Name: **Enrolment No:**	UPES UNIVERSITY OF TOMORROW

UPES

End Semester Examination, December 2024

Course: Programming — **Semester: III**

Program: B. Tech (APE UP) — **Time : 03 hrs**

Course Code: CSEG1029 — **Max. Marks: 100**

Instructions: (a) This is a closed book exam. Possessing a mobile phone and any other communication devices during the exam is strictly prohibited.

(b) All programs should be written in clear and correct indentation.

SECTION A (5Q x 4M = 20 Marks)

S. No.	Statement (s) of the question (s)	Marks	CO
Q 1	Write a python code to (a) define a range named **series** containing the following elements below: **-2 -4 -6 -8 -10 -12 -14 -16** (b) Convert the range data type to a list data type and assign the list to a variable named **series_lst**	**2 + 2**	**CO1**
Q 2	Write a python code to (a) define a dictionary named **fuel_oil** that can store its physical properties, density (930), viscosity (0.005) and specific heat (2.122. (b) Use a method to find the value associated with density	**2 + 2**	**CO1**
Q 3	Write a python code to print star patterns (*) with 15 numbers of rows. Each row contains 5 numbers of stars. Use of loop is compulsory.	**4**	**CO2**
Q 4	(a) Write a python program to create a user-define function named **sq_root** that returns the square root of an input number. (Example: square root of 9 is $\sqrt{9} = 3$). In-built functions is not allowed. (b) Print the following words in its exact form as output containing all alphabets and special characters below: **"python's \n code"**	**2 + 2**	**CO1**
Q 5	Write a python code to create a function named **my_length** that returns the number of elements present in a string. Here, len() is not allowed.	**4**	**CO3**

SECTION B (4Q x 10M = 40 Marks)

Q 6	(i) Write a python program to create a function named **result** that returns a list containing the values of $f(x)$. **Here**, $f(x) = 2x^3 + x^2 + 3x - 4$ (Use of loop is compulsory)	**6 + 2 + 2**	**CO2**

	(ii) Call the function to return a list containing the values of $f(0.1), f(0.2), f(0.3), \ldots f(0.8), f(0.9), f(1.0)$. Assign the list to a variable named **sol1** (iii) Call the function to return a list containing the values of $f(0.4), f(0.6), f(0.8), \ldots f(1.6), f(1.8), f(2.0)$. Assign the list to a variable named **sol2**		
Q 7	Write a python code to print the following number pattern, exactly as shown in **Fig. 1**. **OR** Write a python code to print the following number pattern, as shown in **Fig. 1**, but inverted i.e. upside down.	**10**	**CO2**
Q 8	Write a python program that counts the frequency of occurrence of words in a string named **sentence** and store the data in a dictionary (named **freq**). The dictionary should contain all the words as **keys** and the frequency as **values**. The method .count() is not allowed. Start with the code below: sentence = "years and years of coding and executing"	**10**	**CO2**
Q 9	Write python code to create a function named **my_sort** that takes a list (containing zeros, positive number, and negative numbers) as input parameter and returns a nested tuple containing three lists as an output parameter. One list containing only even numbers, other list only contains negative numbers, and the last list only contains zeros.	**10**	**CO4**
SECTION C (2Q x 20M = 40 Marks)			
Q 10	Analyze the python codes below to predict the outputs: (2 marks each) (i) print(7 // 3) Output: _____ (ii) print(17 % 3) Output: _____ (iii) str1 = "program of python" print(str1[6]*3) Output: _____ (iv) print(str1[1:11:2]) Output: _____ (v) water = [] water.append("density") print(water) Output: _____ (vi) word = "she" for i in word: print("welcome {}".format(i)) Output: _____ (vii) a, b, c, d = 1, 2, 3, 4 print(d > c**b) Output: _____ (viii) print(c < b or a > d) Output: _____ (ix) print(5 in [7.675, "float", 5]) Output: _____ (x) print(type((1, 2, "hello"))) Output: _____	**20**	**CO4**
Q 11	Imagine that an excel file named **raw.csv** is stored in IDLE working directory or folder. The data in rows and columns are shown in **Table 1.** Write a python program to find the concentration (c) of acetic acid for all		

	samples and store the data in a dictionary named **sample** with the name of sample as keys and the concentration as values. $(c = \frac{volume\ of\ acetic\ acid}{volume\ of\ acetic\ acid + volume\ of\ water})$ **OR** Imagine that a text file named **data.txt** (all the values separated by comma) is stored in IDLE working directory or folder. The data in rows and columns are shown in **Table 1.** Write a python program to find the volume fraction (x) of acetic acid for all samples and store the data in a dictionary named **fraction** with the name of sample as keys and the concentration as values. $(x = \frac{volume\ of\ acetic\ acid}{volume\ of\ acetic\ acid + volum\ \ of\ water})$	**20**	**CO4**

Table 1: Sample of volume of acetic acid and volume of water mixed at different ratios.

Sample	acetic acid (ml)	water (ml)
A	5	1
B	4	2
C	3	3
D	2	4
E	1	5

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9
9 8
9 8 7
9 8 7 6
5 4 3 2 1
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Fig. 1: Triangular pattern