Roll No.											

PRESIDENCY UNIVERSITY

BENGALURU

End - Term Examinations – December 2025

Date: 10 / 12/ 2025 **Time:** 01:00pm – 04:00pm

School: SOCSE	**Program:** B. Tech	
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**	**16**	**14**	**14**	**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.	List two benefits of computational thinking.	2 Marks	L1	CO1
2.	Explain two basic data types in Python.	2 Marks	L2	CO2
3.	List the rules for naming variables in Python.	2 Marks	L1	CO2
4.	Define divide and conquer with an example.	2 Marks	L1	CO1
5.	What is the main requirement for applying binary search?	2 Marks	L2	CO2
6.	What is the purpose of for loop and while loop?	2 Marks	L2	CO3
7.	Define dictionary with an example.	2 Marks	L1	CO3
8.	Differentiate **Set and List** in Python.	2 Marks	L2	CO4
9.	Why tuples are considered immutable? Give example	2 Marks	L1	CO4
10.	Define a user-defined function that takes two numbers and returns their sum.	2 Marks	L1	CO5

Part B

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

11.	a.	Explain the idea of Computational Thinking as used in modern problem-solving. Describe decomposition, pattern recognition, abstraction, and algorithmic thinking with proper applications or examples.	10 Marks	L2	CO1
		Or			
12.	a.	Explain the application of Computational Thinking in designing an Online Examination System. Describe how decomposition, pattern recognition, abstraction, and algorithm development aid in question management, evaluation, student login, and result generation.	10 Marks	L2	CO1

13.	a.	Explain conditional statements in Python. Describe the structure and working of if, if-else, elif, and nested if in detail by identifying a suitable example.	10 Marks	L2	CO2
		Or			
14.	a.	Explain the difference between **identifiers, keywords, and literals** as Python tokens. Discuss their purpose, usage rules, and limitations with proper illustrations.	10 Marks	L2	CO2

15.	a.	An organization maintains a long list of employee IDs in an unsorted form. Explain how linear search can be applied to check whether a specific ID exists in the list. Also discuss the efficiency and limitations of this approach.	10 Marks	L2	CO3
		Or			
16.	a.	Discuss the importance of sorted data in binary search. Explain how binary search divides the list into halves and how this logic can be implemented efficiently in Python.	10 Marks	L2	CO3

17.	a.	Describe various set operations in Python such as union, intersection, difference, and symmetric difference. Explain each with proper syntax, usage, and real-time examples.	10 Marks	L2	CO4
		Or			
18.	a.	Explain how looping works in dictionaries. Discuss different ways of iterating through keys, values, and key-value pairs. Provide suitable examples and explain when each of these loop types are used.	10 Marks	L2	CO4

19.	a.	Experiment with Python program to generate a grocery bill for a customer. The program should: • Accept total amount of purchased groceries. • Provide discounts:			

		◦ Above ₹5,000 → 20% ◦ ₹3,000–₹4,999 → 12% ◦ ₹1,000–₹2,999 → 7% ◦ Below ₹1,000 → No discount • Add a **2% packaging charge** on the discounted amount. • Display original amount, discount, packaging charge, and final bill amount.	20 Marks	L3	CO5
Or					
20.	a.	Explain types of functions with syntax and suitable examples. Also explain function call and return statements. Write a python program to find reverse of a given number using user defined function.	20 Marks	L3	CO5

21.	a.	A smart city tracks transport card users who travel by Metro, Bus, and Local Train. Develop a Python program to: • Find users who travel using all three transport modes. • List users who travel only by Metro. • Find users who travel using either Bus or Train. • Identify users who travel by only one of Bus or Train. • Verify whether all Metro users also use Bus services.	20 Marks	L3	CO6
Or					
22.	a.	Explain lambda function with syntax and suitable example. Define recursion, how will you find factorial of a number using recursive function.	20 Marks	L3	CO6