

**(FOR THE CANDIDATES ADMITTED
DURING THE ACADEMIC YEAR 2024 ONLY)**

24UBC102

REG.NO. : _____

**N.G.M.COLLEGE (AUTONOMOUS) : POLLACHI
END-OF-SEMESTER EXAMINATIONS : NOVEMBER-2024
COURSE NAME: B.C.A
SEMESTER: I**

**MAXIMUM MARKS: 75
TIME : 3 HOURS**

**PART - III
DATA STRUCTURES**

SECTION – A (10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

MULTIPLE CHOICE QUESTIONS. (K1)

1. The Stack is also known as _____.
a) Last in last out b) First in Last out c) First in first out d) none of these
2. The data structure used by level order traversal of binary tree is _____.
a) Queue b) Stack c) Linked List d) None of these
3. The node that has no children is referred as _____.
a) Parent node b) Root node c) Leaf node d) Siblings
4. Which of the Following algorithm design techniques used in the quick sort algorithm.
a) Back tracking b) Dived and conquer c) Greedy method d) Heap sort
5. The easiest sorting is _____.
a) Shell sort b) Heap sort c) Quick sort d) Selection sort

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES.

(K2)

6. Define an Array.
7. List the binary tree traversal.
8. What is graph?
9. The travelling salesman problem can be solved.
10. What is an external sorting algorithm?

SECTION – B (5 X 5 = 25 MARKS)

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

11. a) How are arrays represented? Justify.

(OR)

b) State the types of Linked list.

12.a) Write a short note on binary trees.

(OR)

b) Recall any three advantages of threaded binary trees.

13.a) Examine the concept of Adjacency Matrix.

(OR)

b) Explain the Prim's Algorithm.

(CONTD.....2)

14.a) Determine the Greedy method.
(OR)

b) What is Backtracking? Explain.

15.a) Explain the heap sort algorithm.
(OR)

b) Write a note on linear search.

SECTION – C **(5 X 8 = 40 MARKS)**
ANSWER EITHER (a) OR (b) IN EACH OF THE FOLLOWING QUESTIONS.
(K4 (Or) K5)

16. a) Explain in detail stack and its operations.
(OR)

b) Construct the linked Stacks and Queues.

17.a) Define tree. Discuss the tree traversal with example.
(OR)

b) Explain binary search trees.

18. a) Determine the various representation of graph.
(OR)

b) Summarize the working of shortest paths.

19.a) Justify the traveling salesperson problem
(OR)

b) Evaluate the divide and conquer algorithm.

20.a) Discuss in detail insertion sort.
(OR)

b) Explain the searching techniques.
