

BT-5/DX

8501

DESIGN AND ANALYSIS OF ALGORITHM

Paper : CSE-301

Time : Three Hours]

[Maximum Marks : 100

Note : Attempt five questions in all, selecting at least *one* question from each unit.

UNIT-I

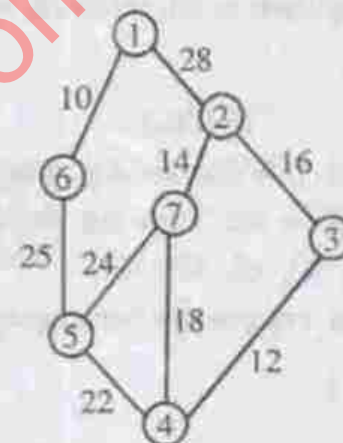
1. What is Heapsort ? Write an algorithm to sort elements using heapsort. Show the steps for the following list :
(40, 80, 35, 90, 45, 50, 70)
Analyze its Time complexity and compare it with quick sort. 20
2. What is Binary search ? Write the algorithm to search an element using binary search with suitable example. Analyse its time complexity and compare it with linear search. 20

UNIT-II

3. (a) What are binomial heaps ? Explain with example. 10
(b) Explain the optimal polygon triangulation technique. 10
4. (a) What is dynamic programming ? Explain its use in problem solving. 10
(b) Describe the Huffman codes in brief. 10

UNIT-III

5. (a) Explain the topological sort with example. 10
(b) Explain the Johnson's algorithm for shortest path. 10
6. Write the Prim's algorithm for finding minimum spanning tree. Analyze its time complexity. Compare it with Kruskal's algorithm. Apply the Prim's algorithm for the following graph :



UNIT-IV

7. (a) What are Flow networks ? Explain their use in brief. 10
(b) Explain the Bitonic sorting network. 10
8. Write short notes :
(a) Comparison network.
(b) Merging network. 10+10