

(FOR THE CANDIDATES ADMITTED

SUBJECT CODE **25 UCT 205**

DURING THE ACADEMIC YEAR 2025-26 ONLY)

REG.NO.

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

END-OF-SEMESTER EXAMINATIONS : MAY– 2026

B.Sc. – COMPUTER TECHNOLOGY

MAXIMUM MARKS: 75

II SEMESTER

TIME : 3 HOURS

PART – III

DATA STRUCTURES

SECTION – A

(10 X 1 = 10 MARKS)

ANSWER THE FOLLOWING QUESTIONS.

(K1)

1. An algorithm is defined as _____
 - a) A flowchart
 - b) A finite set of instructions to solve a problem
 - c) A programming language
 - d) A data structure
2. Recall _____ operation is used to insert an element into a stack.
 - a) Pop
 - b) Peek
 - c) Push
 - d) Delete
3. In a singly linked list, each node contains _____
 - a) Data and two pointers
 - b) Only data
 - c) Data and one pointer
 - d) Only a pointer
4. Select a graph which is defined as a collection of _____
 - a) Nodes only
 - b) Vertices and edges
 - c) Trees and nodes
 - d) Arrays and lists
5. Show in a sequential file organization, how records are stored _____
 - a) In random order
 - b) Based on a key sequence
 - c) In hash table
 - d) In index blocks only

ANSWER THE FOLLOWING IN ONE (OR) TWO SENTENCES

(K2)

6. Define the term array.
7. Expand the different types of queues used in data structure.
8. Explain the linked list in data structure view.
9. Define a Binary Search Tree
10. Indicate and name two divide-and-conquer sorting algorithms.

(CONTD 2)

SECTION – B (5 X 5 = 25 MARKS)

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

11. a) Sketch an algorithm and explain its structure and properties.
(OR)
b) Examine an array and its operations.
12. a) Describe the applications of stack.
(OR)
b) Interpret circular queue with its advantages.
13. a) Assess the process of a linked list and explain its structure.
(OR)
b) Compare singly linked list and doubly linked list.
14. a) Describe a tree. Explain its basic terminologies with a diagram
(OR)
b) Examine the applications of binary search trees.
15. a) Sketch the sequential file organization with advantages and disadvantages.
(OR)
b) Assess the merge sort with steps and list its advantages.

SECTION – C (5 X 8 = 40 MARKS)

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

16. a) Discuss data structure and explain its classification with examples.
(OR)
b) Discuss the representation of arrays in memory and their applications.
17. a) Classify term of a stack and explain its operations .
(OR)
b) Point out and explain the applications of queues.
18. a) Outline circular linked list with structure, advantages, and applications.
(OR)
b) Categorize the applications of linked lists.
19. a) Determine the representation of trees and binary trees.
(OR)
b) Evaluate the graphs and explain basic terminologies.
20. a) Analyze an indexed sequential and direct file organizations.
(OR)
b) Analyze quick sort with steps and applications.