SHRIMATHI DEVKUNVAR NANALAL BHATT VAISHNAV COLLEGE FOR WOMEN (AUTONOMOUS)
(Affiliated to the University of Madras and Re-accredited with 'A+' Grade by NAAC)
Chromepet, Chennai — 600 044.
M.Sc. END SEMESTER EXAMINATION APRIL/NOV - 2021
SEMESTER - II
20PCSCT2004 - Design and Analysis of Algorithms

Total Duration	**: 3 Hrs**	**Total Marks**	**: 75**
MCQ	: 30 Mins	MCQ	: 15
Descriptive	: 2 Hrs.30 Mins	Descriptive	: 60

Section B

Answer any **SIX** questions $(6 \times 5 = 30$ Marks)

1. Explain the various Asymptotic notations used in algorithm design?
2. With an example, explain how recurrence equations are solved.
3. Describe about optimal storage on tapes.
4. Consider the knapsack instance n = 3, (w l, w2, w3) = (2,3,4), (p1, p2, p3) = (1,2,5) and m = 6. Explain 0/1 knapsack algorithm to solve the above instance.
5. Solve graph coloring problem with your own example.
6. Do all dynamic programming algorithms holds principles of optimality – Justify your answer?
7. Examine how backtracking method works to solve 8 Queen's problem.
8. Describe lower bound theory.

Section C

Part A

Answer any **TWO** questions $(2 \times 10 = 20$ Marks)

9. Describe the multistage graph problem. Also develop an algorithm for the same using forward approach.
10. Solve travelling salesperson problem using backtracking approach.
11. Explain NP-hard and NP-Completeness with example?
12. Apply greedy method to solve job sequencing with deadlines problem. Explain with your own example.

Part B

Compulsory question $(1 \times 10 = 10$ Marks)

13. Develop an algorithm to find maximum number from the given list using divide and conquer approach.