

D (Printed Pages 4)
(21223) Roll No.
BCA-III Sem.

18012

B.C.A. Examination, Dec.-2023

Data Structure using C and C++

(BCA-302)

Time : Three Hours] [Maximum Marks : 75

Note : Attempt **all** the Sections as per instructions.

Section-A

(Very Short Answer Type Questions)

Note : Attempt **all five** questions. Each question carry 3 marks. $3 \times 5 = 15$

1. What do you mean by Sparse arrays?
Give example. 3
2. Where can we use Stack? Give applications of stack. 3
3. How can you represent a Binary Tree in memory using array? 3

P.T.O.

4. What is Hashing. What are its advantages. 3
5. Explain Priority Queue in brief. 3

Section-B

(Short Answer Question)

Note : Attempt any **two** questions.

6. Write an algorithm to convert a given infix expression to postfix expression. Trace the steps involved in converting the given infix expression $((A+B)^C) - ((D*C)/F)$ to post fix expression. 7.5
7. Give difference between Linear and Binary Search. Also write a C program to implement Binary Search. 7.5
8. Write C program to show insertion and deletion in a simple Queue. 7.5

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Section-C

(Long Answer Question)

Note : Attempt any **three** questions.

3×15=45

9. Perform Heap Sort on given keys, Arrange them in descending order: 15
K=2, 9, 7, 6, 5, 8
10. Construct a Binary Tree from its 15
Inorder Traversal → D, B, E, A, F, C
Preorder Traversal → A, B, D, E, C, F
11. Write a C Program to multiply two 2-Dimensional matrix of 3×3 and store the result in another matrix. 15
12. Implement Singly linked list using dynamic memory allocation. 15

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13. Write short notes on:

15

- (a) Collision resolution techniques
- (b) B-Trees
- (c) D-Queues