

Roll No. \_\_\_\_\_

**22/2100****B.C.A. Third Semester****Examination, 2022****Second Paper****(Data Structure Using C & C++)****Time : 1:30 Hours ]****[ Maximum Marks : 75**

**Note :** Attempt any **five** questions. All questions carry equal marks. The answer to given questions should not exceed 250 words each.

1. Write a short note on the structure and applications of : 15

(i) Sparse array

(ii) Lower and upper triangular matrix

2. What do you mean by the following with respect to the STACK data structure? 15

(i) PUSH

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(ii) POP

(iii) OVERFLOW

(iv) UNDERFLOW

Explain with diagram.

3. What is meant by POSTFIX expression?

How is it evaluated? Explain with an example. 15

4. Write about the structure and operations on a doubly linked list. How can we implement such a list in C or C++? 15

5. What do you understand by 'Binary Search Tree'? Illustrate the search process using this tree with a suitable data set. 15

6. Write an account of the process of creation, operations and uses of a B-Tree. 15

7. Write the algorithm for merge sort. Illustrate it with a suitable dataset. 15

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8. What is Hashing? How is it implemented?  
What are its advantages and limitations?

15

9. Write a short note on :                    5+5+5
- (i) Tridiagonal Matrix
  - (ii) Prefix Notation
  - (iii) Insertion Sort

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