D 51729 (Pages : 2) Name.....................................

Reg. No...............................

THIRD SEMESTER (CBCSS—UG) DEGREE EXAMINATION NOVEMBER 2023

Computer Science

BCS 3B 04—DATA STRUCTURES USING C

(2019—2022 Admissions)

Time : Two Hours Maximum : 60 Marks

Section A (Short Answer Type Questions)

Answer **all** *questions, each correct answer carries a maximum of* 2 *marks.*
Ceiling 20 *marks.*

1. Explain singly linked list.

2. What is stack ?

3. What is dequeue ?

4. Define algorithm.

5. Explain searching an element in an array ?

6. What is abstract data type ?

7. Explain trees.

8. What is TOP in stack.

9. Define hash function.

10. What is delete operation in queue ?

11. What is big O notation?

12. What is recursion ?

Turn over

Section B (Short Essay Type Questions)

Answer **all** *questions, each correct answer carries a maximum of 5 marks.*

Ceiling 30 *marks.*

13. Write a C Program to implement queue using linked list.

14. Explain time complexity and space complexity of an algorithm.

15. Explain breadth first search with an example.

16. Explain sparse matrix representation.

17. Explain different hash functions with suitable examples.

18. Write a program to traverse a binary search tree non recursively in preorder.

19. Compare sequential and binary search. Write a program to search an item using recursive sequential search.

Section C (Essay Type Questions)

Answer any **one** *question, correct answer carries* 10 *marks.*

20. Explain string, string operations and pattern matching algorithm.

21. Explain the different operations performed on stack and queue and implement it using array. Explain the different algorithms used for the implementation.