

C 3521

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Name.....

Reg. No.....

**FOURTH SEMESTER (CBCSS—UG) DEGREE EXAMINATION
APRIL 2021**

Computer Science

BCS 4C 04—DATA STRUCTURE USING C PROGRAMMING

Time : Two Hours

Maximum : 60 Marks

Section A (Short Answer Type Questions)

Answer at least eight questions.

Each question carries 3 marks.

All questions can be attended.

Overall Ceiling 24.

1. What is ADT ? Specify its significance.
2. What are data structures ? List out various linear data structures.
3. Explain the time complexity of an algorithm with example.
4. What are the advantages of an array variable ?
5. How to represent a sparse matrix in memory ?
- ⑥. What are the advantages of a dynamic memory allocation in linked list representation ?
7. What is the basic concept of a doubly linked list ?
8. What is stack organization ? Specify the significance of the term "Top of the stack".
9. Develop an algorithm to insert an element in to a queue.
- ⑩. Explain one of the applications of a queue.
11. What is sort procedure ? Specify its advantages.
12. What are the complexity specifications of search algorithms ?

(8 × 3 = 24 marks)

Turn over

Section B (Short Essay Type Questions)

Answer at least five questions.

Each question carries 5 marks.

All questions can be attended.

Overall Ceiling 25.

13. Explain the classification of data structures with examples. Also, specify the advantages of a dynamic data structures.
14. What are two dimensional arrays ? How to represent a two dimensional array in memory.
15. Develop an algorithm to insert a node in a singly linked list.
16. Explain various types of dequeues and its advantages with suitable example.
17. Explain the implementation of a stack in an array.
18. Illustrate the working of a bubble sort procedure with proper example.
19. Explain the linear search procedure with supporting algorithms.

(5 × 5 = 25 marks)

Section C (Essay Type Questions)

Answer any one question.

The question carries 11 marks.

20. What are the features of a circular queue ? Explain the implementation of a circular queue using arrays.
21. Discuss the quick sort procedure with suitable example.

(1 × 11 = 11 marks)