



## SECTION-B

2. Solve the recurrence using master method :

$$T(n) = 9 T(n/3) + n$$

3. Solve the following instance of the knapsack problem using branch and bound

Items	w	v
I1	9	15
I2	6	6
I3	7	5
I4	2	1

4. What are the ways for representation of graphs? Compare these ways.
5. What is the relationship between the classes P and NP? Explain
6. What are NP hard problems? Write short notes on the procedures of the following approximation algorithms to solve TSP using suitable examples.
- a) Nearest Neighbor algorithm
- b) Twice-around-the-tree algorithm.

## SECTION-C

7. Explain the Floyd-Warshall's algorithm with the help of an example.
8. Prove that  $f(n) = a_m n^m + a_{m-1} n^{m-1} + \dots + a_1 n + a_0$  then  $f(n) = O(n^m)$
9. Compare the various programming paradigms such as divide-and-conquer, dynamic programming and greedy approach.

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