St. Francis Institute of Technology
Department of Information Technology

Academic Year: 2023-2024   **Semester: ODD -III**
Subject: Data Structure and Analysis   **Class/Branch/Division : S.E / I.T /A & B**

Internal Assessment Test I (IAT-I) Portion

Sr. no	Topic no.	CO
1	**Introduction to Stacks, Queues and Linked Lists :** Linear and Non Linear Data Structures, Static and Dynamic Data Structures.Concept of Stack and Queue. Array Implementation of Stack and Queue, Circular Queue, Double Ended Queue, Priority Queue. Concept of Linked Lists. Singly linked lists, doubly linked lists and circular linked lists. Insertion, deletion, update and copying operations with Singly linked lists, doubly linked lists and circular linked lists. Reversing a singly linked list.	CO1
2	**Trees:** Introduction to Trees: Terminology, Types of Binary trees. Non recursive Preorder, in-order and post-order traversal. Creation of binary trees from the traversal of binary trees. Binary search tree: Traversal, searching, insertion and deletion in binary search tree.Threaded Binary Tree: Finding in-order successor and predecessor of a node in threaded tree. Insertion and deletion in threaded binary tree. **AVL Tree**: Searching and traversing in AVL trees. Tree Rotations: Right Rotation, Left Rotation. Insertion and Deletion in an AVL Tree. **B-tree**: Searching, Insertion, Deletion from leaf node and non-leaf node. B+ Tree, Digital Search Tree, Game Tree & Decision Tree	CO2
3.	**Graphs:** Introduction to Graphs: Undirected Graph, Directed Graph, graph terminology, Connectivity in Undirected and Directed Graphs. Spanning tree. Representation of graph: adjacency matrix, adjacency list, Transitive closure of a directed graph and path matrix. Traversals: Breadth First Search, Depth First Search.	CO3

Signature:

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    Subject in-charge   HoD