Assignment - 04

Total Marks	Deadline	Topic
100	08/21/2025	Functions, Lists & Tuples in Python

Topics: Function (8 questions × 5 = 40)

1. Write a Python function called `factorial` that takes an integer as input and returns its factorial. Test the function with different values.

2. Write a Python function called `is_palindrome` that takes a string as input and returns `True` if it is a palindrome and `False` otherwise. Test the function with different words.

3. Write a Python function called `even_or_odd` that takes an integer as input and returns "Even" if the number is even and "Odd" if the number is odd. Test the function with different numbers.

4. Write a Python function called `list_sum` that takes a list of integers as input and returns the sum of all elements in the list. Test the function with different lists.

5. Write a Python function called `Greatest Common Divisor (GCD)` that takes two integers as input and returns their greatest common divisor. Test the function with different pairs of numbers.

6. Write a Python function called `is_leap_year` that takes a year as input and returns `True` if it is a leap year and `False` otherwise. Test the function with different years.

7. Write a Python function called `math_operations` that takes three numbers and a string representing an operation ('add', 'subtract', 'multiply', or 'divide'). The function should return the result of the specified operation on the three numbers. Implement the math operations as nested functions.

8. Write a Python function called `temperature_converter` that takes a temperature value and a string representing the scale ('C' for Celsius or 'F' for Fahrenheit) as input.
The function should convert the temperature from one scale to the other using nested functions and return the converted value.

Topics: Lists (6 questions × 5 = 30)

9. Write a Python program to find the maximum and minimum values in a given list of integers.

10. Write a Python program to reverse a given list without using any built-in functions.

11. Given two lists of integers, write a Python program to create a new list that contains elements common to both lists.

12. Given a list of integers, write a Python program to create a new list that contains the squares of the elements using list comprehension.

13. Write a Python program to transpose a given matrix represented as a nested list.

14. Given a list of nested lists, write a Python program to concatenate all the sublists into a single flat list.

Topic: Tuple (6 questions × 5 = 30)

15. Write a Python program to concatenate two tuples and create a new tuple. And then write a Python program to extract a slice of elements from the new tuple.

16. a) Given a tuple with three elements (x, y, z), write a Python program to unpack the tuple and assign the values to three variables.
b) Write a Python program to pack three variables into a single tuple and print the tuple.

17. a) Write a Python program to sort a tuple of integers in ascending order.
b) Write a Python program to reverse a tuple without using any built-in functions.

18. Given a tuple containing various elements, write a Python program to count the frequency of a specific element in the tuple.

19. Given two tuples of integers, write a Python program to perform element-wise addition, subtraction, and multiplication and create new tuples for each operation.

20. Write a Python program that takes an element as input and checks if it exists in a given tuple.