NOVEMBER 2025 **52507/225C4A**

Time : Three hours Maximum : 75 marks

PART A — (10 × 2 = 20 marks)

Answer any TEN questions.

1. Define : "Space Complexity".
2. Recall the representation of arrays.
3. What is sparse matrix?
4. Write a note on stacks.
5. What are the operations on queues?
6. Show the advantages of AVL Trees.
7. What are the types of graphs?
8. Give the example for pseudocode conventions.
9. State the need of Asymptotic notations.
10. Comment on breadth first traversal.
11. Define : "Merge Sort".
12. What is graph coloring?

PART B — (5 × 5 = 25 marks)

Answer any FIVE questions.

13. Summarize the procedure for insert operation of singly linked list.

14. Write short notes on circular linked list.

15. Elucidate the array and linked representations of stack.

16. Describe the postfix expression with simple example.

17. Elaborate the algorithm for binary search trees in arrays.

18. Bring out the overview and importance of algorithms.

19. Identify the performance measurement of quick sort.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

20. Outline the insertion and deletion operations of double linked list.

21. Discuss the various operations of circular queue.

22. Illustrate binary tree traversals with suitable examples.

23. Conclude the procedure for minimal spanning trees using Prim's algorithm.

24. Examine the implementation of Hamiltonian cycle using backtracking.

———————