

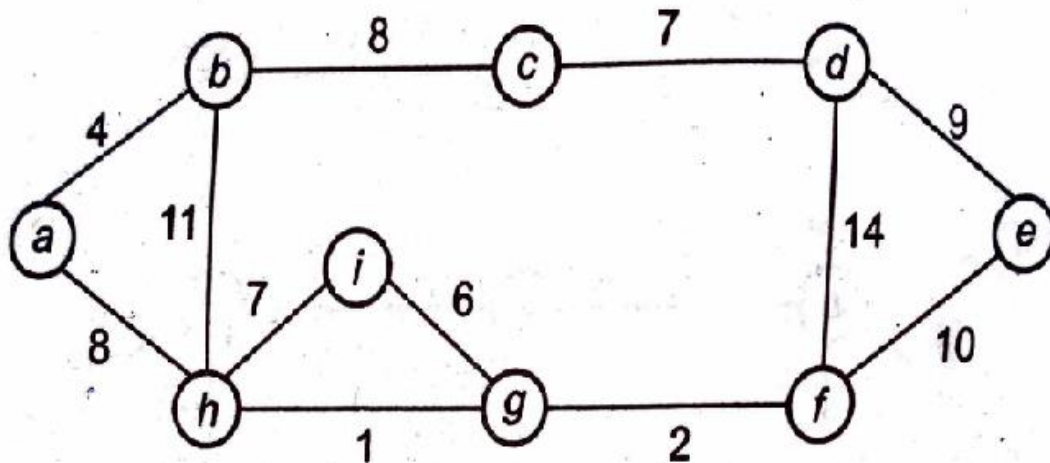
Computer Science and Engineering (AI-ML)

5th Semester G-Section

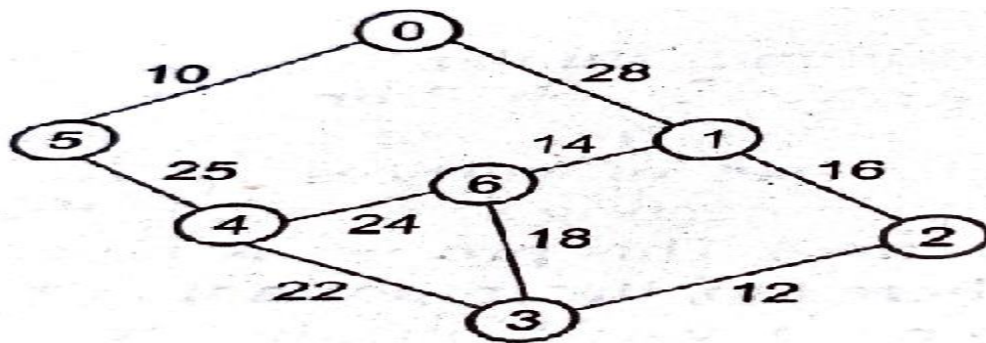
DAA Assignment for Batch-2

Assignment submission Date: 25-11-2022(Friday)

1. Write the Kruskal's algorithm and analyze time complexity? Find out the weight of a minimum spanning tree of the following graph using kruskal's algorithm.



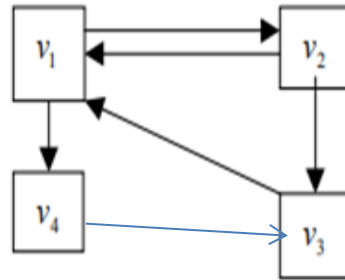
2. Write the Prim's algorithm and analyze time complexity? Find out the weight of a minimum spanning tree of the following graph using Prim's algorithm.



3. A thief enters a house for robbing it. He can carry a maximal weight of 60 kg into his bag. There are 5 items in the house with the following weights and values. What items should thief take if he can even take the fraction of any item with him?

Item	1	2	3	4	5
Profit	30	40	45	77	90
Weight	5	10	15	22	25

4. Consider the following graph, find the all pairs shortest path using floyd's's algorithm.



5. Consider the following matrices; find out the optimal number of multiplications using Matrix chain multiplication method?

$A_1 = 4 \times 7$, $A_2 = 7 \times 5$, $A_3 = 5 \times 6$, $A_4 = 6 \times 2$, $A_5 = 2 \times 3$

6. Solve the following travelling salesman problem using dynamic programming. Starting city (vertex) is 1.

0	10	8	5	12
15	0	20	10	14
6	9	0	13	18
10	6	7	0	15
8	9	12	14	0

7. Find any one Longest Common Subsequence of given two strings using Dynamic Programming.

$X = \text{babbcddba}$

$Y = \text{abbcdbca}$

8. A thief enters a house for robbing it. He can carry a maximal weight of 10 kg into his bag. There are 4 items in the house with the following weights and values. What items should thief take if he cannot take the fraction of any item with him? (Hint: 0/1 Knapsack problem, Using Dynamic Programming).

Item	1	2	3	4
Profit	10	20	30	40
Weight	5	4	3	6

9. Consider the following graph, find the All pairs Shortest path using floyd's algorithm.

