**Section A: List (3 Questions):**

**Section B: Tuple (2 Questions):**

**Section C: Dictionary (3 Questions):**

**Section D: Set (2 Questions):**

**Q1. Write a Python program to remove all duplicates from a list without using the set() function. Input Example: [1, 2, 2, 3, 4, 4, 5]**

**Output: [1, 2, 3, 4, 5]**

input\_list = [1, 2, 2, 3, 4, 4, 5]

unique\_list = []

for i in input\_list:

    if i not in unique\_list:

        unique\_list.append(i)

print("Q1 Output:", unique\_list)

**Q2. Given a list of integers, write a program to find the second highest unique number. Input Example: [12, 5, 9, 21, 21, 3]**

**Output: 12**

nums = [12, 5, 9, 21, 21, 3]

unique\_nums = list(set(nums))

unique\_nums.sort(reverse=True)

second\_highest = unique\_nums[1]

print("Q2 Output:", second\_highest)

**Q3. Rotate a list to the right by k positions. Input: List = [1, 2, 3, 4, 5], k = 2**

**Output: [4, 5, 1, 2, 3]**

lst = [1, 2, 3, 4, 5]

k = 2

rotated = lst[-k:] + lst[:-k]

print("Q3 Output:", rotated)

**Q4. Write a Python program to multiply the elements of each tuple in a list of tuples and return a new list. Input: [(2, 4), (3, 5), (4, 6)]**

**Output: [8, 15, 24]**

tuple\_list = [(2, 4), (3, 5), (4, 6)]

product\_list = [a \* b for a, b in tuple\_list]

print("Q4 Output:", product\_list)

**Q5. Given a tuple of integers, write a program to count how many times each element occurs. Input: (1, 2, 2, 3, 1, 4, 2)**

**Output: {1: 2, 2: 3, 3: 1, 4: 1}**

input\_tuple = (1, 2, 2, 3, 1, 4, 2)

freq\_dict = {}

for num in input\_tuple:

    freq\_dict[num] = freq\_dict.get(num, 0) + 1

print("Q5 Output:", freq\_dict)

**Q6. Write a Python program to count the frequency of each character in a string using a dictionary. Input: 'banana'**

**Output: {'b': 1, 'a': 3, 'n': 2}**

input\_str = 'banana'

char\_count = {}

for char in input\_str:

    char\_count[char] = char\_count.get(char, 0) + 1

print("Q6 Output:", char\_count)

**Q7. Merge two dictionaries such that common keys have their values summed. Input: {'apple': 10, 'banana': 5}, {'banana': 3, 'orange': 7}**

**Output: {'apple': 10, 'banana': 8, 'orange': 7}**

dict1 = {'apple': 10, 'banana': 5}

dict2 = {'banana': 3, 'orange': 7}

merged\_dict = dict1.copy()

for key, value in dict2.items():

    merged\_dict[key] = merged\_dict.get(key, 0) + value

print("Q7 Output:", merged\_dict)

**Q8. Given a dictionary of student names and their marks, print the name(s) of the student(s) with the highest marks.**

**Input: {'Alice': 85, 'Bob': 92, 'Carol': 92} Output: ['Bob', 'Carol']**

marks = {'Alice': 85, 'Bob': 92, 'Carol': 92}

max\_mark = max(marks.values())

top\_students = [name for name, score in marks.items() if score == max\_mark]

print("Q8 Output:", top\_student

**Q9. Write a Python program to find all common elements among three lists using set operations. Input: [1, 2, 3], [2, 3, 4], [3, 2, 5]**

**Output: {2, 3}**

a = [1, 2, 3]

b = [2, 3, 4]

c = [3, 2, 5]

common\_elements = set(a) & set(b) & set(c)

print("Q9 Output:", common\_elements)

**Q10. From a sentence entered by the user, extract and display all unique words using a set. Input: 'this is a test this is fun'**

**Output: {'this', 'is', 'a', 'test', 'fun'}**

sentence = 'this is a test this is fun'

words = sentence.split()

unique\_words = set(words)

print("Q10 Output:", unique\_words)

**OUTPUT:**

