D 12005 **(Pages : 2)** **Name.....**

Reg. No.....

THIRD SEMESTER (CBCSS–UG) DEGREE EXAMINATION
NOVEMBER 2021

Computer Science

BCS 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. What are data structures ? Examples.
2. Explain the string operation, "Concatenation".
3. How to represent a one dimensional array in memory ?
4. What are the advantages of dynamic memory allocation ?
5. Specify one of the applications of a linked list.
6. What is the significance of the term "top of the stack" ?
7. Explain the procedure to add a new element in to a linear queue.
8. What are priority queues ?
9. Define a binary tree data structure with example.
10. Explain in-order tree traversal procedure.
11. What is directed graph ?
12. What is the basic concept of a linear search ?

(8 × 3 = 24 marks)

Section B

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

13. What are the features of a good algorithm ? Discuss the complexity measures.
14. What are sparse matrices ? Explain its memory representation and operations.

Turn over

15. Develop the algorithm to insert a node in a singly linked list.
16. What is recursion ? Explain the requirement of a stack in recursion process.
17. What is circular queue ? Explain the procedure to add a new element in to a circular queue.
18. Explain the binary tree representation in memory using arrays and linked list.
19. Explain the selection sort procedure with example.

(5 × 5 = 25 marks)

Section C

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

20. What is linked list representation of queue in memory ? Develop the implementation algorithms.
21. What are binary search trees ? Develop the algorithm to create a binary search tree in memory.

(1 × 11 = 11 marks)