C 3521

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 deques 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.

$(5 \times 5 = 25$ 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.

$(1 \times 11 = 11$ marks)