17636

11920

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

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

(2) Answer each next main Question on a new page.

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

(4) Figures to the right indicate full marks.

(5) Assume suitable data, if necessary.

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

Marks

1. Attempt any FIVE of the following : **20**

(a) Compare any three sorting algorithms based on their time complexity.

(b) Define algorithm. Enlist four properties of algorithm.

(c) Describe Divide and Conquer strategy.

(d) Explain counting sort.

(e) Describe Graph & explain graph representation using example.

(f) Describe topological sorting.

(g) Explain the best case, worst case and average case analysis of merge sort.

2. Attempt any TWO of the following : **16**

(a) Explain the Kruskal's algorithm for finding the minimum cost spanning tree with suitable example.

(b) Explain Knapsack problem in detail.

(c) Explain quick sort algorithm.

3. Attempt any TWO of the following : **16**

(a) Describe sorting and searching. List down examples of sorting and searching.

(b) Define a Binomial heap ? Describe the advantage of binomial heap over a heap ?

(c) Explain job scheduling.

4. Attempt any TWO of the following : **16**

(a) Explain dynamic programming. Explain principle of optimality.

(b) Explain DFS algorithm in detail.

(c) Explain the Merge sort algorithm in detail.

5. Attempt any TWO of the following : **16**

(a) Explain big-on, omega & treta notation with the help of an example.

(b) Write a program to sort the series of numbers using radix sort.

(c) Explain BFS algorithm in detail.

6. Attempt any FOUR of the following : **16**

(a) Describe the objective of time analysis.

(b) Sort the following numbers using heap sort :

96, 15, 12, 04, 26, 46, 58, 42, 102

(c) Explain the job sequnceing for the instance

n = 5, (P1, P2, P3, P4, P5) = (20, 15, 10, 5, 1)

(d) Explain Prims algorithm.

(e) Explain Disk stray algorithm.

(f) Obtain the pair shortest path for the following graph.