497089 DCCS201

Reg. No.

II Semester B.Sc. Degree Examination, July/August - 2024

COMPUTER SCIENCE

Data Structures

(NEP Scheme)



Time : 2½ Hours Maximum Marks : 60

*Instructions to Candidates:*

*Answer All parts. Answer any FOUR from each part.*

## PART - A

I. Answer any **FOUR** questions. Each question carries **2** marks. **(4×2=8)**

1. Define data structures. What is meant by abstract data type?
2. What is a string? How is it different from an array?
3. What is Stack? Mention any 2 applications of stacks.
4. Define graph. Mention graph traversal techniques.
5. Name any four sorting techniques.
6. Compare Sequential search and Binary search.

## PART - B

II. Answer any **FOUR** questions. Each question carries **5** marks. **(4×5=20)**

7. Explain the asymptotic notations for complexity of algorithms.
8. What is meant by traversal? Write the algorithm for traversing linear array.
9. Write a C program to evaluate postfix expression.
10. Write a note on
    a) Greedy algorithm. **(2)**
    b) Divide and conquer method. **(3)**

**[P.T.O.**

11. Define binary search tree. Explain the linked representation for binary trees.

12. Explain Hashing.

## PART - C

**III.** Answer any **FOUR** questions. Each question carries **8** marks. **(4×8=32)**

13. a) Explain the classification of data structures with a diagram. **(4)**

    b) Explain any two string operations. **(4)**

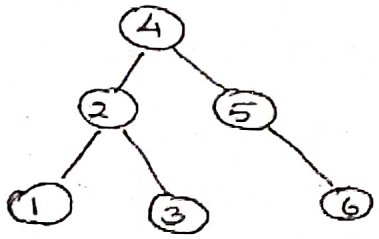
14. a) What are the types of linked list. Explain. **(4)**

    b) Explain two operations on stacks. **(4)**

15. a) Explain the differences between stacks and queues. **(3)**

    b) Convert A + B * (C + D) into postfix. **(3)**

    c) Traverse the following tree in in-order. **(2)**




16. Write a program to implement circular queue using arrays. **(8)**

17. a) Explain heap with an example. **(4)**

    b) Explain the application of graphs. **(4)**

18. a) Give an algorithm for insertion sort. **(4)**

    b) Write a recursive function to find the GCD of 2 numbers. **(4)**