QP CODE: 24803213

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Reg No : .....

Name : .....

M.C.A DEGREE EXAMINATION, JUNE 2024

Second Semester

MASTER OF COMPUTER APPLICATION

CORE - MCACT202 - DATA STRUCTURES AND ALGORITHM ANALYSIS

2020 Admission Onwards

6165FC38

Time: 3 Hours Maximum: 75 Marks

Part A

*Answer any **ten** questions*

*Each question carries **3** marks*

1. Define algorithm. List down the features of an algorithm.
2. Describe Array.
3. Define priority queue and list its Applications.
4. What is Linked list and How will you represent a linked list?
5. What is a complete binary tree ?
6. What is an isolated vertex and a degree of a vertex in a graph?
7. Explain the complexities of linear and binary search.
8. How can you choose hash function for floating point numbers.
9. Explain the importance of divide and conquer method of algorithm design.
10. Give the computing time of Binary search in the case of best, average, and worst cases in successful and unsuccessful searches.
11. Define multi-stage graph problem.
12. Describe the general strategy of Branch and Bound method.

(10×3=30 marks)

Part B

*Answer **all** questions*

*Each question carries **9** marks*

13. a) Write an algorithm to convert Infix expression to postfix using stack. Convert the following Infix expression into Postfix using Tabular method, a – b / c * d + e * f / g .

OR

b) Explain Asymptotic complexity with example.

14. a) Describe Preorder and Inorder traversal with suitable example and algorithm.

OR

b) Illustrate Binary tree traversal with suitable examples.

15. a) Find the element 49 using binary search: 10 , 18 , 19 , 20 , 25 , 30 , 49 , 57 , 64 , 72

OR

b) Explain the different methods in hashing.

16. a) Explain the Greedy algorithm for knapsack problem with an example.

OR

b) Explain the divide and conquer algorithm for finding the maximum and minimum in a given set of n elements.

17. a) Explain the various branch and bound techniques.

OR

b) Explain any one algorithm for solving the multi-stage graph problem.

(5×9=45 marks)