

(FOR THE CANDIDATES ADMITTED
DURING THE ACADEMIC YEAR 2022 ONLY)

22PCS101

REG.NO

NGM COLLEGE (AUTONOMOUS) POLLACHI

END-OF-SEMESTER EXAMINATIONS: DECEMBER- 2022

M. Sc - Computer Science

MAXIMUM MARKS: 50

I SEMESTER

TIME: 3 HOURS

DESIGN AND ANALYSIS OF ALGORITHMS

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

(K1)

1. Compound data types can be formed with _____
a) File b) Records c) Memory d) Field
2. _____ strategy splits the input into two sub problems.
a) Divide and Conquer b) Backtracking
c) Dynamic Programming d) Branch and Bound
3. $O(2n)$ means computing time is _____
a) Constant b) Quadratic c) Linear d) Exponential
4. What is the type of the algorithm used in solving the 8 Queens problem?
a) Greedy b) Dynamic c) Backtracking d) Branch and Bound
5. Which data structure is used for implementing a FIFO branch and bound strategy?
a) stack b) queue c) array d) linked list

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES

(K2)

6. What is a recursive function?
7. What is a Greedy method?
8. What is dynamic programming?
9. Define Backtracking.
10. What is Branch and Bound?

SECTION – B (5 X 3 = 15 MARKS)**ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.****(Qn. No. 11 to 15 Questions for Short Answers with internal choices) (K3)**

11. a) Describe the Trees.
(OR)
b) What are priority queues?
12. a) What is a Binary Search?
(OR)
b) Describe the Prim's algorithm for minimum cost spanning tree.
13. a) What is flow shop scheduling?
(OR)
b) Elucidate Multi stage graphs.
14. a) Describe Graph coloring.
(OR)
b) Discuss the sum of subsets problem.
15. a) Illustrate Least cost search using branch and bound method.
(OR)
b) Describe the FIFO branch and bound method.

SECTION – C (5 X 5 = 25 MARKS)**ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.****(Qn. No. 16 to 20 Questions for Long Answers with internal choices) (K4 (Or) K5)**

16. a) Discuss Breadth First Search Traversal in detail.
(OR)
b) What are the stack operations? Explain.
17. a) Explain the Merge sorting in detail.
(OR)
b) How will you solve a single source shortest path problem using divide and conquer method?
18. a) Explain all pairs shortest paths algorithm in detail.
(OR)
b) How will you solve a Traveling salesman problem using dynamic programming?
19. a) Discuss the 8-Queens problem in detail.
(OR)
b) What is a Hamiltonian cycle? Explain.
20. a) Discuss the control abstractions for LC search in detail.
(OR)
b) How will you solve a 15 puzzle problem using branch and bound method?