Roll No.												

PRESIDENCY UNIVERSITY

BENGALURU

End - Term Examinations – December 2025

Date: 10-12-2025 **Time:** 09:30am – 12:30pm

School: SOCSE	**Program:** B. Tech (Physics Cycle AND Chemistry Cycle)	
Course Code : CSE1500	**Course Name:** Computational Thinking using Python	
Semester: I	**Max Marks**: 100	**Weightage**: 50%

CO - Levels	**CO1**	**CO2**	**CO3**	**CO4**	**CO5**	**CO6**
Marks	**14**	**14**	**14**	**16**	**22**	**20**

Instructions:

(i) Read all questions carefully and answer accordingly.

(ii) Do not write anything on the question paper other than roll number.

Part A

Answer ALL the Questions. Each question carries 2marks. **10Q x 2M=20M**

1.	Define computational thinking and list any two key pillars of it.	2 Marks	L1	CO1
2.	Define **Pattern Recognition** with an example.	2 Marks	L1	CO1
3.	Define an algorithm and mention any two important characteristics of a good algorithm.	2 Marks	L1	CO3
4.	What are the different types of literals available in Python? List them.	2 Marks	L1	CO4
5.	List any two differences between Linear Search and Binary Search	2 Marks	L1	CO2
6.	What are the advantages of Brute Force strategy?	2 Marks	L1	CO2
7.	Define set with an example.	2 Marks	L1	CO4
8.	Explain the concept of slicing in tuples with an example	2 Marks	L2	CO4
9.	contrast between tuple and list in Python	2 Marks	L2	CO3
10.	Define calling a function in Python with syntax.	2 Marks	L1	CO5

Part B

Answer the Questions. **Total Marks 80M**

11.	a.	What are the four key pillars of computational thinking? Explain Pattern Recognition with an example	10 Marks	L2	CO1
		Or			
12.	a.	Explain how you would apply the pillars of computational thinking decomposition, pattern recognition, abstraction, and algorithms for the scenario. "Weather Data Analysis"	10 Marks	L2	CO1

13.	a.	Describe the different types of operators in Python and explain arithmetic operators in detail with suitable examples.	10 Marks	L2	CO3
		Or			
14.	a.	Illustrate the grade of a student as output by accepting student's score (0–100) using if, elif, and else statements. The grading criteria are as follows: 1. a score of 90 and above should display Grade A, 2. scores between 80 and 89 should display Grade B, 3. scores between 70 and 79 should display Grade C, 4. scores between 60 and 69 should display Grade D, and 5. any score below 60 should display Grade F.	10 Marks	L2	CO3

15.	a.	Describe the divide and conquer technique of problem solving. Explain various steps involved in divide and conquer method. Also list its advantages and disadvantages	10 Marks	L2	CO2
		Or			
16.	a.	Describe the brute force technique of problem solving. Explain various steps involved in Brute Force method. Also list its advantages and disadvantages	10 Marks	L2	CO2

17.	a.	Kaprekar, an Indian Mathematician, discovered many patterns in numbers, a special routine for 4-digit numbers known as the Kaprekar Constant. 1. Take a 4-digit number (digits must be in descending order) For example: 8765, let it be 'a' 2. Find smallest number from the above digits (say for example 6578), let it be 'b' 3. Subtract b from a, call it c. for example c = a – b Develop python code to solve the above problem.	10 Marks	L3	CO4
		Or			
18.	a.	Describe the key operations and methods available for sets in Python such as union(), intersection(), difference(), and symmetric_ difference(). And illustrate the built-in functions len(), max(), min(), and sort() with examples.	10 Marks	L3	CO4

19.	a.	Explain Lists, Tuples, and Dictionaries in Python with syntax and suitable examples. How do they differ usage?	20 Marks	L3	CO5
		Or			

20.	a.	A company stores a sorted list of employee IDs who attended a training program. Develop a Python program to: **1.** Accept total employee IDs (already sorted). **2.** Accept an employee ID to search. **3.** Use **binary search** to check attendance. **4.** Display: o "Employee attended" o "Employee did not attend"	20 Marks	L3	CO5

21.	a.	Explain types of functions with syntax and suitable examples. Also explain function call and return statements. Explain different types of parameters.	20 Marks	L3	CO6
		Or			
22.	a.	A teacher maintains a dictionary where keys are student names and values are their marks. Develop a Python program to: 1. Identify the student with the highest marks. 2. Display the names of students who scored below a given mark. 3. Calculate and display the total marks of the class. 4. Identify students who scored 0 marks (absent). 5. Check whether a requested student's name exists in the dictionary.	20 Marks	L3	CO6