24U347S (Pages: 2) Name: .....

Reg.No: .....

THIRD SEMESTER B.Sc./B.C.A. DEGREE EXAMINATION, NOVEMBER 2025

(CBCSS - UG)

CC19UBCS3B04 / CC19UBCA3B04 - DATA STRUCTURES USING C

(Computer Science / Computer Application - Core Course)

(2019 to 2023 Admissions - Supplementary/Improvement)

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 the difference between data and information?
2. Define linear data structures?
3. Distinguish time complexity and space complexity.
4. What is a matrix that is mainly populated with zeroes?
5. Define the term circular list.
6. Explain dequeue operation on a queue.
7. List any two applications of queues.
8. What is complete binary tree? How many leaf nodes are there in a complete binary tree of depth ‘d’?
9. Write the procedure to delete the child of a binary tree.
10. List different tree traversal.
11. What do you mean by a cycle in a 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. Explain the array insert operation.
14. Explain the array serch operation.
15. Define stack. How stack can be implemented using an array and linked list?
16. What is the advantage of prefix expression over infix? Give the postfix expression for d/(e+f)^b*c.
17. How does a binary search algorithm work? Write down the program.

18. Write short note on hash functions.

19. Explain the working of insertion sort algorithm.

(Ceiling: 30 Marks)

Part C (Essay questions)

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

20. What is a linked list? Explain the insert and delete operations in linked list.

21. Why it is said that searching a node in a binary search tree is efficient than that of a simple binary tree? Create a Binary Search Tree for the following data and do inorder, preorder and postorder traversal of the tree 50, 60, 25, 40, 30, 70, 35, 10, 55, 65.

(1 × 10 = 10 Marks)

****