

23U414

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Name : .....

Reg. No : .....

**FOURTH SEMESTER B.Sc. DEGREE EXAMINATION, APRIL 2025**

(CBCSS-UG)

(Regular/Supplementary/Improvement)

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

(Computer Science - Complementary Course)

(2019 Admission onwards)

Time: 2 Hours

Maximum: 60 Marks

Credit: 2

**Part A** (Short answer questions)

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

1. What is space complexity?
2. Differentiate between array and linked list.
3. Define array merge.
4. Define a sparse matrix. Give an example.
5. What do you mean by 'Traversal' operation in circular linked list?
6. Define doubly linked list give an example.
7. What is a stack?
8. What do you mean by queue?
9. Give some applications of queue.
10. What is sorting? Define internal sorting.
11. Define insertion sort. What is the time complexity of insertion sort?
12. What do you mean by divide-and-conquer method?

**(Ceiling: 20 Marks)**

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

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

13. What do you mean by data structure? Explain data structure operations.
14. What are the steps required for performing array insertion?
15. What are the steps required for performing array deletion?
16. How will you perform 'Deletion' in Singlelinked list? Explain with algorithm.
17. How will you perform insertion and deletion in a queue using linked list?

18. Explain the steps in sorting the element 8,5,6,10 using selection sort.
19. Sort the elements 5, 9, 6, 4, 3, 2, 1 using Quick sort.

**(Ceiling: 30 Marks)**

**Part C** (Essay questions)

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

20. With suitable algorithm explain stack operations using linked list.
21. What is Binary search in data structure? Explain the concept with an example and algorithm.

**(1 × 10 = 10 Marks)**

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