B.E/B.Tech. PRACTICAL END SEMESTER EXAMINATIONS, NOVEMBER/DECEMBER 2022

Third Semester

CS3311 – DATA STRUCTURES LABORATORY

(Regulations 2021)

Time: 3 Hours **(Answer any one Question)** **Max.Marks: 100**

Aim and Algorithm/ Procedure	Program	Execution and Results	Viva-voce	Record	Total
20	30	30	10	10	100

1. Write a c program to implement the following operations for Queue ADT using Array implementation.
   i.) Insert ii.) Delete iii.) Display
2. Write a program in C to insert a new node at the end of a Singly Linked List.
3. Write a C program to insert and delete of an element in a linear queue

   (Choices i) Front of the Queue ii)Rear of the Queue).
4. Write a C program to add the polynomial equations 3x^3+5^2+4x^0 and 7x^3+4x^2+8x^0. For addition use List ADT
5. Write a C program to implement and evaluate the postfix expression.
6. How to implement the search operation on a binary search tree after adding new element. Write a C program, to implement the above.

   Write a C program that uses functions to perform the following:

   a) Create a binary search tree of integers.

   b) Traverse the above Binary search tree non recursively in inorder

7. Write a c program to perform the following operations:

   a) Insert an element into a AVL tree.

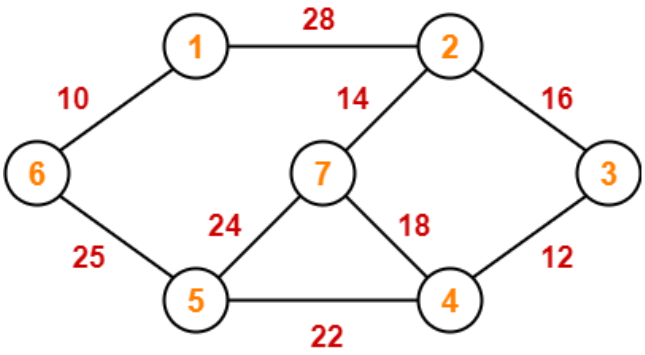
   b) Delete an element from a AVL tree.

   c) Search for a key element in a AVL tree.

8. Write a C program to insert and delete an element in Max heap binary tree.

9. Write a C program to implement Dijkstra's algorithm

10. Construct the minimum spanning tree (MST) for the given graph using Prim's Algorithm-



11. Find the number 18 in the given list by implementing the binary search tree in C language. {20,14,6,8,12,10,4,16,18,2}

12. Write a C program to sort the given unsorted array of elements using insertion sort

    {12,31,25,8,32,17}

13. Write a C program to implement selection sort for the given array

    arr[] = {64, 25, 12, 22, 11}.

14. Write a C program for the implementation of priority queue using the following heap operation Minheap i.) Insert ii.) Delete

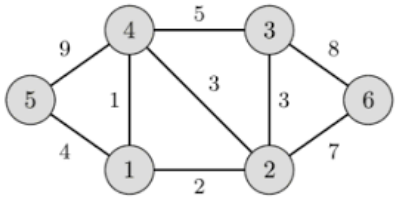
15 Create a node and perform the following operation Insertion with single rotation and double rotation, Display in **AVL Tree** using C program.

16 Write a C Program to implement the following various operation for **List ADT** using array implementation. i.) Create ii.) Traverse iii.)Search

17 Write a C program to construct a binary tree and display the nodes using inorder, preorder and postorder traversals.

18 Write a C Program to implement the following various operation for **Queue ADT** using array implementation. i.) Enqueue ii.) Dequeue iii.)Display

19 Write a C program to construct MST using Prims algorithm for the given graph



20 Write a C Program for Binary SearchTree with the following operations Create, Insert, Findmin and Findmax.