

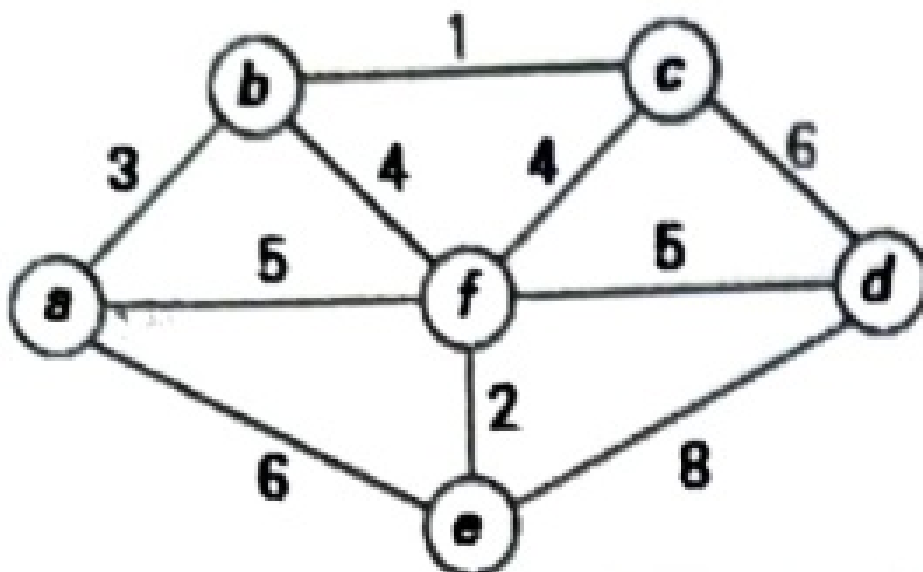
# DESIGN AND ANALYSIS OF ALGORITHMS

## PART A

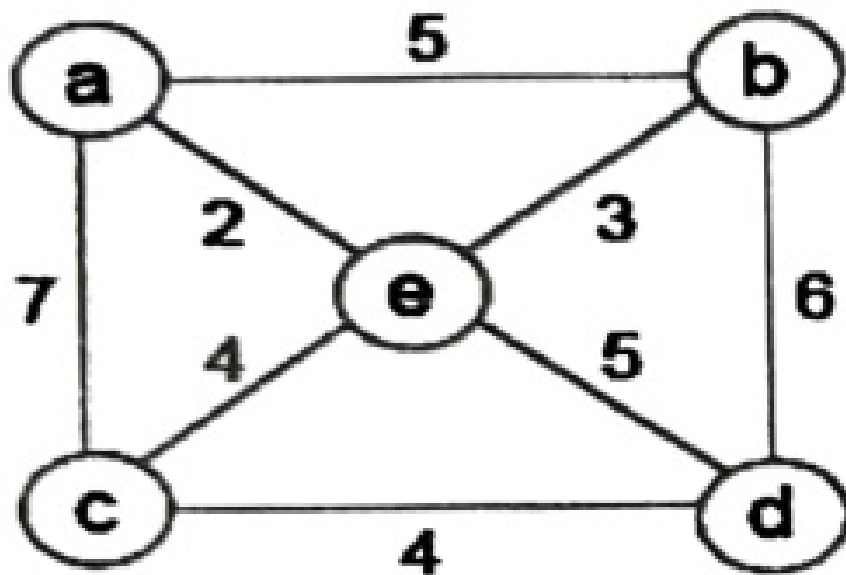
- 1 Worst case time complexity of quick sort is..... (Frequency: 1)
- 2 Define an algorithm (Frequency: 1)
- 3 Performance of an algorithm is depends on..... and ..... (Frequency: 1)
- 4 Prove that  $3n+2=O(n)$  (Frequency: 1)
- 5 Define Theta notation. (Frequency: 1)
- 6 What are the applications of greedy approach (Frequency: 1)
- 7 Kruskal's algorithm is ..... method (Frequency: 1)
- 8 Discuss knapsack problem (Frequency: 1)
- 9 Given a weighted graph where weights of all edges are unique then there is always a unique shortest path from source to a destination (True / False) (Frequency: 1)
- 10 Define minimal cost spanning tree. (Frequency: 1)

## PART B

- 1 Solve the recurrence relation using Substitution Method  $T(n) = \begin{cases} 1, & n = 1 \\ 2T(n/2) + n, & n > 1 \end{cases}$  (Frequency: 1)
- 2 Sort the given list using merge sort [50, 25, 6, 20, 60, 30, 90, 10] (Frequency: 1)
- 3 Write an algorithm to find out the maximum and minimum of array elements (Frequency: 1)
- 4 Calculate the minimum cost spanning tree of the following graph using Prim's algorithm. (Frequency: 1)



- 5 Write an algorithm for the job sequencing problem using greedy approach. (Frequency: 1)
- 6 Apply the Dijkstra's algorithm to the following graph to find the single source shortest path. Consider vertex 'a' as the source vertex. (Frequency: 1)



**All the best for the exam!**