

21U414

(Pages: 2)

Name: .....

Reg.No: .....

**FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2023**

(CBCSS - UG)

(Regular/Supplementary/Improvement)

**CC19U CSC4 C04 - DATA STRUCTURES USING C**

(Computer Science - Complementary Course)

(2019 Admission onwards)

Time : 2.00 Hours

Maximum : 60 Marks

Credit : 2

**Part A** (Short answer questions)

Answer *all* questions. Each question carries 2 marks.

1. Distinguish time complexity and space complexity.
2. Write a brief note on column major order representation of an array.
3. Write the algorithm of array traversal.
4. Write a note on array deletion.
5. What is a singly linked list?
6. What is Circular linked list? List down the various operations that can be performed on circular linked list.
7. What is recursion? Name the data structure used for implementing recursion.
8. Define enqueue.
9. Define a priority queue.
10. What is searching? List the types of searching.
11. Define insertion sort.
12. Define merge sort. What is the time complexity of merge sort.

**(Ceiling: 20 Marks)**

**Part B** (Short essay questions - Paragraph)

Answer *all* questions. Each question carries 5 marks.

13. Explain different data structure operations in detail.
14. Write a note on array copy with algorithm.
15. Explain the way to represent a sparse matrix using arrays?
16. What is a doubly linked list? How will you perform 'Insertion' operation on doubly linked list?

17. What are queues? What are the various queue operations? Explain queue operations using linked list.
18. Explain the steps in sorting the element 8, 5, 6, 10 using selection sort.
19. Illustrate the use of Divide-and-Conquer method in Quick sort with suitable example.

**(Ceiling: 30 Marks)**

**Part C (Essay questions)**

Answer any *one* question. The question carries 10 marks.

20. Illustrate stack operations with suitable example.
21. Explain the concept of Bubble sort using an example and also write down the algorithm of the same.

**(1 × 10 = 10 Marks)**

\*\*\*\*\*