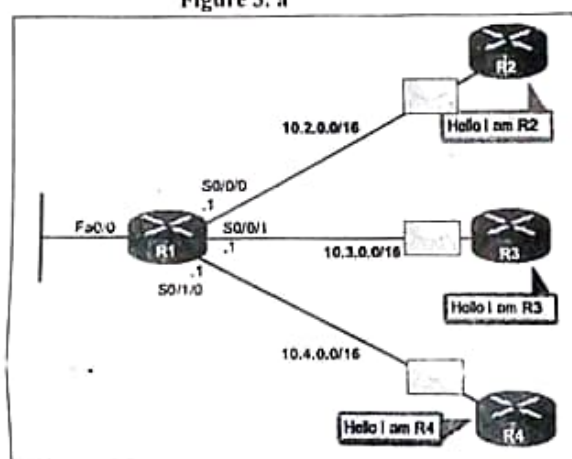


Figure 3. b

Course Outcomes

CO1:	Apply the algorithms/techniques of routing and congestion control to solve problems related to Computer Networks.
CO2:	Analyze the services provided by various layers of TCP/IP model to build effective solutions.
CO3	Design sustainable networking solutions with societal and environmental concerns by engaging in lifelong learning for emerging technology.
CO4	Exhibit network configuration, protocol usage and performance evaluation in networks.
CO5	Demonstrate the solutions using various algorithms/protocols available to address networking issues using modern tools by exhibiting teamwork and effective communication.

	L1	L2	L3	L4	L5	L6	CO1	CO2	CO3	CO4	CO5
Marks	-	-	40	20	-	-	12	10	16	6	16