DSA Strong Dataset – University Level (Set 2)

Part A – Short Answer (2 Marks Each)

1. Define time complexity and space complexity with examples.

2. Differentiate between stack and queue.

3. What is recursion? Give a simple recursive example.

4. Define linked list. How is it different from an array?

5. What are asymptotic notations? Explain Big O with example.

6. List the advantages of binary search over linear search.

7. What is a priority queue?

8. Define graph. What are directed and undirected graphs?

9. Explain hashing. What is collision resolution?

10. Write the main difference between DFS and BFS.

Part B – Long Answer (5 Marks Each)

11. Write and explain the Merge Sort algorithm with example.

12. Describe how Binary Search Tree (BST) operations (insert, delete, traverse) work.

13. Explain Dijkstra's algorithm for shortest path with an example graph.

14. Illustrate Quick Sort with example and explain its time complexity.

15. Explain how stacks can be used for expression evaluation.

16. Discuss Dynamic Programming with an example (Fibonacci or Knapsack).

17. Compare AVL Tree and B-Tree with use cases.

18. Explain Hash Table operations and their average time complexity.

19. Discuss Graph traversal algorithms with examples.

20. Explain Queue implementation using linked list.