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ABEDA INAMDAR SENIOR COLLEGE OF ARTS, SCIENCE AND COMMERCE (AUTONOMOUS), PUNE
AZAM CAMPUS, CAMP, PUNE – 411001

Booklet of Practical Skeleton Papers for

B.C.A (Science) NEP-2023 Pattern

Credit System Syllabus

(w.e.f. From - June 2023)

S.Y.B.C.A (Science)

SEMESTER–IV

23SBCA44MM-Lab I: Data Structure using Python

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S.Y.B.C.A. (SCIENCE) PRACTICAL EXAMINATION OCT / APRIL20___

Paper- 23SBCA44MM-Lab I: Data Structure using Python

(Semester-IV, NEP-2023 pattern)

Duration: 3hrs **Max Marks: 30**

Q1. Write Python program to search element in an array using linear search algorithm in iterative manner. [10]

Q2. Write Python program to implement following operations on singly circular linked list. [15]

1. **Append**
2. **Display**
3. **Insert First**

Q3. External Viva [5]

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S.Y.B.C.A. (SCIENCE) PRACTICAL EXAMINATION OCT / APRIL20___

Paper- 23SBCA44MM-Lab I: Data Structure using Python

(Semester-IV, NEP-2023 pattern)

Duration: 3hrs **Max Marks: 30**

Q1. Write recursive python program to search element in an array using linear search algorithm. [10]

Q2. Write Python program to implement following operations on Doubly Circular linked list. [15]

1. **Append**
2. **Display**
3. **Delete Last**

Q3. External Viva [5]

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Paper- 23SBCA44MM-Lab I: Data Structure using Python

(Semester-IV, NEP-2023 pattern)

Duration: 3hrs **Max Marks: 30**

Q1. Write Python program to search element in an array using binary search algorithm in iterative manner. [10]

Q2. Write Python program to implement following operations on singly linked list. [15]

1. **Append**
2. **Display**
3. **Insert at position**

Q3. External Viva [5]

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(Semester-IV, NEP-2023 pattern)

Duration: 3hrs **Max Marks: 30**

Q1. Write recursive python program to search element in an array using binary search algorithm. [10]

Q2. Write Python program to implement following operations on doubly linked list. [15]

1. **Append**
2. **Display**
3. **Insert at position**

Q3. External Viva [5]

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Paper- 23SBCA44MM-Lab I: Data Structure using Python

(Semester-IV, NEP-2023 pattern)

Duration: 3hrs **Max Marks: 30**

Q1. Write Python program to sort elements in ascending order using bubble sort. [10]

Q2. Write python program to implement static stack with following operations [15]

1. **PUSH**
2. **POP**
3. **DISPLAY**

Q3. External Viva [5]

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Paper- 23SBCA44MM-Lab I: Data Structure using Python

(Semester-IV, NEP-2023 pattern)

Duration: 3hrs **Max Marks: 30**

Q1. Write Python program to sort elements in descending order using bubble sort. [10]

Q2. Write python program to implement static queue with following operations [15]

1. **ENQUEUE**
2. **DEQUEUE**
3. **DISPLAY**

Q3. External Viva [5]

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Paper- 23SBCA44MM-Lab I: Data Structure using Python

(Semester-IV, NEP-2023 pattern)

Duration: 3hrs **Max Marks: 30**

Q1. Write Python program to sort numbers in ascending order using insertion sort [10]

Q2. Write Python program to implement dynamic stack using linked list ti implement following operations: [15]

1. **PUSH**
2. **POP**
3. **DISPLAY**

Q3. External Viva [5]

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(Semester-IV, NEP-2023 pattern)

Duration: 3hrs **Max Marks: 30**

Q1. Write a Python program to sort numbers in descending order using insertion sort. [10]

Q2. Write Python program to implement dynamic queue using linked list and implement following operations: [15]

1. **ENQUEUE**
2. **DEQUEUE**
3. **DISPLAY**

Q3. External Viva [5]

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Paper- 23SBCA44MM-Lab I: Data Structure using Python

(Semester-IV, NEP-2023 pattern)

Duration: 3hrs **Max Marks: 30**

Q1. Write Python program to create singly linked list and display it. **[10]**

Q2. Write python program to evaluate postfix expression using stack. **[15]**

Q3. External Viva **[5]**

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Paper- 23SBCA44MM-Lab I: Data Structure using Python

(Semester-IV, NEP-2023 pattern)

Duration: 3hrs **Max Marks: 30**

Q1. Write Python program to create doubly linked list and display it. **[10]**

Q2. Write python program to sort the elements in ascending order using quick sort. **[15]**

Q3. External Viva **[5]**

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Paper- 23SBCA44MM-Lab I: Data Structure using Python

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Duration: 3hrs **Max Marks: 30**

Q1. Write Python program to create doubly circular linked list and display it. **[10]**

Q2. Write python program to sort the elements in ascending order using merge sort. **[15]**

Q3. External Viva **[5]**

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Paper- 23SBCA44MM-Lab I: Data Structure using Python

(Semester-IV, NEP-2023 pattern)

Duration: 3hrs **Max Marks: 30**

Q1. Write Python program to reverse sentence using stack **[10]**

Q2. Write Python program to create binary search tree and display in-order and count number of leaf nodes. **[15]**

Q3. External Viva **[5]**

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Paper- 23SBCA44MM-Lab I: Data Structure using Python

(Semester-IV, NEP-2023 pattern)

Duration: 3hrs **Max Marks: 30**

Q1. Write a Python program to sort numbers in ascending order using bubble sort. [10]

Q2. Write Python program to create binary search tree and display it in in-order and post-order fashion. [15]

Q3. External Viva [5]

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Paper- 23SBCA44MM-Lab I: Data Structure using Python

(Semester-IV, NEP-2023 pattern)

Duration: 3hrs **Max Marks: 30**

Q1. Write Python program to search element in an array using linear search algorithm in iterative manner. [10]

Q2. Write Python program to convert expression infix to postfix using stack [15]

Q3. External Viva [5]

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Paper- 23SBCA44MM-Lab I: Data Structure using Python

(Semester-IV, NEP-2023 pattern)

Duration: 3hrs **Max Marks: 30**

Q1. Write Python program to search element in an array using binary search algorithm in iterative manner. [10]

Q2. Write Python program to implement following operations on doubly linked list [15]

1. **Append**
2. **Display**
3. **Search element**

Q3. External Viva [5]

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Paper- 23SBCA44MM-Lab I: Data Structure using Python

(Semester-IV, NEP-2023 pattern)

Duration: 3hrs **Max Marks: 30**

Q1. Write Python program to search element in an array using linear search algorithm in recursive manner. [10]

Q2. Write Python program to implement following operations on singly linked list [15]

1. **Append**
2. **Display**
3. **Delete By Value**

Q3. External Viva [5]

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Paper- 23SBCA44MM-Lab I: Data Structure using Python

(Semester-IV, NEP-2023 pattern)

Duration: 3hrs **Max Marks: 30**

Q1. Write Python program to search element in an array using binary search algorithm in recursive manner. [10]

Q2. Write Python program to implement following operations on singly circular linked list [15]

1. **Append**
2. **Display**
3. **Delete First**

Q3. External Viva [5]

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Paper- 23SBCA44MM-Lab I: Data Structure using Python

(Semester-IV, NEP-2023 pattern)

Duration: 3hrs **Max Marks: 30**

Q1. Write Python program to reverse sentence using stack . **[10]**

Q2. Write python program to sort the elements in ascending order using quick sort. **[15]**

Q3. External Viva **[5]**

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Paper- 23SBCA44MM-Lab I: Data Structure using Python

(Semester-IV, NEP-2023 pattern)

Duration: 3hrs **Max Marks: 30**

Q1. Write Python program to sort elements of an array in ascending order using insertion sort algorithm. [10]

Q2. Write Python program to implement following operations on doubly circular linked list [15]

1. **Append**
2. **Display**
3. **Delete by value**

Q3. External Viva [5]

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Paper- 23SBCA44MM-Lab I: Data Structure using Python

(Semester-IV, NEP-2023 pattern)

Duration: 3hrs **Max Marks: 30**

Q1. Write Python program to reverse singly linked list [10]

Q2. Write python program to implement static queue with following operations [15]

1. **ENQUEUE**
2. **DEQUEUE**
3. **DISPLAY**

Q3. External Viva [5]

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Paper- 23SBCA44MM-Lab I: Data Structure using Python

(Semester-IV, NEP-2023 pattern)

Duration: 3hrs **Max Marks: 30**

Q1. Write Python program to reverse doubly linked list and display it. **[10]**

Q2. Write Python program to create binary search tree and display it in in-order and pre-order fashion. **[15]**

Q3. External Viva **[5]**

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Paper- 23SBCA44MM-Lab I: Data Structure using Python

(Semester-IV, NEP-2023 pattern)

Duration: 3hrs **Max Marks: 30**

Q1. Write Python program to reverse sentence using stack **[10]**

Q2. Write Python program to create binary search tree and display in-order and also find mirror image of BST. **[15]**

Q3. External Viva **[5]**

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Paper- 23SBCA44MM-Lab I: Data Structure using Python

(Semester-IV, NEP-2023 pattern)

Duration: 3hrs **Max Marks: 30**

Q1. Write Python Program to find length singly linked list. **[10]**

Q2. Write a Python program to sort elements in ascending order using Merge Sort Algorithm **[15]**

Q3. External Viva **[5]**

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Duration: 3hrs **Max Marks: 30**

Q1. Write Python program to implement linear search algorithm. **[10]**

Q2. Write python program to implement static stack with following operations **[15]**

1. **PUSH**
2. **POP**
3. **DISPLAY**

Q3. External Viva **[5]**

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Duration: 3hrs **Max Marks: 30**

Q1. Write Python program to sort elements in ascending order using insertion sort. [10]

Q2. Write Python program to implement dynamic queue using linked list and implement following operations: [15]

1. **ENQUEUE**
2. **DEQUEUE**
3. **DISPLAY**

Q3. External Viva [5]

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Duration: 3hrs **Max Marks: 30**

Q1. Write Python program to find length of static stack. **[10]**

Q2. Write Python program to implement Binary search tree and display in-order traversal. **[15]**

Q3. External Viva **[5]**

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Duration: 3hrs **Max Marks: 30**

Q1. Write Python program to find length of static queue. [10]

Q2. Write Python program to implement Binary search tree and display in-order traversal. [15]

Q3. External Viva [5]

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Duration: 3hrs **Max Marks: 30**

Q1. Write Python program to display peek elements of static stack. [10]

Q2. Write Python program to implement doubly linked list and display it and also implement search by value in linked list. [15]

Q3. External Viva [5]

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Duration: 3hrs **Max Marks: 30**

Q1. Write Python program to display peek elements of static queue. [10]

Q2. Write Python program to implement singly linked list and display it and also implement search by value in linked list. [15]

Q3. External Viva [5]