D 11992 **(Pages : 2)** **Name.....**

Reg. No.....

THIRD SEMESTER (CBCSS–UG) DEGREE EXAMINATION
NOVEMBER 2021

B.C.A.

BCA 3B 04—DATA STRUCTURES USING C

(2019—2020 Admissions)

Time : Two Hours Maximum : 60 Marks

Section A

Answer atleast **eight** *questions.*
Each question carries 3 *marks.*
All questions can be attended.
Overall ceiling 24.

1. Why we use data structure ? Explain.
2. What are the various operations that can be performed on different Data Structures ? Explain.
3. What is column major order ?
4. Define sparse matrix.
5. Define circular linked list.
6. When stack is said to be underflow ? Explain.
7. List out limitation of linear queue.
8. What are binary search tree ? Explain.
9. What is an expression tree ?
10. Define binary search.
11. What is undirected graph ? Explain.
12. Explain Folding Method in hashing.

(8 × 3 = 24 marks)

Turn over

Section B

Answer atleast **five** *questions.*
Each question carries 5 *marks.*
All questions can be attended.
Overall ceiling 25.

13. Explain algorithms complexity and time-space trade off with examples.

14. Define Pattern matching algorithms. Explain with examples.

15. What is an array ? Which operations can be performed on Array ? Explain with example.

16. What is a queue ? Write a program to insert more than one element into a queue. Check all validations and use user defined functions and pass parameters.

17. Write a menu driven program to implementation (operations) of stack using linked list.

18. Which sorting techniques are an example of divide and conquer ? Write an algorithm for sort a list of number using that sorting technique.

19. What is strictly binary tree ? Explain array representation of binary tree with example.

(5 × 5 = 25 marks)

Section C

Answer any **one** *question.*
Each question carries 11 *marks.*

20. (a) How to represent linear array in memory ? Explain.

    (b) Write algorithms of tree traversals without recursion. Explain with example.

21 (a) Write a program to add two sparse matrices, use user defined functions and pass parameters.

    (b) Explain any five String operations with examples.

(1 × 11 = 11 marks)