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Roll No DD 05

MCADD-601

M.C.A. (Integrated) VI Semester

Examination, May 2024

Analysis Design and Algorithm

Time : Three Hours

Maximum Marks : 70

- Note:** i) Attempt any five questions.
ii) All questions carry equal marks.

1. a) List and Explain the applications of various discrete structures. 7
b) Discuss in brief the various models of computation. 7

- ✓ 2. a) State and Explain the different notations used to represent the complexity of an algorithm. 7
b) Apply the Quick sort algorithm for the following list:
36,12,85,79,46,18,92,30,28,65,72 7

3. a) Explain in brief the depth first search traversal method with a suitable example. 7
b) Discuss the process for analysis of divide and conquer run time recurrence relations. 7

- ✓ 4. a) List and explain the general properties of greedy method. 7
b) Explain with suitable example to determine the minimum spanning tree for Prim's algorithm. 7

- ✓ 5. a) Find the optimal solution for the knapsack instance $n=3, m=20, (p_1, p_2, p_3) = (25, 24, 15)$ and $(w_1, w_2, w_3) = (18, 15, 10)$. 7
- b) Discuss in detail about dynamic programming. 7
- ✓ 6. a) State and explain the 8 Queens problem also write an algorithm to solve using backtracking. 7
- b) Explain the travelling salesman problem using dynamic programming. 7
7. a) Write short notes on complexity measures. 7
- b) Discuss in brief about Polynomial time complexity. 7
- ✓ 8. Explain in detail on any two of the following: 14
- a) Worst case time complexity analysis of linear search algorithm.
- b) Time Complexity of Divide and Conquer Algorithm.
- c) Matrix Multiplication using dynamic programming.
- d) Divide and conquer method.

$$18 \overline{) 25} \begin{array}{r} 1.87 \\ 18 \\ \hline 25 \end{array}$$