Name: **Enrolment No:**	

UPES

End Semester Examination, December 2024

Course: Software System Foundation — **Semester : First**

Program: B.Tech Biomedical Engineering — **Duration: 3 Hours**

Course Code: CSEG1024 — **Max. Marks: 100**

Instructions:

S. No.	Section A Short answer questions/ MCQ/T&F (20Qx1.5M= 30 Marks)	Marks	Cos
Q	Write your answer as true or false.		
1)	A list in Python is mutable, meaning its elements can be changed after creation.	**1.5**	**1**
2)	Tuples are mutable data structures in Python.	**1.5**	**1**
3)	Elements in a set are ordered and indexed.	**1.5**	**1**
4)	Dictionaries are mutable and allow for the modification of values after creation.	**1.5**	**1**
5)	Lists can contain duplicate elements.	**1.5**	**1**
6)	In a dictionary, keys must be unique, but values can be duplicated.	**1.5**	**1**
7)	A set can contain duplicate elements.	**1.5**	**1**
8)	The append() method can be used to add elements to both lists and tuples.	**1.5**	**1**
9)	Tuples can contain other tuples, making them capable of nesting.	**1.5**	**1**
10)	Lists can store elements of different data types.	**1.5**	**1**
11)	Dictionary keys must be immutable types, such as strings, integers, or tuples.	**1.5**	**1**

12)	In Python, {} represents an empty dictionary by default, not an empty set.	**1.5**	**1**
13)	Sets are mutable, so elements can be added and removed after creation.	**1.5**	**1**
14)	The elements in a tuple can be accessed by index, like lists.	**1.5**	**1**
15)	Using the del statement, you can delete specific elements in a set.	**1.5**	**1**
16)	Numpy Array allows negative indexing, Use the minus operator to refer to an index from the end.	**1.5**	**1**
17)	The view function does not own the data, and any changes made to the view will affect the original array.	**1.5**	**1**
18)	Dictionaries can have lists as keys, if the lists contain only immutable elements.	**1.5**	**1**
19)	Tuples can store elements of different data types, just like lists.	**1.5**	**1**
20)	The len() function can be used to determine the number of elements in lists, tuples, dictionaries, and sets.	**1.5**	**1**
	Section B **(4Qx5M=20 Marks)**		
Q 1	Define broadcasting in NumPy? Give an example to show how it works.	**5**	**1**
Q 2	Explain the following list functions a) len() b) sum() c) any() d) all() e) sorted()	**5**	**1**
Q 3	The code below is a recursive function meant to calculate the sum of elements in a list. However, it returns `None` instead of the expected result. Identify and fix the issue. Write the correct code. 1. def recursive_sum(lst): 2. if not lst: 3. return 0 4. recursive_sum(lst[1:]) 5. return lst[0] + recursive_sum(lst[1:]) 6.	**5**	**2**

	7. print(recursive_sum([1, 2, 3, 4])) # Expected output: 10		
Q 4	The following code is intended to print a multiplication table for numbers 1 through 5, but the output is incorrect. Identify and fix the bug. Write the correct code. 1. for i in range(1, 5): 2. for j in range(1, 5): 3. result = i * j 4. print(f"{i} * {j} = {result}")	**5**	**2**
Section C (2Qx15M=30 Marks)			
Q 1	Write a Python function that accepts a list of numbers and returns a dictionary where each number is a key, and its square is the corresponding value. Explain the approach taken in your code.	**15**	**2**
Q 2	Write a program that takes a string as input from the user and checks if it is a palindrome (the same forwards and backwards). Describe your approach.	**15**	**3**
Section D (2Qx10M=20 Marks)			
Q 1	Write a Python code snippet to merge two dictionaries dict1 and dict2 where dict1 = {'a': 1, 'b': 2} and dict2 = {'b': 3, 'c': 4}. Explain the result.	**10**	**2**
Q 2	Write a program to display the Fibonacci sequences up to nth term where n is provided by the user.	**10**	**3**