

NOVEMBER 2024

**53504/220C3A/
226C3A/227C3A**

Time : Three hours

Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer any TEN questions.

1. Define: "Data Structure".
2. What are the applications of arrays?
3. Write a note on linear list.
4. Show the operations of queues.
5. Mention the "Node" in a linked list.
6. Define the term "Heap".
7. Write an algorithm to insert an element into a circular queue.
8. Give the two applications of graph.
9. What is a Binary Tree? Give an example.
10. Draw a complete graph with four vertices.
11. Define: "Directed Graph".
12. What are minimal spanning trees?

PART B — (5 × 5 = 25 marks)

Answer any FIVE questions.

13. Summarize the representation of sparse matrix.
14. What are the searching operations of double linked list? Explain.
15. Write a procedure to convert infix to postfix conversion with example.
16. Describe the linked representations of stack.
17. Elaborate the binary search trees in arrays.
18. Determine the representation of graphs.
19. Write an algorithm for breadth first traversal with example.
22. Illustrate the inorder and preorder of binary tree traversals.
23. Develop an algorithm for AVL trees with example.
24. Compare and construct the prim's and kruskal's algorithms with examples.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

20. Outline the algorithm of insertion and deletion in singly linked list.
21. Discuss the implementation of circular linked list.