PUNE INSTITUTE OF COMPUTER TECHNOLOGY

INFORMATION TECHNOLOGY

ACADEMIC YEAR -2020_21

SUB: DSA 2019 course Semester – I

DSFL ASSIGMENT NO 5 WRITUP OUTLINE

1	**Title**	Assignment 5: Binary Search tree
2.	**Aim**	To implement a Binary Search Tree
3.	**Problem statement**	Implement binary search tree and perform following operations: a) Insert (Handle insertion of duplicate entry) b) Delete c) Search d) Display tree (Traversal) e) Display - Depth of tree f) Display - Mirror image g) Create a copy h) Display all parent nodes with their child nodes i) Display leaf nodes j) Display tree level wise (Note: Insertion, Deletion, Search and Traversal are compulsory, from rest of operations, perform Any three)
4.	**Objective**	
5.	**Outcome**	
6.	**Theory**	C. Theory :: 1. Binary Search tree concept, definition with example 2. Applications of BST 3. BST ADT
7.	**Algorithms /Pseudocode:**	Write down the pseudocode for the following operations and explain each of them with appropriate examples and data structure i. BST ceration Recursive and non recursive ii. BST search recursive and non recursive iii. BST delete Recursive iv Level order traversal v. Depth of tree recursive and non recursive vi Mirror recursive non recursive vii. Copy of tree recursive and non recursive Just write algorithm /pseudocode vii. Count no of leaf, non leaf node etc. iv Recursive inorder, preorder, postorder traversal
8.	**Test cases/validation**	Validations : Valid key input for insertion, deletion, search operations Test cases : 1. Random input 2. sorted input and test for skewed tree concepts (calculate no comparions

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		for insertion)
09	**Program**	Printout /Softcopy
10.	**Results /output**	Including test cases , validations and valid inputs based results .
11.	**Conclusion**	

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