

Roll No.

Total Pages : 3

3975/M

M-24/2051

DATA STRUCTURES

Paper-BCA-124

Semester-II

Time allowed : 3 Hours] [Maximum Marks : 75

Note: The candidates are required to attempt two questions each from section A and section B carrying 15 marks each and the entire section C consisting of 5 questions carrying 3 marks each.

SECTION-A

1. Define Data Structures? What is the use of Data Structures? What are various types of Data Structures? Discuss in detail. 15

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2. What do you mean by an Array? What are Linear Arrays? How Linear Arrays can be traversed? Discuss in detail. 15
3. What is a Stack? Explain the algorithm for the PUSH and POP operations in stack. Write the procedure for matching parenthesis in an expression using stacks. 15
4. What do you mean by Queue Data Structures? Write an algorithm to insert and delete an element in a queue data structures. 15

SECTION-B

5. What do you mean by a Linked List? What are its advantages? Write an algorithm to insert a node in the beginning and in the end of a linked list, when the pointer to its first node is given. 15
6. What is Binary Search Tree? How it is different from binary tree? Write an algorithm to delete a node from a binary search tree. 15

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7. What do you mean by Searching? What are various searching techniques? Discuss any one in detail giving its advantages and disadvantages over the others. 15
8. Explain the procedure of merge sort giving suitable example. 15

SECTION-C

9. Attempt all questions : 3×5 = 15
- (i) What is algorithmic complexity?
 - (ii) Differentiate between row major order and column major order.
 - (iii) How a stack is represented in memory?
 - (iv) Differentiate between static and dynamic data structure.
 - (v) What is height and weight of tree? Explain with example.