QP CODE: 23709219

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Reg No : .....

Name : .....

M.C.A DEGREE EXAMINATION, AUGUST 2023

Second Semester

MASTER OF COMPUTER APPLICATION

CORE - MCACT202 - DATA STRUCTURES AND ALGORITHM ANALYSIS

2020 Admission Onwards

C8EFE1C5

Time: 3 Hours Maximum: 75 Marks

Part A

*Answer any **ten** questions*

*Each question carries **3** marks*

1. Distinguish between linear and non-linear data structures.
2. List various applications of Stack.
3. What are the different types of Queues?
4. Differentiate the internal and leaf nodes of a tree.
5. Explain the inorder traversal with example.
6. Write an example of AVL tree.
7. What is linear search?
8. Define truncation method in hashing.
9. Explain how merging of two sorted lists is performed.
10. How is a minimum cost spanning tree generated from a graph using Prim’s algorithm?
11. Evaluate the time complexity of all pairs shortest paths algorithm.
12. What are the searching techniques that are commonly used in branch and bound method?

(10×3=30 marks)

Part B

*Answer **all** questions*

*Each question carries **9** marks*

13. a) Write an algorithm to evaluate Postfix expression using stack .Evaluate the following postfix expression using stack. 5 8 3 - / 6 * 2 %

OR

b) Explain the various operations performed on a circular queue with suitable algorithms and examples.

14. a) Define Tree and explain the Tree terminologies.

OR

b) Explain insertion of a node in binary search tree with algorithm and example.

15. a) Explain how binary search is different from linear search with example.

OR

b) Why hash functions are needed? Explain any 3 hash functions.

16. a) Explain the Binary search algorithm and analyse its performance.

OR

b) Explain how the divide and conquer strtegy is applied in Quicksort algorithm.

17. a) Explain the general method of dynamic programming.

OR

b) Explain the general method of backtracking with control abstraction.

(5×9=45 marks)