



K22U 2779

Reg. No. : .....

Name : .....

**Third Semester B.Sc. Degree (CBCSS – Supplementary)**  
**Examination, November 2022**  
**(2016 – 18 Admissions)**  
**CORE COURSE IN COMPUTER SCIENCE**  
**3B04CSC : Data Structure**

Time : 3 Hours

Max. Marks : 40

SECTION – A

One word answer.

(8×0.5=4)

1. a) LIFO method is used in \_\_\_\_\_ datastructure.
- b) The complexity of binary search algorithm is \_\_\_\_\_
- c) In a tree the children of the same parent is said to be \_\_\_\_\_
- d) If the elements "A", "B", "C" and "D" are placed in a queue and are deleted one at a time, in what order will they be removed ?
- e) A normal queue, if implemented using an array of size MAX\_SIZE, gets full when \_\_\_\_\_ condition is reached.
- f) What would be the asymptotic time complexity to add an element in the linked list ?
- g) Given an array P = {5, 6, 77, 88, 99} and key = 88: How many iterations are done until the element is found using binary search ?
- h) Merge sort uses \_\_\_\_\_ technique to implement sorting.

P.T.O.

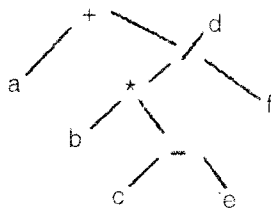


## SECTION – B

Write short notes on **any seven** of the following questions.

(7×2=14)

2. Define Tree.
3. What is quick sort ? Sort the following array using quick sort method.  
24 56 47 35 10 90 82 31
4. Write the code snippet which implements the pop operation.
5. What is a sparse matrix ?
6. Write the inorder form for the following expression tree.



7. Write the code for binary search algorithm.
8. What is circular linked list ?
9. What are the tasks performed during inorder traversal ?
10. Convert the expression  $((A + B) * C - (D - E) ^ (F + G))$  to equivalent Prefix and Postfix notations.
11. What do you mean by Garbage Collection ?

## SECTION – C

Answer **any four** of the following questions.

(4×3=12)

12. What are the advantages and disadvantages of linked list ?
13. Define a Binary Search Tree.



14. Write about insertion sort with suitable example.
15. Define circular queue and write the procedure to create a circular queue.
16. What is a Queue ? How it is different from stack and how is it implemented ?
17. Write the algorithm for binary search.

SECTION – D

Write an essay on **any two** of the following questions.

(2×5=10)

18. What is the difference between Linear Array and Linked List ?
  19. List the basic operations carried out in a linked list. Write the algorithms for those.
  20. Write the program code for infix to postfix conversion with example.
  21. Write about tree traversal with algorithms.
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