Name: **Enrolment No:**	

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES
End Semester Examination, December 2022

Course: Programming with Python
Semester: I
Program: MCA **Time : 03 hrs.**
Course Code: CSAI 7011 **Max. Marks: 100**

Instructions: Attempt all the questions. Q. No. 11 has internal choice.

SECTION A
(5Qx4M=20Marks)

S. N.		Marks	CO
Q 1	Write python code to determine the remainder of the arithmetic division of two integers. Both the integers are accepted as command line arguments. Also demonstrate a sample execution of this code.	**4**	**CO1**
Q 2	Give a brief in a maximum of four lines each on **get()** and **keys()** dictionary methods.	**4**	**CO1**
Q 3	State the meaning and usage of meta characters '*****' and '^' in regular expressions.	**4**	**CO2**
Q 4	Give a brief on the KeyError and TypeError within four lines.	**4**	**CO3**
Q 5	Consider two simple lists of integers, X = [5, 2, 9, 4, 7] and Y = [10, 5, 8, 4, 2]. Assuming them to be the horizontal and vertical axesvalues, respectively, write the Python code to draw a line graph.	**4**	**CO4**
	SECTION B **(4Qx10M= 40 Marks)**		
Q 6	(a) List various sequences available in Python. Discuss any *two*. (b) Write a Python code to add two 3×3 matrices using appropriate sequence.	**4, 6**	**CO1**
Q 7	(a) Discuss and demonstrate the use of **map()** and **filter()** functions with fitting example. (b) Write a Python program to sort a list, li = [['Java', 1995], ['C++', 1983], ['Python', 1989]], by year using lambda function.	**4, 6**	**CO1**
Q 8	(a) Explain multilevel and multiple inheritances in Python. (b) Consider that a class BankAccount is to be inherited by the two subclasses; SavingAccount and CurrentAccount. Write a Python program to implement the given inheritance scenario by mentioning appropriate members for each	**4, 6**	**CO2**

	class. Instantiate these classes to demonstrate object polymorphism. Finally, show a sample run.		
Q 9	(a) State the procedure to handle a system (in built) exception in Python. (b) Write a Python program to create and generate a user-defined exception. Demonstrate a sample run of your program.	**4, 6**	**CO3**
	SECTION-C **(2Qx20M=40 Marks)**		
Q 10	(a) Discuss on regular expressions. Express how to determine whether an email address entered by a user is valid using Python 're' module. (b) Consider a file containing record of students' performance in a test. Individual records are arranged in each row as per roll number, student's name and marks in the order given below: 1 Abhishek 23 2 Sandhya 45 ... 10 Yogesh 61 Write a function to print the name of the student with the highest marks. (c) Write a function in Python to count and display the total number of words in a text file.	**6, 8, 6**	**CO3**
Q 11	(a) Discuss Buttion, Radiobutton, and Checkbutton widgets in tkinter module. (b) Design a GUI that takes a student's name, gender, and marks in three subjects as inputs. Use the appropriate GUI components for these inputs. Upon clicking the Buttion 'Average', the average marks should get printed on the Python shell. (c) Express the purpose of using **os** module. State the purpose of listdir(), rmdir(), and getcwd() functions from this module by showing their usage.	**6, 8, 6**	**CO4**
	OR		
	Employee record of a company is arranged under three heads; name, age, and salary. Utilize numpy, pandas, and matplotlib modules and write the code to (a) Prepare such a record for 10 employees. (b) Create a dataframe of shape [10, 3] for the prepared record and show the first four rows of the dataframe. (c) Use the dataframe to plot two graphs – name against salary and age against salary.	**20**	**CO4**