Seat No./Enrollment No.: _____

GUJARAT TECHNOLOGICAL UNIVERSITY
BACHELOR OF ENGINEERING – SEMESTER 5 – EXAMINATION – SUMMER 2026

Subject Code: 3151108 **Date: 21/05/2026**

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.**

Q.1	**(a)**	Describe logical operator and identity operator with example.	**03**
	(b)	Discuss the following function of List in python. a) append( ) b) insert( ) c) sort( ) d) remove( )	**04**
	(c)	Differentiate between List and Tuple in Python. Write advantages of tuple.	**07**
Q.2	**(a)**	Explain the structure of for loop in python with suitable example.	**03**
	(b)	Describe elif ladder structure and nested if..else.. statement.	**04**
	(c)	Write a Python function to calculate the factorial of a number (a non-negative integer).	**07**
		OR	
Q.2	**(c)**	Write a Python program to construct the following pattern using a nested for loop. * * * * * * * * * * * * * * * *	**07**
Q.3	**(a)**	What is meant by module in python? List some built in modules in python.	**03**
	(b)	Describe dictionary in python with suitable example.	**04**
	(c)	What is an exception? Explain about the different types of Exceptions in Python.	**07**
		OR	
Q.3	**(a)**	What are negative indexes and why are they used?	**03**
	(b)	Describe break, continue, pass statement with example.	**04**
	(c)	Write a Python function that takes a number entered by user and checks whether the number is prime or not.	**07**
Q.4	**(a)**	Write a python program to display current year, month and day separately using datetime module.	**03**
	(b)	List and give brief explanation of different modes for opening a file in Python.	**04**

	(c)	Write a Python program to copy the contents of a one .txt file to another .txt file.	**07**

OR

Q.4	**(a)**	Enlist various IDE available to program MicroPython program.	**03**
	(b)	Describe try-except block with suitable example.	**04**
	(c)	With the help of suitable example explain how can we read and write to a CSV file in python?	**07**
Q.5	**(a)**	What is micro python? Discuss unique features of micro python.	**03**
	(b)	Write a micropython program to blink led pin connected to GPIO digital pin 1 to 4 of ESP8266 continuously.	**04**
	(c)	Write a micropython program to read and print DHT Sensor data for ESP8266 continuously.	**07**

OR

Q.5	**(a)**	Discus the steps of Installation of MicroPython on Hardware.	**03**
	(b)	Explain the difference between python and micro python.	**04**
	(c)	Write MicroPython program to read proximity sensor connected at Pin1, blink the LED if sensing is detected.	**07**

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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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Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V (NEW) EXAMINATION – SUMMER 2024

Subject Code: 3151108 Date:16-05-2024

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)**	Differentiate list and tuples.	**03**
	(b)	Develop python program to print even numbers in a list.	**04**
	(c)	Explain and categorize operators in python.	**07**
Q.2	**(a)**	Explain dictionary in detail.	**03**
	(b)	Develop python program to count occurrences of an element in a list	**04**
	(c)	Explain various features of a plot in python.	**07**
		OR	
	(c)	Develop python program that create matrix graph of following plot using subplot 1.linear plot 2.Scatter plot 3.Histogram and 4.Bar chart	**07**
Q.3	**(a)**	Explain for loop in detail.	**03**
	(b)	Develop python program to construct following pattern: *	**04**
	(c)	Make use of if, if..else, if..elif..else and , nested if.	**07**
		OR	
Q.3	**(a)**	Explain while loop in detail.	**03**
	(b)	Develop python program to print factorial of a number..	**04**
	(c)	Explain working of break, continue and pass statement.	**07**
Q.4	**(a)**	Differentiate actual and formal arguments.	**03**
	(b)	Develop python program to display fibonacci sequence using recursion method.	**04**
	(c)	Develop python program that convert decimal to binary, decimal to octal and decimal to hexadecimal number using user define function.	**07**

OR

Q.4	**(a)**	Define SCOPE, Discuss global and local variable in detail.	**03**
	(b)	Define Lambda function, Utilize lambda function in an example.	**04**
	(c)	Develop python program to find maximum, minimum and average of given numbers using user define function.	**07**
Q.5	**(a)**	Define micropython, explain feature of micropython.	**03**
	(b)	Develop python program that read and print first n lines from existing file also create new file that have first n lines from the existing file.	**04**
	(c)	Explain Exceptional handling in detail	**07**

OR

Q.5	**(a)**	Enlist mode of file in python.	**03**
	(b)	Develop program in micropython to send digital data on GPIO pin of micropython supported board and blink LED connected to it.	**04**
	(c)	Develop python program to create csv file that contain five entries along with header (serial number, name, birth_date and city).	**07**

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Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE – SEMESTER- V EXAMINATION-SUMMER 2023

Subject Code: 3151108 Date: 23/06/2023

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)**	What are key features of python?	**03**
	(b)	Differentiate between compiler and interpreter. How is the python an interpreted language?	**04**
	(c)	What is the difference between list and tuple in python? Explain with suitable example.	**07**
Q.2	**(a)**	What are local variable and global variable in python?	**03**
	(b)	Explain dictionary in python with the help of example.	**04**
	(c)	What are common built-in data types in python?	**07**
		OR	
	(c)	What is type conversion in python? Explain with the help of suitable example.	**07**
Q.3	**(a)**	Discuss the following function of List in python. a) append( ) b) count( ) c) reverse( )	**03**
	(b)	Explain the use of break, continue and pass statement in python.	**04**
	(c)	Explain Logical Operator and bitwise operator in python.	**07**
		OR	

Q.3	**(a)**	Write the output of the following code.
		`txt = "Python Programming"`
		`x = txt.casefold()`
		`print(x)`
		`y = txt.count("P")`
		`print(y)`
		`x = txt.split()`
		`print(x)`
			03

	(b)	Write a python program to check if given string is palindrome or not.	**04**
	(c)	Explain arithmetic operator and assignment operator in python.	**07**
Q.4	**(a)**	Write a Python function to sum all the numbers in a list.	**03**
	(b)	Explain nested if else statement in python	**04**
	(c)	Explain the different methods available for manipulating the CSV files in python.	**07**
		OR	
Q.4	**(a)**	Explain the structure of while loop in python.	**03**
	(b)	What is meant by module in python. List some of the built in module and built in functions of python.	**04**

	(c)	Write a function in python to count the number of lines from a text file "sample.txt" which is not starting with an alphabet "T". If the file "sample.txt" contains the following lines: What will be the output? A boy is playing there. There is a playground. An aeroplane is in the sky. The sky is pink. Alphabets and numbers are allowed in the password.	**07**
Q.5	**(a)**	What are keywords in python?	**03**
	(b)	What is micro python? Where is it use?	**04**
	(c)	Describe the different access mode of file in python.	**07**
		OR	
Q.5	**(a)**	What are the rules for naming a variable in python?	**03**
	(b)	Explain the difference between python and micro python.	**04**
	(c)	Describe the need for catching exceptions using try and except statements with suitable example.	**07**

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Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

BE - SEMESTER–V(NEW) EXAMINATION – SUMMER 2022

Subject Code:3151108 Date:02/06/2022

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)**	Explain how string is converted into list? Convert String S = "GTU Supports Innovation" into list.	**03**
	(b)	How list is different from tuple? Write advantages of tuple.	**04**
	(c)	Describe Arithmetic Operators, Assignment Operators and Bitwise Operators in detail with examples	**07**
Q.2	**(a)**	Explain for loop in python. Display even numbers from 0 to 100 using for loop	**03**
	(b)	Explain while loop in python. How to create infinite while loop? How to break infinite while loop in certain condition? Explain with example.	**04**
	(c)	Explain nested if statements in Python with logical combinations. Write program to get temperature and humidity from the user. Display following messages in different situations: (1) If temperature>30 and humidity<20% Message: "Hot and Dry" (2) If temperature is in between 20 to 30 and Humidity between 20% to 40% Message: "Good weather condition" (3) If temperature is between 20 to 30 and Humidity more than 80% Message: "Moisture present"	**07**
		OR	
	(c)	Write Python program that accepts a sentence and calculate the number of words, digits, uppercase letters and lowercase letters	**07**
Q.3	**(a)**	Explain the **is** and **is not** operators with example	**03**
	(b)	Write a Python Program to find the sum of all Odd numbers up to a number specified by the user.	**04**
	(c)	Write Python Program to get number from the user and find the Sum of digits in entered number by the user and print the sum. Prompt the user to get the input number.	**07**
		OR	
Q.3	**(a)**	Write Python Program to find factorial of given number	**03**
	(b)	Explain continue and pass statements in Python with example. What is the use of continue and pass statements?	**04**
	(c)	Explain command line arguments with help of one example	**07**
Q.4	**(a)**	Write Python code to check if a given year is a leap year or not ?	**03**

(b) Write a Python Program to input information for 5 number of students as given below: **04**
a. Name
b. Registration Number
c. Total Marks

(c) Write Python Program to Prompt for a Marks in the range of 0 to 100. If the entered mark is out of range, it should print an error. If the entered marks is between 0 and 100, print a grade using following information: **07**

Marks ≥ 70 Grade A
60≤Marks<70 Grade B
50 ≤ Marks <60 Grade C
40 ≤ Marks <50 Grade D
Marks<40 Grade FF

OR

Q.4 **(a)** Explain file exception handling. What are the reasons for file exceptions? **03**

(b) Write Python Program to count the number of times an item appears in the list. **04**

(c) Given a point(x,y), Write Python Program to find whether this point lies in the First, Second, Third or Fourth Quadrant of X - Y Plane. Print message of corresponding quadrant. **07**

Q.5 **(a)** List Integrated development environment (IDE) used for Micropython programming **03**

(b) Write Micropython program to send digital data 0 to pin no. 4 and digital data 1 to pin no. 2 of NodeMCU board. **04**

(c) Write a Python program to check the validity of a password entered by the user. Provide prompt to the use to enter the password. **07**
The Password should satisfy the following criteria:
1. Contain at least 1 letter between a and z
2. Contain at least 1 number between 0 and 9
3. Contain at least 1 letter between A and Z
4. Minimum length of password: 6
If password satisfies all above condition, print message "Valid password" else print message "Invalid password".

OR

Q.5 **(a)** Explain difference between Python and Micropython. **03**

(b) What is the necessity of file operations? Explain different mode of file opening. Which mode is preferred if **04**

(c) Write Micropython program to read sensor data from pin A0 of NodeMCU board. Glow LED connected at pin number 4 of NodeMCU if sensor data is greater than 500. **07**

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