MAY 2022 **P/ID 17605/PCA2D**

Time : Three hours Maximum : 80 marks

PART A — (10 × 2 = 20 marks)

Answer any TEN questions.

1. What is an ordered list?

2. What are the operations performed on arrays?

3. Define the properties of circular queue. How will you check whether the circular queue is full or not?

4. Define the term Dequeue.

5. What causes underfiow of stack? How it could be avoided?

6. Write a recursive algorithm to perform preorder traversal.

7. What is the use of threaded binary tree?

8. List any two differences between graphs and trees.

9. What is the difference between internal and external sorting techniques?

10. What do mean by ‘seek’ and ‘transfer’ times?

11. What is Red-Black tree?

12. What is meant by Splay Tree?

PART B — (5 × 6 = 30 marks)

Answer any FIVE questions.

13. What is asymptotic notation? Describe Big O notation.

14. Compare singly and circular linked list while performing insertion and deletion operations.

15. Trace the infix to postfix algorithm to find the equivalent postfix expression for the following infix expression:

A + (B * C – (D / E $\wedge$ F) * G)

16. Show the structure of the binary search tree after adding each of the following values in that order : 10, 1, 3, 5, 15, 12, 16. What is the height of the created binary search tree?

17. Define the terms complete and full binary tree. Explain with suitable examples.

18. Write short notes on sorting with tapes.

19. Describe the different rotations defined for AVL Tree.

PART C — (3 × 10 = 30 marks)

Answer any THREE questions.

20. Explain the representation of polynomial using Abstract Data Type.

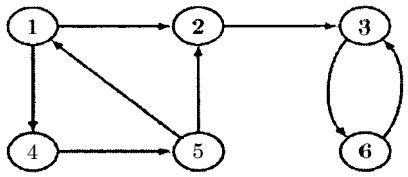
21. Write algorithms to perform the following operations on a doubly linked list.

    (a) Insert a node with data 'x' after a node whose data is 'y'.

    (b) Delete a node whose data is 'a'.

    (c) Insert a node with data 'b' as the 1st node of the list.

22. Explain BFS with the help of an algorithm/pseudo code. Perform BPS on the following graph, starting from node 5.



23. Elaborate on the concept of sorting with disk.

24. Describe the open addressing and chaining methods of collusion resolution techniques in hashing.

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