DAA Home Assignment-1

1. Explain the Divide – and - Conquer strategy in which the division into two sub arrays is made so that the sorted sub arrays need to be merged later.

2. Explain the Divide – and - Conquer strategy in which the division into two sub arrays is made so that the sorted sub arrays do not need to be merged later.

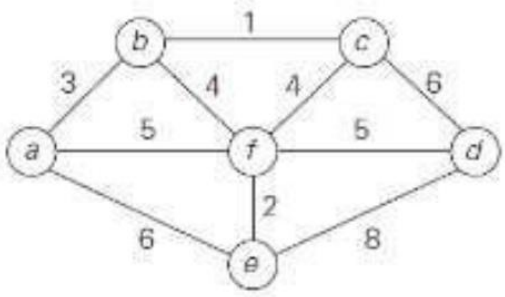
3. Discuss Volker Strassen's matrix multiplication with the following example?

$$\begin{pmatrix} 2 & 3 & 1 \\ 1 & 2 & 3 \end{pmatrix} \times \begin{pmatrix} 1 & 2 & 3 \\ 3 & 2 & 1 \\ 2 & 1 & 3 \end{pmatrix}$$

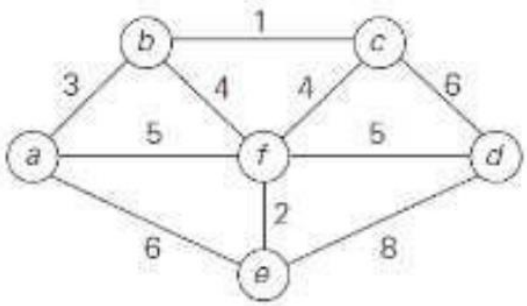
4. What is fractional Knapsack problem? Find the solution to the fractional Knapsack problem instance n = 4, m = 15, (P1, P2, P3, P4) = (10, 10, 12, 18) and (W1, W2, W3, W4) = (2, 4, 6, 9).

5. State the Job Sequencing with deadlines problem. Find solution generated by job sequencing problem with deadlines for 7 jobs given profits 3, 5, 20, 18, 1, 6, 30 and deadlines 1, 3, 4, 3, 2, 1, 2 respectively.

6. What is a Minimum Cost Spanning tree? Find Minimum cost spanning tree for the following graph using prim's algorithm.



7. What is a Minimum Cost Spanning tree? Find Minimum cost spanning tree for the following graph using krushkal's algorithm.



8. What is Single-source shortest-paths problem? Find shortest paths to all other vertices from **a**.