Enrolment No./Seat No_____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V EXAMINATION – SUMMER 2025

Subject Code:3151108 Date:13-05-2025

Subject Name:Python Programming

Time:02:30 PM TO 05:00 PM Total Marks:70

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**
4. **Simple and non-programmable scientific calculators are allowed.**

			Marks
Q.1	**(a)**	Write a Python program to compute the sum, difference, product, and quotient of two numbers and print the output for each of them..	**03**
	(b)	What is the significance of setting the environment variable `PATH` during Python installation? How does it affect running Python from the command line.	**04**
	(c)	Describe the various data types in Python (e.g., integer, float, string, boolean, list, tuple, dictionary). How does Python manage memory allocation for these data types?	**07**
Q.2	**(a)**	Explain the difference between = and == in Python. Provide an example where each of these is used.	**03**
	(b)	What is type conversion in Python? Differentiate between implicit and explicit type conversion with examples.	**04**
	(c)	What are bitwise operators in Python? Explain the use of various bitwise operator with examples..	**07**
		OR	
	(c)	Describe slicing in Python. How does it work with lists, tuples, and strings? Provide examples to illustrate the slicing syntax.	**07**
Q.3	**(a)**	What are the restrictions on dictionary keys in Python? Can a dictionary key be mutable? Explain why or why not with an example.	**03**
	(b)	Explain the difference between `if`, `if...else`, and `elif` statements in Python. Provide an example where each of these statements is used.	**04**
	(c)	Write a Python program to do the following with a list: • Create a list with five numbers. • Append a new number to the list. • Remove the second element. • Sort the list in ascending order. • Reverse the sorted list. • Print the final list.	**07**
		OR	
Q.3	**(a)**	How do you create a dictionary in Python? Give an example of a dictionary with at least three key-value pairs.	**03**
	(b)	What are the risks of using `while` loops, and how can you avoid creating an infinite loop? Provide an example of a `while` loop and explain how to ensure it terminates correctly.	**04**
	(c)	Write a Python program to: • Create a tuple with 5 elements. • Access and print the first and last elements of the tuple. • Slice the tuple to get the middle three elements.	**07**

- Try modifying one element in the tuple and explain why it fails.

Q.4	**(a)**	What is an infinite loop in Python? How can you detect and break out of an infinite loop in your code?	**03**
	(b)	What are the key differences between lists and tuples in Python? When would you use one over the other?	**04**
	(c)	Explain the purpose of defining custom functions in Python. How do functions contribute to code reusability and organization? Provide an example of a function that calculates the factorial of a number.	**07**

OR

Q.4	**(a)**	Explain the purpose of the `break` statement in Python. How does it affect the execution of loops? Provide an example where using `break` is necessary.	**03**
	(b)	How do you import and use standard and external modules in Python? Explain the difference between `import module`, `from module import name`, and `import module as alias`.	**04**
	(c)	What is the difference between local and global variables in Python? How do you declare and use each type of variable? Provide an example where both local and global variables are used.	**07**
Q.5	**(a)**	Describe the function of the `try`, `except`, and `raise` keywords. How do they contribute to exception handling in Python?	**03**
	(b)	Describe how to read from and write to a text file in Python. What functions and methods are commonly used for these operations?	**04**
	(c)	What are the key differences between MicroPython and standard Python? Discuss aspects such as memory usage, performance, and supported features.	**07**

OR

Q.5	**(a)**	What is the difference between mutable and immutable data types in Python? Provide examples of each	**03**
	(b)	What are the different file modes in Python, such as `'r'`, `'w'`, `'a'`, and `'b'`? Describe each mode and its typical use case.	**04**
	(c)	Explain the significance of MicroPython in the context of embedded systems and IoT (Internet of Things). What advantages does it offer for developing applications on microcontrollers?	**07**

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