1. _____path is a path in a graph which visits each edge exactly once and returns to the starting Vertex

(a) Hamiltonian
(b) Eulerian
(c) Shortest
(d) None of these

2. For the quick sort algorithm, what is the time complexity of the best/worst case?

(a) best case: $O(n)$ worst case: $O(n*n)$
(b) best case: $O(n)$ worst case: $O(n*\log(n))$
(c) best case: $O(n*\log(n))$ worst case: $O(n*\log(n))$
(d) best case: $O(n*\log(n))$ worst case: $O(n*n)$

3. Backtracking can be applied to problems which have partial candidate solutions.

(TRUE / FALSE)

4. Which of the following problems do not have the combine step:

(a) binary search, merge sort (b) binary search, quick sort (c) merge sort, quick sort (d) All of these

5. Given the following set of duration and deadlines times:

i	1	2	3	4	5	6	7
ti	4	3	3	2	3	5	6
di	4	7	19	12	10	13	14

Find the minimum lateness using Greedy method which gives the efficient results?

(a) 12 (b) 14 (c) 20 (d) None of these

6. Consider the following set of items with their profits **:**

Item 1: Weight, Profit
1: 4kg, 20
2: 2kg, 3
3: 2kg, 6
4: 6kg, 25
5: 2kg, 80

Consider the knapsack with capacity of weight 6kg. What will be the maximum profit for 0/1 knapsack using dynamic programming?

(a) 25 (b) 89 (c) 100 (d) None of these

7. Given a set of 6 numbers. What is the total number of subsets for producing a given sum S?

(a) 720 (b) 36 (c) 64 (d) None of these

8. Identifying all edges in a graph using adjacency matrix takes ___ time while using incidence list takes ____

(a) $O(n^2)$, $O(n^2)$ (b) $O(n^2)$, $O(m+n)$ (c)$O(n^2)$, $O(m*n)$ (d) $O(m+n)$, $O(m+n)$

9. In Strassen's Multiplication Algorithm the time complexity T(n) is

a) $7T(n) + bn^2$ b) $7T(n/2) + bn^2$ c) $8T(n/2) + bn^2$ d) $7T(n/2) + bn$

10. Which of the following is an example of greedy method for finding the minimum spanning tree in a weighted graph?

(a) Prim's algorithm (b)Dijkstra's algorithm (c) kruskal's algorithm (d) All of these