Enrolment No/Seat No.: _____

R.N.G.PATEL INSTITUTE OF TECHNOLOGY-RNGPIT

(An Autonomous College U/s UGC Act 1956)

B.Tech. SEMESTER-II, SEMESTER END EXAMINATION – SUMMER 2025

Subject Code: 1IT202 **Date: 20-05-2025**

Subject Name: PYTHON FOR ENGINEERS

Time: 11:00 AM to 01:30 PM **Total Marks: 70**

Instructions

1. It is **compulsory** for students to write **Enrolment No. /Seat No.** on the question paper.
2. Write answers of **Section A** and **Section B** in **separate answer books**.
3. Attempt all questions from both **Section A** and **Section B**.
4. Each section carries **35 marks**, with a total of **70 marks** for the examination.
5. The figures to the right of each question indicate full marks, make suitable assumptions with justification.
6. BL - Bloom's Taxonomy Levels (R-Remember, U-Understanding, A –Application, N –Analyze, E – Evaluate, C -Create), CO - Course Outcomes.

SECTION A

		Marks	BL	CO
Q.1	**Multiple-Choice Questions**	**[05]**		
(a)	Which function adds two arrays element-wise in NumPy?	**1**	**U**	**5**
	(i) np.add() **(ii)** np.sum()			
	(iii) np.concatenate() **(iv)** np.multiply()			
(b)	Which function calculates the standard deviation of an array?	**1**	**U**	**5**
	(i) np.std() **(ii)** np.variance()			
	(iii) np.sqrt() **(iv)** np.mean()			
(c)	Which operator is used to compare if two strings are lexicographically greater than one another?	**1**	**A**	**4**
	(i) = = **(ii)** >			
	(iii) != **(iv)** <=			
(d)	What does the upper() method do in Python?	**1**	**A**	**4**
	(i) Converts a string to lowercase **(ii)** Converts a string to uppercase			
	(iii) Reverses the string **(iv)** Changes the string to title case			

(e)	What will the following code print?	**1**	**U**	**4**

```
s = "Hello, World!"
print(s[7:12])
```

(i) Hello **(ii)** World

(iii) , Wo **(iv)** World!

Q.2	**Attempt Any Two**	**[10]**		
(a)	Differentiate between local and global variables in Python. Explain with examples.	**5**	**R**	**3**
(b)	What is the purpose of the reduce() function in Python? How does it work? Provide an example.	**5**	**U**	**3**
(c)	Create a function that takes two numbers as input and returns their sum, difference, product, and quotient.	**5**	**A**	**3**
Q.3	**Attempt Any Two**	**[10]**		
(a)	What is string slicing in Python? Provide an example where string slicing is used to extract substrings.	**5**	**U**	**4**
(b)	How does the join() method in Python work? Provide an example of how it can be used to concatenate a list of strings.	**5**	**U**	**4**
(c)	Write a Python program that uses a loop to print each character of a string in reverse order.	**5**	**A**	**4**
Q.4	**Attempt Any Two**	**[10]**		
(a)	List and explain at least three NumPy functions that are useful for numerical computations.	**5**	**A**	**5**
(b)	Describe how to create a 3D line plot and a 3D scatter plot using Matplotlib.	**5**	**U**	**5**
(c)	List and describe at least three types of categorical plots available in Seaborn.	**5**	**U**	**5**

SECTION B

		Marks	BL	CO
Q.5	**Multiple-Choice Questions**	**[05]**		
(a)	What is the output of the following python program? x = 10 y = 5 result = x * y + 3 print(result) **(i)** 50 **(ii)** 53 **(iii)** 15 **(iv)** 80	**1**	**N**	**1**
(b)	Find the output of the following Python snippet: nums = [1, 2, 3] x = nums + [4] print(x) **(i)**[1, 2, 3, 4] **(ii)**[4] **(iii)**[1, 2, 3, [4]] **(iv)**Error	**1**	**N**	**1**
(c)	What will be the output of the following Python code? nums = [10, 20, 30, 40, 50] print(nums[1:4]) **(i)** [10, 20, 30] **(ii)** [10, 20, 30, 40] **(iii)** [20, 30, 40] **(iv)** [20, 30, 40, 50]	**1**	**N**	**2**
(d)	Which of the following operations is not allowed on a tuple? **(i)** Accessing elements using index **(ii)** Modifying an element **(iii)** Iterating using a for loop **(iv)** Slicing operation	**1**	**U**	**2**
(e)	Which method is used to return a list of all keys in a dictionary? **(i)** get_keys() **(ii)** keys() **(iii)** allkeys() **(iv)** dict_keys()	**1**	**R**	**2**
Q.6	**Attempt Any Two**	**[10]**		
(a)	Discuss any two types of conditional statements in Python, with suitable examples.	**5**	**U**	**1**
(b)	Explain the loop control statements *break* and *continue* in Python, with an example.	**5**	**U**	**1**
(c)	Write a Python program that finds the sum of all even numbers between 1 and 50 (inclusive) using a *for* loop.	**5**	**A**	**1**

Q.7	**Attempt Any Two**	**[10]**		
	(a) Explain the *Tuple* data type in Python with a brief description and an example.	**5**	**U**	**2**
	(b) Describe any five methods of the *List* data type in Python, along with their syntax and usage.	**5**	**R**	**2**
	(c) Write a Python program that uses a dictionary to store the names of 5 students and their marks in the *Python* subject. Display the details of only those students who have scored above 50 marks.	**5**	**A**	**2**
Q.8	**Attempt Any Two**	**[10]**		
	(a) Explain the concepts of local and global scope in a user-defined function with an example.	**5**	**U**	**3**
	(b) Describe any two types of Python functions based on the function's arguments and return values. Write a suitable example for each type.	**5**	**R**	**3**
	(c) Write a Python program that defines a function which accepts a List (containing 5 numbers) as an argument and returns the average of those numbers.	**5**	**A**	**3**

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