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|  | “Techno Social Excellence”  Marathwada Mitra Mandal’s  **INSTITUTE OF TECHNOLOGY (MMIT)**  Lohgaon, Pune-411047. |

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**Department of Computer Engineering**

**Academic Year: 2021 - 2022 Semester: IV**

**Name of the Student: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Subject Name: Data Structure and Algorithm Laboratory**

**Class: A/B Roll No.: \_\_\_\_\_\_\_\_\_\_\_\_ Exam Seat No: --\_\_\_\_\_\_\_\_\_\_\_**

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| **Sr. No.** | **Title** | **Page No.** | **Date of Performance** | **Date of Submission** | **Remarks** | **Signature** |
| 1.(A-1) | Consider telephone book database of N clients. Make use of a hash table implementation to quickly look up client‘s telephone number. Make use of two collision handling techniques and compare them using number of comparisons required to find a set of telephone numbers |  | 08/02/2022 | 15/02/2022 |  |  |
| 2.(A-4) | To create ADT that implement the "set" concept. a. Add (new Element) -Place a value into the set , b. Remove (element) Remove the value c. Contains (element) Return true if element is in collection, d. Size () Return number of values in collection Iterator () Return an iterator used to loop over collection, e. Intersection of two sets , f. Union of two sets, g. Difference between two sets, h. Subset |  | 15/02/2022 | 21/02/2022 |  |  |
| 3.(B-5) | A book consists of chapters, chapters consist of sections and sections consist of subsections. Construct a tree and print the nodes. Find the time and space requirements of your method. |  | 21/02/2022 | 22/02/2022 |  |  |
| 4.(B-6) | Beginning with an empty binary search tree, Construct binary search tree by inserting the values in the order given. After constructing a binary tree - i. Insert new node, ii. Find number of nodes in longest path from root, iii. Minimum data value found in the tree, iv. Change a tree so that the roles of the left and right pointers are swapped at every node, v. Search a value |  | 22/02/2022 | 15/03/2022 |  |  |
| 5.(B-7) | Construct an expression tree from the given prefix expression eg. +--a\*bc/def and traverse it using post order traversal (non recursive) and then delete the entire tree. |  | 15/03/2022 | 22/03/2022 |  |  |
| 6.(C14) | There are flight paths between cities. If there is a flight between city A and city B then there is an edge between the cities. The cost of the edge can be the time that flight take to reach city B from A, or the amount of fuel used for the journey. Represent this as a graph. The node can be represented by airport name or name of the city. Use adjacency list representation of the graph or use adjacency matrix representation of the graph. Check whether the graph is connected or not. Justify the storage representation used. |  | 22/03/2022 | 23/03/2022 |  |  |
| 7.(C15) | You have a business with several offices; you want to lease phone lines to connect them up with each other; and the phone company charges different amounts of money to connect different pairs of cities. You want a set of lines that connects all your offices with a minimum total cost. Solve the problem by suggesting appropriate data structures. |  | 23/03/2022 | 29/03/2022 |  |  |
| 8.(D18) | Given sequence k = k1 <k2 < … <kn of n sorted keys, with a search probability pi for each  key ki . Build the Binary search tree that has the least search cost given the access  probability for each key? |  | 29/03/2022 | 05/04/2022 |  |  |
| 9.(D19) | A Dictionary stores keywords and its meanings. Provide facility for adding new keywords, deleting keywords, updating values of any entry. Provide facility to display whole data sorted in ascending/ Descending order. Also find how many maximum comparisons may require for finding any keyword. Use Height balance tree and find the complexity for finding a keyword |  | 05/04/2022 | 26/04/2022 |  |  |
| 10.(E21) | Implement the Heap/Shell sort algorithm implemented in Java demonstrating heap/shell data structure with modularity of programming language |  | 26/04/2022 | 10/05/2022 |  |  |
| 11.((F23) | Department maintains a student information. The file contains roll number, name, division and address. Allow user to add, delete information of student. Display information of particular employee. If record of student does not exist an appropriate message is displayed. If it is, then the system displays the student details. Use sequential file to main the data. |  | 10/05/2022 | 13/05/2022 |  |  |
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Faculty in Charge\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Sign:

Date: