

A Printed Pages : 3

(2)

(21119) Roll No.

B.C.A.-III Sem.

18012

B.C.A. Examination, November-2019

DATA STRUCTURE USING C AND C++

(BCA-302)

Time : Three Hours]

[Maximum Marks : 75

Note : Attempt questions from *all* sections as per instructions.

Section-A

(Very Short Answer Questions)

Note : Attempt all the *five* questions. Each question carries 3 marks. Very short answer is required not exceeding 75 words. $5 \times 3 = 15$

1. Write the limitations of arrays.
2. Define stacks and queues with an example.
3. What is the advantage of a header node in a linked list ?
4. How a binary tree is traversed in C language ?

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5. What is the basic concept of insertion sorting ?

Section-B

(Short Answer Questions)

Note: Answer any *two* questions out of the following three questions. Each question carries $7\frac{1}{2}$ marks. Short answer is required not exceeding 200 words.

$2 \times 7\frac{1}{2} = 15$

6. What do you mean by sparse matrix ? Explain how a sparse matrix is represented in memory.
7. What is D-queue ? Explain the insertion and deletion operations with the help of suitable example.
8. Write an algorithm to delete last node from a linked list.

Section-C

(Detailed Answer Questions)

Note: Attempt any *three* questions out of the following five questions. Each question carries 15 marks. Answer is required in detail. $3 \times 15 = 45$

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9. Write algorithm and its C syntax to insert an element at the K^{th} position into the linear array.
10. Write an algorithm to evaluate postfix expression and also implement the algorithm to the following expression :
3, 1, +, 2, ↑, 7, 4, -, 2, *, +, 5, -
11. Write algorithm to perform insertion and deletion operations on binary trees and explain them with an example. <https://www.ccsustudy.com>
12. Describe hashing and various hashing techniques in detail.
13. Explain the following :
 - (i) Priority Queues
 - (ii) Heap Sort
 - (iii) Applications of Binary Search Tree