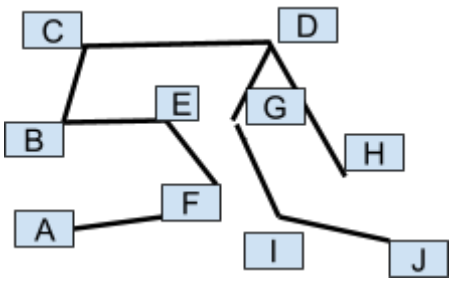
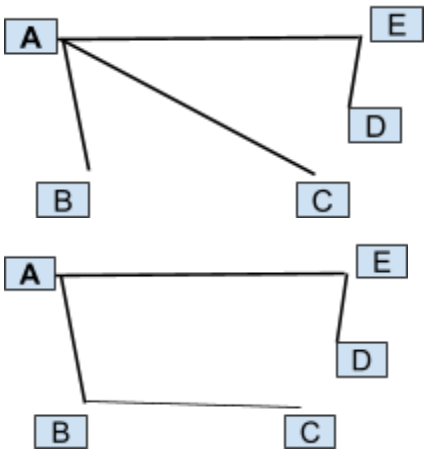
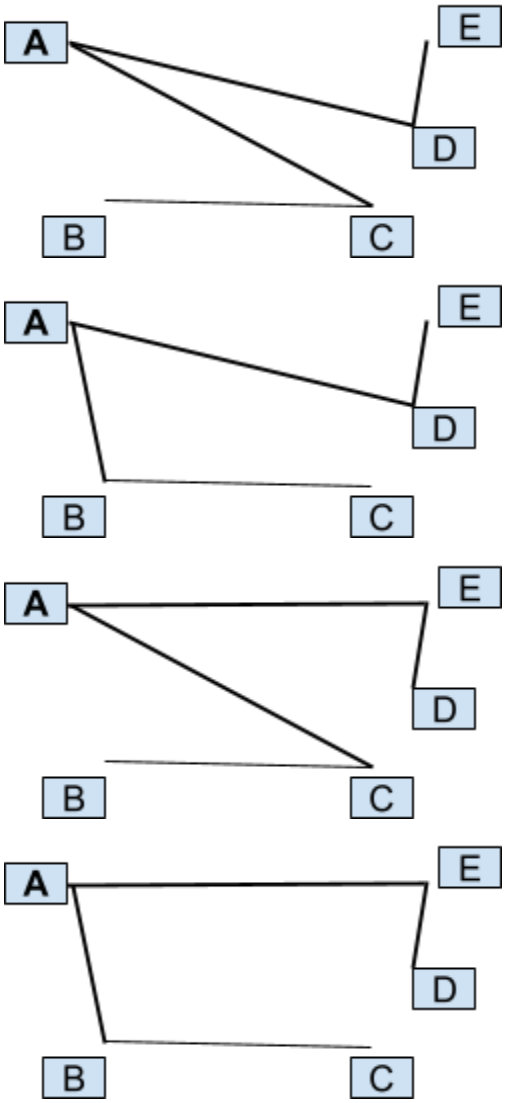
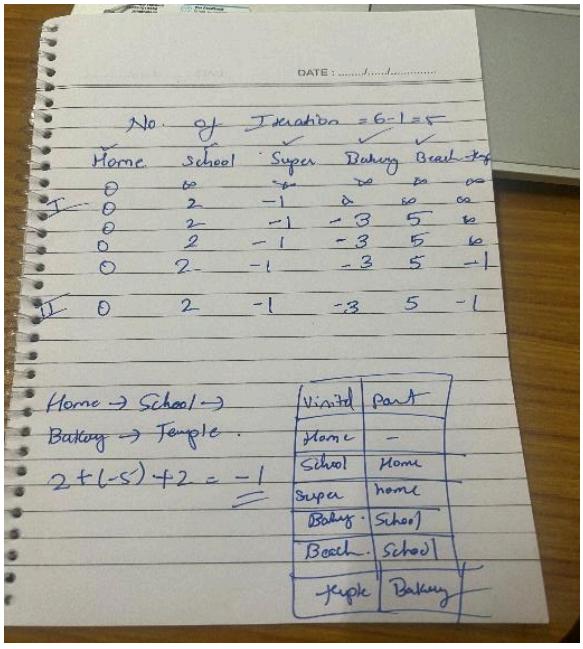
	RV COLLEGE OF ENGINEERING® **Department of Computer Science and Engineering** **CIE-II : Scheme (Open Book)**		
Course : (Code)	**COMPUTER NETWORKS (CY245AT))**	**Semester : IV**	
Date : Apr 2025	**Duration :** 120 minutes	**Staff : CSE/ISE/AI-ML**	
Name :	**USN** :	**Section :**	**CSE/ISE/AI-ML**

Answer all questions

Sl.no	Questions	Marks	L1-L6	CO
1	To route the packets from Home to all other locations, calculate the number of packets generated at every place and total packets:----1M Home-> School= 2 Home-> Super market=2 Home->Beach=5 Home-> Bakery=6 Home-> Temple=8 Workout: Packets generated at every node: Home=2 School=3 Supermarket=1 Beach=2 Bakery=1 Temple=0 Total packets: 9—----------1M	2	3	3
2	 Construction of spanning tree —2M	2	3	3
3	Home-> School->Beach->Supermarket->Bakery—---------2M	2	4	5
4	2 unique trees, —----------2M	2	3	3

				
5	4 unique trees—each tree—0.5M*4=2M 	2	4	4

Part B

Sl.no	Questions	Marks	L1-L6	CO
1.	 Problem solving – 8 marks + 2 marks matrix	10	2	1
2 a.	Identification of problems—3M + Justification—-3M=6M i. It's a super computer, so packet arrival rate exceeds outgoing link capacity ii. Link capacity decreases between router A and B iii. Buffer/memory storage is less in router B iv. Bursty traffic Identification of the necessity for flow control Fast sender, slow reciever List the solutions—2M + Justification—2M=4M i. Warning bit ii. Choke packet	10	2	2
3	Initial table—----------2M | | A | B | C | D | E | | A | 0 | 2 | 4 | 3 | 2 |	5	2	1

b.

B	2	-	3	5	4
C	4	3	-	7	6
D	3	5	7	-	1
E	2	4	6	1	-

Table after good news:------4M

	A	B	C	D	E
A	0	2	4	3	2
B	2	-	3	**4**	4
C	4	3	-	**1**	**2**
D	3	**4**	**1**	-	1
E	2	4	**2**	**1**	-

Table after Bad news—-------4M

	A	B	C	D	E
A	0	2	4	3	2
B	2	-	3	5	4
C	4	3	-	7	6
D	**8** looks at E and updates to 8 ie 3+5 from E Next hop 13+3=16	5	7	-	**5** looks at A and updates to 5 ie, 2 initia,l value of A ie, 2+3 Next hop 8+5=13 . .

<table>
<tr><td></td><td>
<table>
<tr><td></td><td>.
.
.
.
Next hop
18+3=21
.
.Infinity</td><td></td><td></td><td></td><td>.
Next hop
16+2=18
.
.
.
Infinity</td></tr>
<tr><td>E</td><td>2</td><td>4</td><td>6</td><td>1</td><td>-</td></tr>
</table>
</td><td></td><td></td><td></td></tr>
<tr><td>4 a.</td><td>Hierarchical routing table
<table>
<tr><th>Destination</th><th>Line</th><th>Hop</th></tr>
<tr><td>13.0.0.1</td><td>-</td><td>-</td></tr>
<tr><td>13.0.0.2</td><td>13.0.0.2</td><td>1</td></tr>
<tr><td>13.0.0.3</td><td>13.0.0.3</td><td>1</td></tr>
<tr><td>13.0.0.4</td><td>13.0.0.4</td><td>1</td></tr>
<tr><td>13.0.0.5</td><td>13.0.0.5</td><td>1</td></tr>
<tr><td>Region 2</td><td>R3</td><td>2</td></tr>
<tr><td>Region 3</td><td>R3</td><td>2</td></tr>
<tr><td>Region 4</td><td>R3</td><td>3</td></tr>
</table>
</td><td>4</td><td>4</td><td>5</td></tr>
<tr><td>b.</td><td>Metrics—1M + Justification—-2M—----------> 3M
i) Queue Length and Number of packets generated
Queue length need to be optimal not too high
Number of packets generated-Rate of packets generated reduced if queue is almost full and increased if que is almost free

Metrics—1M + Justification—-2M—----------> 3M
ii) Packets discard Rate and Packets stent rate
Packets discarded is increasing, then some node is crash or some problem along the path probably congestion and pallets sent rate need to be reduced</td><td>6</td><td>1</td><td>1</td></tr>
<tr><td>5 a.</td><td>Correct explanation of working of Hop-by-Hop choke packets—---2M
Justifying the answer with respect to time taken is less by hop-by-hop with example or assumption scenario with respect to given figure and path—-------2M</td><td>4</td><td>1</td><td>1</td></tr>
<tr><td>5 b.</td><td>2M split up:
Identification of Method —-1M</td><td>6</td><td>4</td><td>1</td></tr>
</table>

	Justification—--1M **For each figure—-2M*3=6M** ● Fig. 3b. Link State–HELLO Packet to discover neighbor as Figure shows communication as Hello from node to node. ● Fig.1 BroadCast- Efficient to reachout nodes quickly in minimum number of hops ● Fig.2 Multicast: To send to group of nodes along the path shown in figure.			

CO1 Apply the algorithms/techniques of routing and congestion control to solve problems related to
Computer Networks.
CO2 Analyse 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 team work and effective communication.

	L1	L2	L3	L4	L5	L6	CO1	CO2	CO3	CO4	CO5
Marks	16	26	6	12	-	-	16	26	6	8	4