

(NO. OF PAGES: 2)

(FOR THE CANDIDATES ADMITTED
DURING THE ACADEMIC YEAR 2025-26 ONLY)

SUBJECT CODE

25UBC102

REG.NO. :

N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI
END-OF-SEMESTER EXAMINATIONS : NOVEMBER-2025

B.C.A

MAXIMUM MARKS: 75

SEMESTER: I

TIME : 3 HOURS

PART – III
DATA STRUCTURES AND ALGORITHMS

SECTION – A

(10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

MULTIPLE CHOICE QUESTIONS.

(K1)

1. In a stack, if a user tries to remove an element from an empty stack it is called _____.
a) Underflow b) Empty collection c) Overflow d) Garbage Collection
2. The number of edges from the node to the deepest leaf is called _____ of the tree.
a) Height b) Depth c) Length d) Width
3. Dijkstra's algorithm follows _____.
a) Greedy algorithm b) branch and bound c) backtracking d) dynamic programming
4. Kruskal's algorithm is used to _____.
a) find minimum spanning tree b) find single source shortest path
c) find all pair shortest path algorithm d) traverse the graph
5. On which algorithm is heap sort based on?
a) Fibonacci heap b) Binary tree c) Priority queue d) FIFO

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES.

(K2)

6. Define a Queue.
7. Tell about Tree structures.
8. Define a Graph.
9. Mention - why we need backtracking algorithm?
10. What are the advantages of sorting?

SECTION – B

(5 X 5 = 25 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS. (K3)

11. a) Describe arrays.

(OR)

- b) Examine Stack and its operations.

12. a) Interpret a Tree structure with an example

(OR)

- b) Describe a binary Tree with an example

(CONTD.....2)

13. a) Discuss Adjacency List.

(OR)

b) Write about Depth First Search.

14. a) Describe Job Scheduling with example.

(OR)

b) Write about Divide and Conquer.

15. a) Examine the steps in Insertion Sort.

(OR)

b) Write about Linear Search.

SECTION – C

(5 X 8 = 40 MARKS)

ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.(K4&K5)

16. a) Elaborate the implementation of Queue.

(OR)

b) Discuss Linked Lists.

17. a) Write a summary on Tree Traversals.

(OR)

b) Discuss binary search tree.

18. a) Determine the steps of Dijkstra's algorithm.

(OR)

b) Write about Prim's algorithm.

19. a) Explain 8 queen's problems.

(OR)

b) Write about travelling salesman problem and list its applications.

20. a) Construct the steps to perform Merge Sort.

(OR)

b) Evaluate the steps in Binary Search.