17636

16172
3 Hours / 100 Marks Seat No. | | | | | | | | |

Instructions : (1) All Questions are *compulsory.*

(2) Illustrate your answers with neat sketches wherever necessary.

(3) Figures to the right indicate full marks.

(4) Mobile Phone, Pager and any other Electronic Communication devices are not permissible in Examination Hall.

Marks

1. Solve any FIVE : **5 × 4 = 20**

(a) Explain Recursion with suitable example.

(b) Define Graph. Directed graph and undirected graph. Mention how to represent a graph.

(c) Explain general Greedy Method. List various Greedy strategies.

(d) What is heap ? Enlist its operation.

(e) Explain Breath first search algorithm using any one example.

(f) Explain Dijkstra's algorithm finds the shortest path from a single source to the other nodes of a graph.

(g) Explain job scheduling with appropriate example.

2. Solve any TWO : **2 × 8 = 16**

(a) Explain with suitable example the Depth first search, write the algorithm for DFS.

(b) Explain the concept heap sort, and sort the following number using heap sort. (Use Min and Max method to sort)

16, 14, 10, 8, 7, 9, 3, 2, 4, 1

(c) Describe process scheduling with any one algorithm.

3. Solve any TWO : **2 × 8 = 16**

(a) Explain Job scheduling in detail.

(b) What is big-Oh and theta ? Write objectives of time analysis of algorithm.

(c) Compare any two searching and sorting algorithm.

4. Solve any TWO : **2 × 8 = 16**

(a) Explain quick sort algorithm with suitable example. Also explain time complexity of quick sort algorithm.

(b) Solve the following problems :

Consider 5 items along their respective weight and values.

$I = I_1, I_2, I_3, I_4, I_5$

W = 5, 10, 20, 30, 40

V = 30, 20, 100, 90, 160

The capacity of knapsack W = 60, obtain the solution for the above given knapsack problem.

(c) Explain Lower Bounds for Comparison Based sorting with appropriate example.

5. Solve any TWO : **2 × 8 = 16**

(a) Describe greedy method for Job scheduling with deadlines profits using example.

(b) Explain the concept radix sort, write a program to sort the series of number using radix sort.

(c) Design minimum spanning tree for given graph. Give the assumption to simulate the given graph with the help of Prims algorithm.

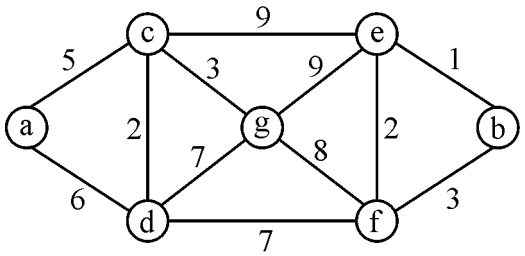

Fig.-1

6. Solve any TWO : **2 × 8 = 16**

(a) Explain the following term :

(i) Algorithm and its properties.

(ii) Linear searching.

(b) Explain the following term :

(i) Topological sorting

(ii) Graph representation

(c) Write an algorithm to illustrate the use of Binary search algorithm, Give an example.

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