

(FOR THE CANDIDATES ADMITTED

23PCS101

DURING THE ACADEMIC YEAR 2023 ONLY)

REG.NO. :

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI

END-OF-SEMESTER EXAMINATIONS : NOVEMBER-2023

M.SC COMPUTER SCIENCE(SF)

MAXIMUM MARKS: 75

SEMESTER I

TIME : 3 HOURS

PART - III

23PCS101 – DESIGN & ANALYSIS OF ALGORITHMS

SECTION – A

(10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS. (K1)

1. The data structure required for Breadth First Traversal on a graph is?
 - a) Array
 - b) Stack
 - c) Tree
 - d) Queue
2. Binary Search can be categorized into which of the following?
 - a) Brute Force technique
 - b) Divide and conquer
 - c) Greedy algorithm
 - d) Dynamic programming
3. In how many directions do queens attack each other?
 - a) 1 b) 2 c) 3 d) 4
4. In dynamic programming, the technique of storing the previously calculated values is called

 - a) Saving value property
 - b) Storing value property
 - c) Memoization
 - d) Mapping
5. In what manner is a state-space tree for a backtracking algorithm constructed?
 - a) Depth-first search
 - b) Breadth-first search
 - c) Twice around the tree
 - d) Nearest neighbour first

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES

(K2)

6. Which data structure is required to check whether an expression contains a balanced parenthesis?
7. What are the applications of single source shortest path?
8. What is the time complexity of the dynamic programming approach?
9. How many solutions are there to the N Queen problem?
10. What is least cost search?

(CONT....2)

SECTION – B**(5 X 5 = 25 MARKS)****ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)**

11. a) Explain the algorithm definition and specification ? (OR)
 b) Explain the usage of priority queue ?
12. a) Write a note on binary search. (OR)
 b) Explain about divide and conquer techniques.
13. a) What is dynamic programming? Explain (OR)
 b) Analysis optimal binary search tree?
14. a) Write a note on backtracking concept (OR)
 b) What is backtracking? Explain the steps in the sum of subsets problem.
15. a) Briefly explain least cost search. (OR)
 b) Explain bounding methods?

SECTION – C**(5 X 8 = 40 MARKS)****ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.****(Qn. No. 16 to 20 Questions for Long Answers with internal choices – 2 questions from each unit. (K4 (Or) K5)**

16. a) Discuss the operations of stack and queue data structure (OR)
 b) Elucidate breadth first search and traversal in detail
17. a) Analysis the merge sort with example (OR)
 b) Write the general procedure for the minimum cost spanning tree
18. a) Describe the all pair shortest path problem (OR)
 b) Explain about travelling salesman problem using the dynamic programming
19. a) Discuss the eight queens problem using backtracking method (OR)
 b) Write a detailed note on Hamiltonian cycles
20. a) Compare FIFO and LC branch and bound methods. (OR)
 b) Discuss on task scheduling problem and its function.
