

FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2019

(CUCBCSS—UG)

Computer Science

BCS 4C 04—DATA STRUCTURE USING C PROGRAMMING

(2017 Admissions)

Time : Three Hours

Maximum : 64 Marks

Section A*Answer all the questions.**Each question carries 1 mark.*

1. Inserting an item into the stack when stack is not full is called _____ Operation and deletion of item from the stack, when stack is not empty is called _____ operation.
2. ADT stands for _____.
3. Define sparse matrix.
4. Define circular linked list.
5. Logical or mathematical model of particular organization of data is called _____.
6. What is recursion ?
7. Node is collection of _____.
8. If top pointer's value is equal to the size of the stack then Stack is _____.
9. The number of interchanges required to sort 5, 1, 6, 2, 4 in ascending order using Bubble Sort is _____.

(9 × 1 = 9 marks)

Section B*Answer all the questions.**Each question carries 2 marks.*

10. Explain different applications of data structures.
11. What is an array ? What are the different operations on array ?
12. Write an algorithm to insert an element into a stack using linked list.

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13. How to represent a singly linked list in C program ? Explain.
14. Write a program to search an element using linear search. Explain.

(5 × 2 = 10 marks)

Section C (Short Essay Type)

Answer any five questions.

Each question carries 5 marks.

15. What are the different characteristics of data structure ? Explain each.
16. Write a program to add two sparse matrices using user defined functions pass parameters.
17. Define a two dimensional array. How it is represented in memory ?
18. Write a program to delete all duplicate elements from one dimensional array.
19. What are the different applications stacks ? Explain.
20. What are the different ways to implement queue in C ? Explain each.
21. Write an algorithm to insert an element in circular linked list.
22. Explain with example how we implement insertion sort.

(5 × 5 = 25 marks)

Section D (Long Essay Type)

Answer any two questions out of three questions.

Each question carries 10 marks..

23. What is an algorithm ? What are the different categories of data structures ? Give example for each.
24. Define two-way linked list. Write a program to implement singly linked list, using recursive functions.
25. Write a note on :
 - (a) Circular queue.
 - (b) Applications of queue.
 - (c) Array vs. Linked list.

(2 × 10 = 20 marks)