

20U339

(Pages: 2)

Name: .....

Reg.No: .....

**THIRD SEMESTER B.Sc./B.C.A. DEGREE EXAMINATION, NOVEMBER 2021**

(CBCSS - UG)

(Regular/Supplementary/Improvement)

**CC19U BCS3 B04/CC19U BCA3 B04 - DATA STRUCTURES USING C**

(Computer Science & Computer Application - Core Course)

(2019 Admission onwards)

Time : 2.00 Hours

Maximum : 60 Marks

Credit : 3

**Part A** (Short answer questions)

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

1. What is an abstract data type?
2. Explain common operations on data structure.
3. What is the difference between row major order and column major order?
4. What is the advantage of sparse matrix over simple matrix?
5. Differentiate between array and linked list.
6. What are the advantage of doubly linked list?
7. Write an algorithm to insert an element in a circular queue.
8. What is the degree of a node in a tree?
9. Write the procedure to delete the child of a binary tree.
10. Construct binary search tree for 50, 15, 75, 81, 77, 30, 64, 99, 18, 3, 35.
11. Define the term graph.
12. What is meant by traversing a graph?

**(Ceiling: 20 Marks)**

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

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

13. How to analyze the Efficiency of an Algorithm?
14. Explain the array delete operation.
15. Explain how you will delete a node from the end of a singly linked list.
16. What are stacks? How are stacks implemented in memory? What are the various stack operations? Write algorithms for each?
17. What are queues? How are queues implemented in memory? What are the various queue operations?
18. What is pre and post-order tree traversal? Write and explain their algorithms.
19. Explain the working of insertion sort algorithm with example.

**(Ceiling: 30 Marks)**

**Part C** (Essay questions)

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

20. Explain queue data structure with illustrating suitable examples.
21. What is hashing? Explain the different hash functions.

**(1 × 10 = 10 Marks)**

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