

Roll No.....

Total No. of Printed Pages: 1

Total No. of Questions: [11]

M.Sc. (Computer Sc.) (Semester – 2nd)

DATA STRUCTURES USING C++

Subject Code: MSCCS1204

Paper ID: [19221008]

Time: 03 Hours

Maximum Marks: 60

Instruction for candidates:

1. Section A is compulsory. It carries 16 marks. It consists of 4 questions of 4 marks each.
2. Section B consist of 4 questions of 8 marks each. The student has to attempt any 3 questions out of it.
3. Section C consist of 3 questions of 10 marks each. The student has to attempt any 2 questions.

Section – A

(4 marks each)

- Q1. Explain the concept of complexity in data structures and its significance in algorithm analysis.
- Q2. Explain insertion sort with example?
- Q3. What is a doubly linked list? State the advantage and disadvantage of such a list?
- Q4. Using the following traversals, construct the corresponding binary tree:
INORDER: H K D B I L E A F C M J G
PREORDER: A B D H K E I L C F G J M

Section – B

(8 marks each)

- Q5. Write an algorithm to find second largest element of a multi-dimensional array.
- Q6. How can you differentiate stack from an array? Implement the push and pop operation of stack with testing for exceptional conditions?
- Q7. Explain the concept of a doubly linked list in detail. Discuss its advantages and applications with suitable examples.
- Q8. What is tree traversal? Explain the three types of tree traversals with the help of an example binary tree.

Section – C

(10 marks each)

- Q9. Discuss infix to postfix conversion with the help of an algorithm and a suitable example.
- Q10. Discuss the importance of Binary Search Trees (BSTs) with suitable examples. Also write an algorithm to delete an element from a BST.
- Q11. Write merge sort algorithm and analyze its time complexity. Discuss the advantages and disadvantages of merge sort.