DESIGN AND ANALYSIS OF ALGORITHMS
QUESTION-BANK FOR MST-I

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Total Questions: = (11)

Q.1. Define asymptotic notations.
Q.2. Illustrate the time complexity of an algorithm.
Q.3. Illustrate the principle of optimality.
Q.4. Evaluate the efficiency of Binary Search.
Q.5. Examine the complexity of (a) Quicksort (b) Mergesort
Q.6. Compare Dijkstra's Algorithm and Bellman-Ford Algorithm
Q.7. Compare Prim's Algorithm & Kruskal's Algorithm.
Q.8. Discuss & give example of greedy method to solve Knapsack problem. [Hint: demonstrate how greedy is applied and consider P_i/w_i for choosing an item.]
Q.9. Demonstrate how dynamic programming can be used to solve knapsack problem. [Take: 0/1 Knapsack Problem]
Q.10. Elaborate how dynamic programming is used by Floyd-Warshal Algorithm. Evaluate the efficiency of Floyd-Warshal Algorithm.
[Hint: As Floyd-Warshal Algorithm involves nested for loops as follows:-

$O(n^3) \Rightarrow$
```
for (k=1 to n)
{   for (i=1 to n)
    {   for (j=1 to n)
        {
            A[i][j] = min (A[i][j], A[i][k] + A[k,j])
        }
    }
}
```
It has time complexity as $O(n^3)$]

Q.11. What are forward & backward approaches to solve multistage graph problem.