4. (a) Write a C function to combine two singly connected linked lists such that if one list is \( L = (l_0, l_1, \ldots, l_m) \) and other list is \( M = (m_0, m_1, \ldots, m_n) \), after combining them the combined list should be \( (l_0, m_0, l_1, m_1, \ldots) \). No additional nodes may be used.

(b) Write functions that implement stacks and queues using linked lists.

\[ 12,8 \]

UNIT-III

5. (a) What are AVL trees? Write algorithms for AVL tree left balance and rotate right and left.

(b) Write function to count number of leaf nodes of a binary tree.

\[ 12,8 \]

6. (a) What is a \( m \)-way tree? Draw a four-way tree. What is a B-tree? Draw a B-tree of order 5.

(b) Write algorithms to add and delete a node from binary search tree.

\[ 8,12 \]

UNIT-IV

7. (a) Write an algorithm that finds the sum of the degrees for a node of a graph represented using the adjacency list representation.

(b) What is Bucket hashing method? Write its algorithm.

\[ 10,10 \]

8. (a) Write algorithms for heap sort and quick sort.

(b) Write down any minimum-cost spanning tree algorithm. Obtain its running time complexity.

\[ 10,10 \]