ST.JOSEPH’S COLLEGE FOR WOMEN (AUTONOMOUS), VISAKHAPATNAM

   III SEMESTER     **COMPUTER SCIENCE**        Time: 2Hrs/Week

CS-Ma2-3651(2) **DATA STRUCTURES USING C LAB** MARKS:50

w.e.f 2024-2025 (23AK Batch) **SYLLABUS**

**Course Objectives:**

To introduce the fundamental concept of data structures and to emphasize the importance of various data structures in developing and implementing efficient algorithms.

**Course Outcomes:** Students after successful completion of the course will be able to:

1. Develop programs to perform basic operations (insertion, deletion, traversal) on arrays, linked lists, stacks, and queues in C. [L3,L6].
2. Design and develop algorithms and programs in binary trees and graphs with data structures. [L3,L6].
3. Demonstrate the practical use of sorting, and searching techniques. [L2]

**List of Experiments:**

1. Write a program to read ‘N’ numbers of elements into an array and also perform the following operation on an array

a. Add an element at the beginning of an array

b. Insert an element at given index of array

c. Update an element using a values and index

d. Delete an existing element

2. Write Program to implement Single Linked List with insertion, deletion and traversal operations

3. Write Program to implement Circular doubly Linked List with insertion, deletion and traversal operations

4. Write Programs to implement the Stack operations using an array

5. Write a program using stacks to convert a given infix expression to postfix

6. Write Programs to implement the Stack operations using Liked List.

7. Write Programs to implement the Queue operations using an array.

8. Write Programs to implement the Queue operations using Liked List.

9. Write a program for Binary Search Tree Traversals

10. Write a program to search an item in a given list using the following Searching Algorithms

a. Linear Search b. Binary Search.

11. Write a program for implementation of the following Sorting Algorithms

a. Bubble Sort b. Insertion Sort c. Quick Sort

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