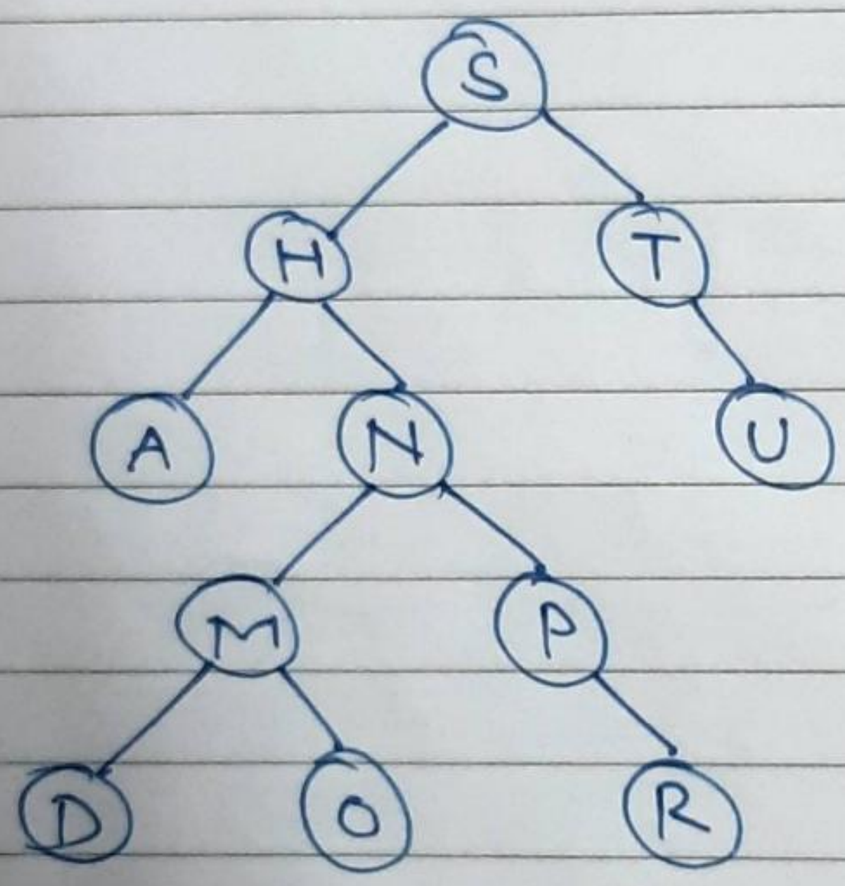
NAME : SHANTANU POTDAR
PNR NO: 2049461245042
ROLL NO: 242

Q1] Create a BST and AVL Tree for your own full name.

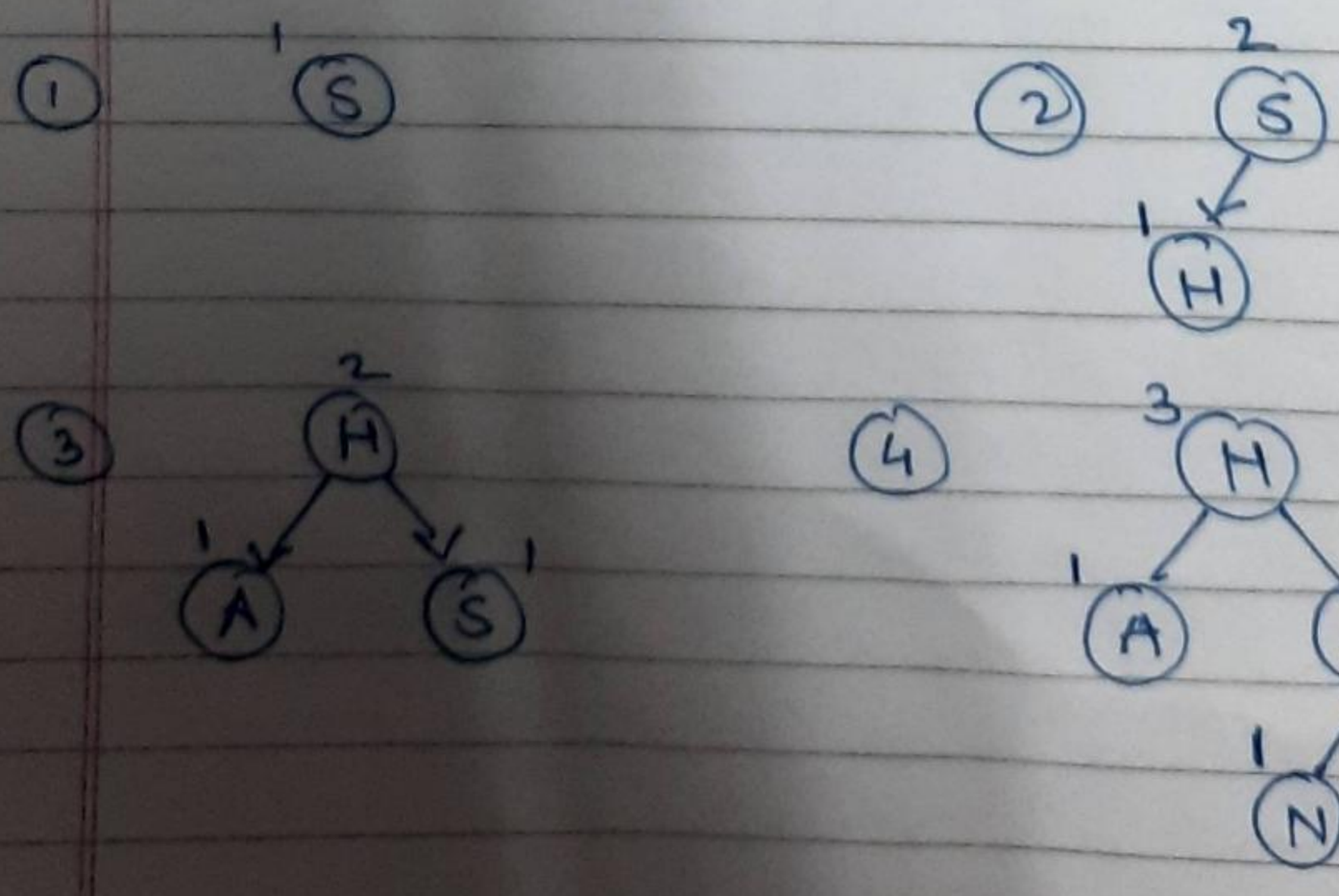
Sol^n SHANTANU PRAMOD POTDAR

SHANTU PRMOD

BST:



AVL:



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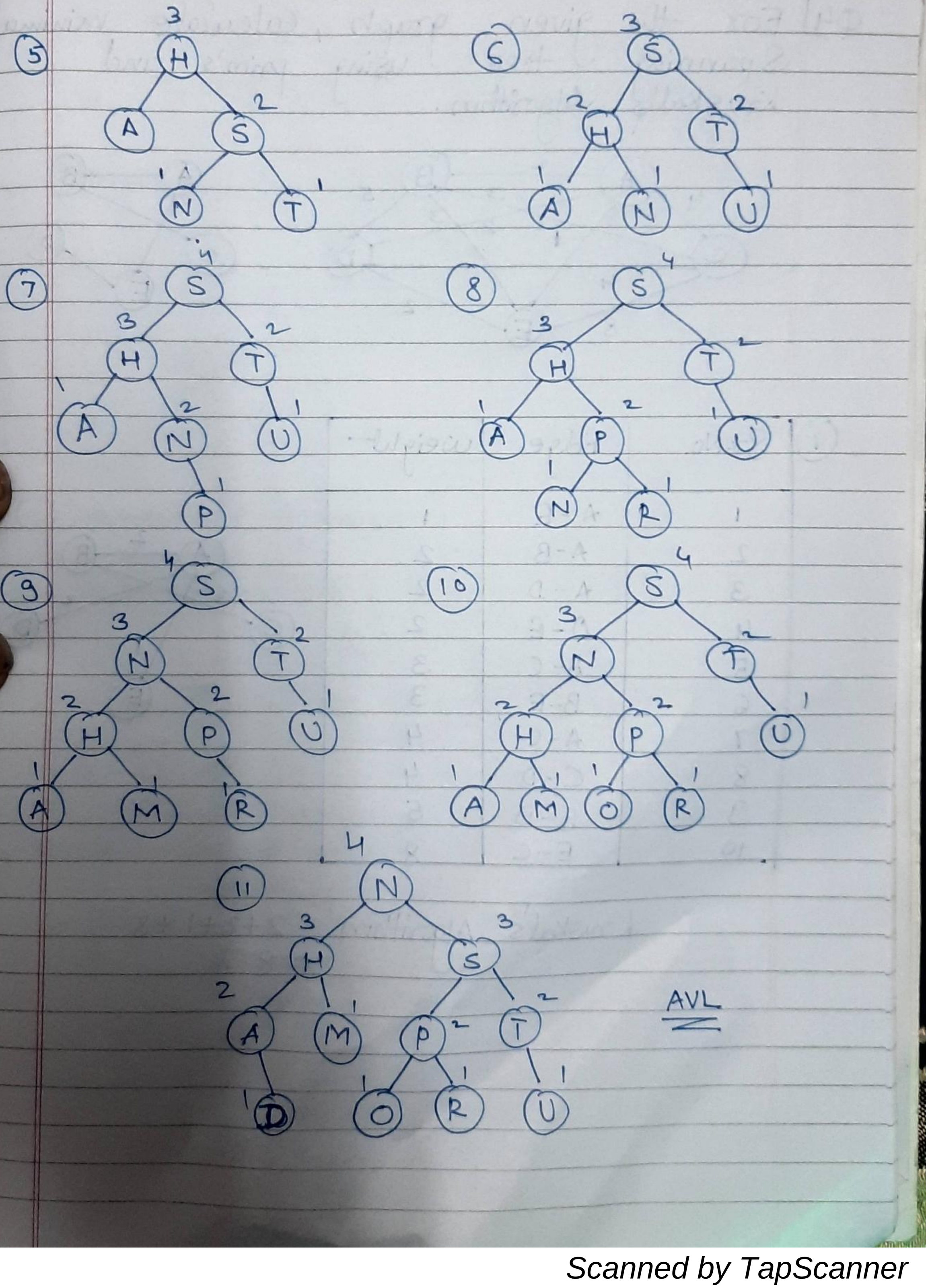

AVL

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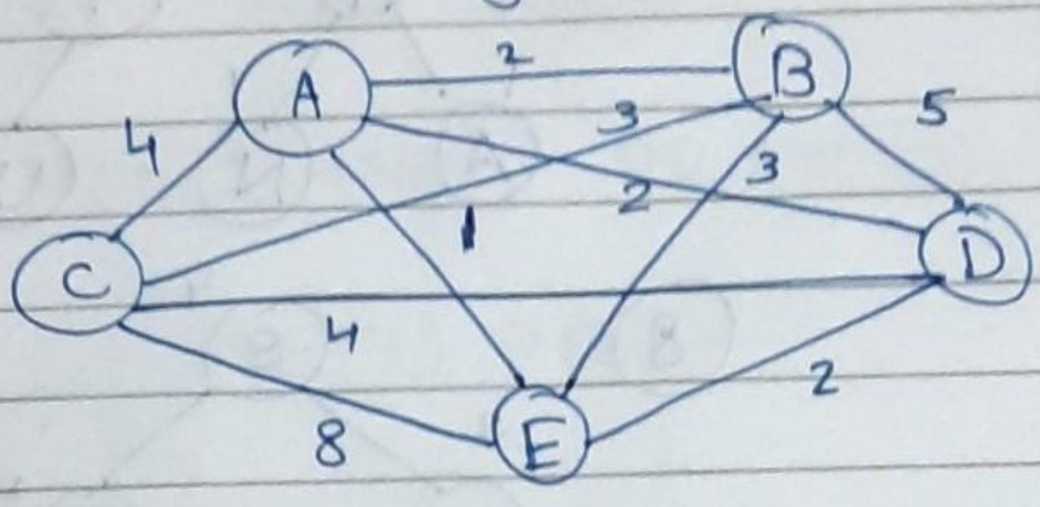
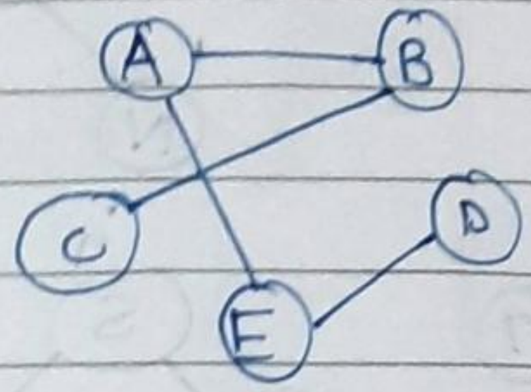
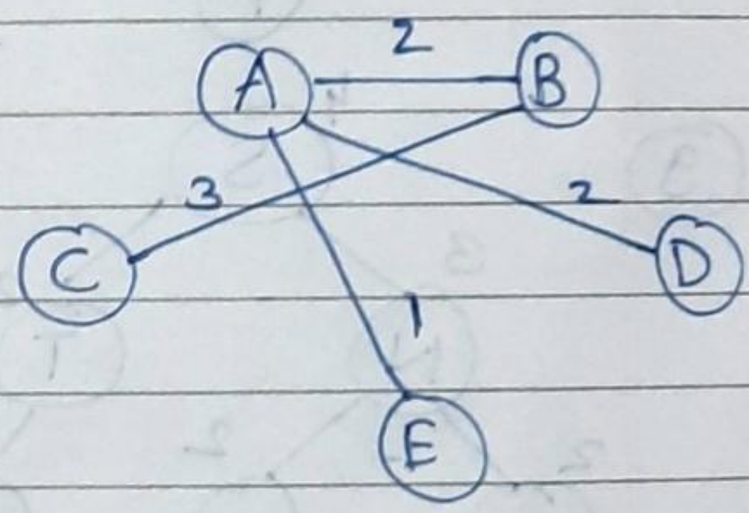
Q4] For the given graph, calculate minimal Spanning tree using prim's and Kruskall Algorithm.





(1)

Sr.No.	Edge	weight
1	A-E	1
2	A-B	2
3	A-D	2
4	D-E	2
5	B-C	3
6	B-E	3
7	A-C	4
8	C-D	4
9	B-D	5
10	E-C	8



Kruskal's Algorithm = 2+2+1+8

= 8.

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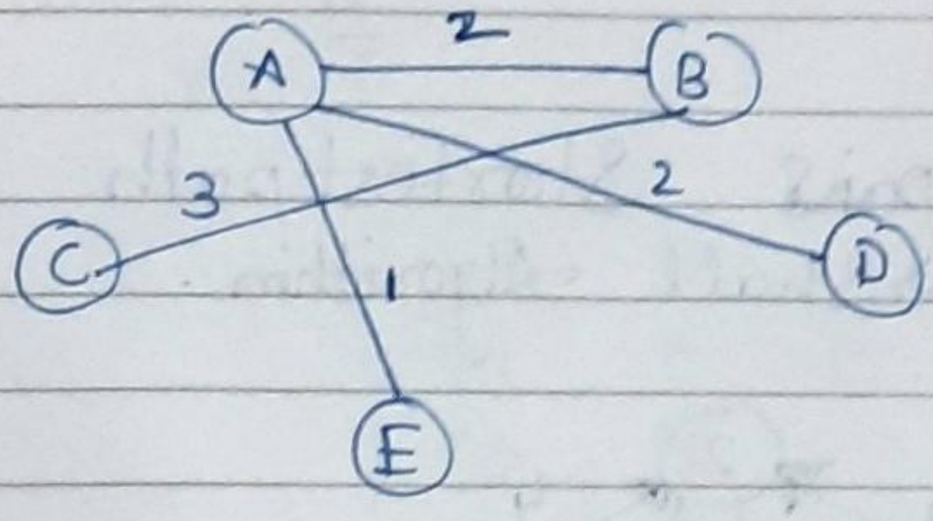
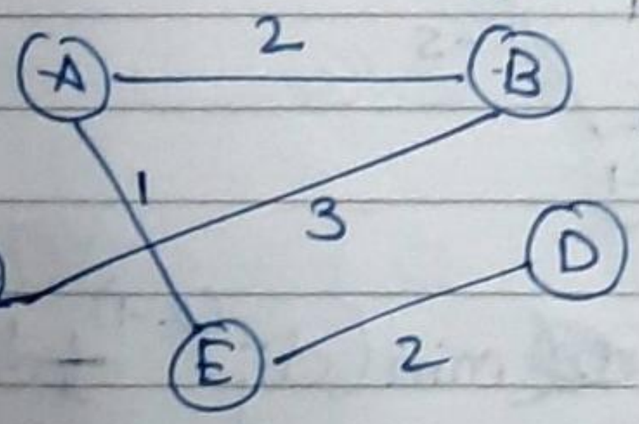
Prims Algorithm.

Step 1 : Taking minimum weigh of edge

Minimal Spanning Tree = 1+2+2+3
= 8



(2) Kruskals Algorithm : -



Sr. No.	Edge	weight
1	A-E	1
2	A-B	2
3	E-D	2
4	B-C	3

Minimal Spanning Tree = 1+2+2+3
= 8

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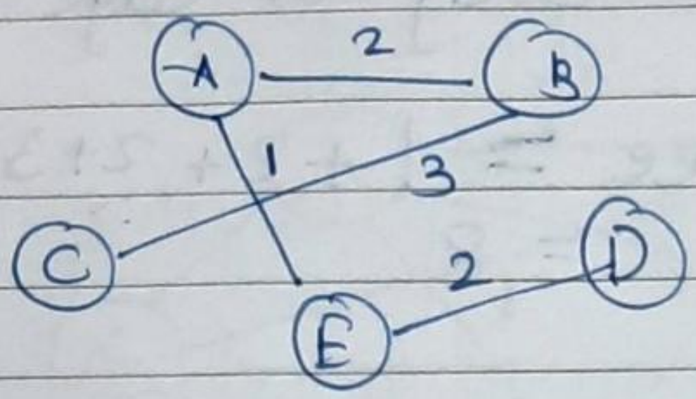
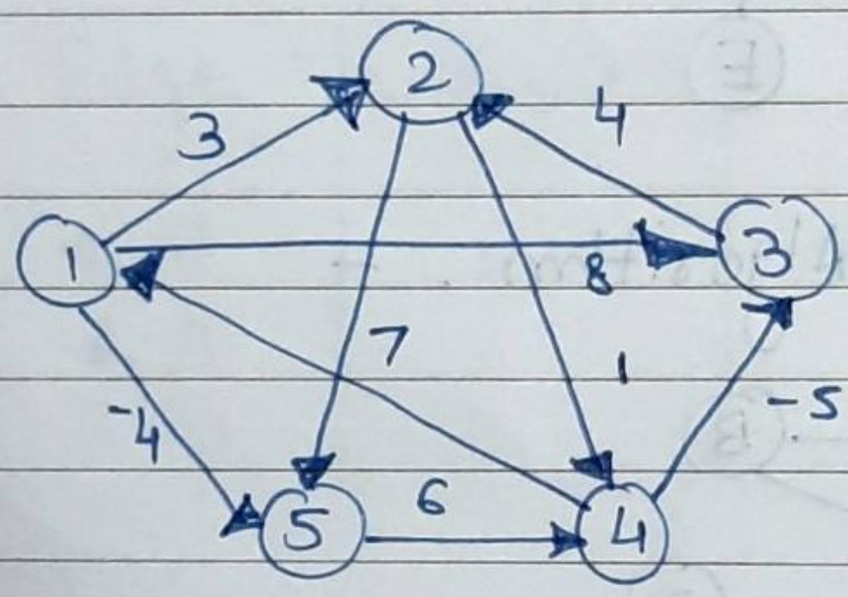
ROLL NO : 242
PRN O : ~~20464902~~ 20464912458042

Prim's Algorithm :



Minimal Spanning Tree
$= 1 + 2 + 2 + 3$
$= 8$
$=$

Q5) Find all pairs Shortest path using Floyd – Warshall Algorithm.



⇒ Step 1 : $k=0$, $d_{ij} = \min(d_{ij}^{(k-1)}, d_{ink}^{(k-1)} + d_{kj}^{(k-1)})$

$$D(0) = \begin{bmatrix} 0 & 3 & 8 & \infty & -4 \\ \infty & 0 & \infty & 1 & 7 \\ \infty & 4 & 0 & 5 & \infty \\ 2 & \infty & \infty & 0 & \infty \\ \infty & \infty & \infty & 6 & 0 \end{bmatrix}$$

Step 2 : $k=1$

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ROLL NO: 242

PRN NO: 2046491245042

$$D(1) = \begin{bmatrix} 0 & 3 & 8 & \infty & -4 \\ \infty & 0 & \infty & 1 & 7 \\ \infty & 4 & 0 & -5 & \infty \\ 2 & 5 & 10 & 0 & -2 \\ \infty & \infty & \infty & 6 & 0 \end{bmatrix}$$

Step 3 : $k = 2$

$$D(2) = \begin{bmatrix} 0 & 3 & 8 & 4 & -4 \\ \infty & 0 & \infty & 1 & 7 \\ \infty & 4 & 0 & -5 & 11 \\ 2 & 5 & 10 & 0 & -2 \\ \infty & \infty & \infty & 6 & 0 \end{bmatrix}$$

Step 4: When $k = 3$

$$D(3) = \begin{bmatrix} 0 & 3 & 8 & 3 & -4 \\ \infty & 0 & \infty & 1 & 7 \\ \infty & 4 & 0 & -5 & 11 \\ 2 & 5 & 10 & 0 & -2 \\ \infty & \infty & \infty & 6 & 0 \end{bmatrix}$$

Step 5: When $k = 4$

$$D(4) = \begin{bmatrix} 0 & 3 & 8 & 3 & -4 \\ 3 & 0 & 11 & 1 & -1 \\ -3 & 0 & 0 & -5 & -7 \\ 2 & 5 & 10 & 0 & -2 \\ 8 & 11 & 16 & 6 & 0 \end{bmatrix}$$

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Step 6: When K = 5

$$D(5) = \begin{bmatrix} 0 & 3 & 8 & 3 & -4 \\ 3 & 0 & 11 & 1 & -1 \\ -3 & 0 & 0 & -5 & -7 \\ 2 & 5 & 10 & 0 & -2 \\ 8 & 11 & 16 & 6 & 0 \end{bmatrix}$$

— x —

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