Subject Code: BAI-110

Time : 3 Hours

Subject: Programming with Python

Note: Q. 1 is compulsory. Attempt one question each from Units I, II, III & IV.

Maximum Marks: 60

Q1.		
	(a) Explain different types of operators in python.	(2.5*8=20)
	(b) Look at this series: 7, 10, 8, 11, 9, 12,10,13, ... Write a python program to print the given series from 7 to 50.	
	(c) Elaborate the concept of aliasing and copying dictionary with an example.	
	(d) Write a Python function to check whether a given number is perfect or not.	
	(e) Explain the concept of try and except with the help of an example.	
	(f) Write a program to raise an exception if the input provided by the user is not having at least one uppercase, one lowercase character, and one digit.	
	(g) Write a program to create a NumPy array filled with all zeros.	
	(h) How to add a button in the Tkinter window, explain.	

UNIT-1

Q2.	Write a Python program to construct the following pattern:	(10)

| Q3. | Write a Python program to check the validity of password input by users.

Validation:

• At least 1 letter between [a-z] and 1 letter between [A-Z].
• At least 1 number between [0-9].
• At least 1 character from [$#@].
• Minimum length 6 characters.
• Maximum length 16 characters. | (10) |

UNIT-2

| Q4. | (a)Write a Python program to add 'ing' at the end of a given string (length should be at least 3). If the given string already ends with 'ing' then add 'EE' instead. If the string length of the given string is less than 3, leave it unchanged.
    Sample String: 'abc'
    Expected Result : 'abcing'
    Sample String : 'string'
    Expected Result : 'stringEE'

(b) Explain the difference between a List and a Dictionary with the help of an example. | (10) |
| Q5. | (a)Explain the concept of recursion by taking a suitable example.
(b)Write a program to copy the content of one file to another file and skip the lines starting with a special character ('#' and '$'). | (10) |

UNIT-3

Q6.	(a) Explain the concept of pickling and exceptions.	(10)
	(b) Write a program to read the content of the file in reverse order.	
Q7.	Explain the concept of exceptions. How to handle exceptions and raise errors.	(10)

UNIT-4

| Q8. | Design the following graphical user interface using the Tkinter library: | (10) |

| Q9. | Write a program to create a DataFrame for 5 students with columns: Marks of 4 subjects- Maths, English, Physics, and Chemistry (out of 100), Name of the Students. After the creation of the data frame, calculate the following:

i) Total marks (sum of all the subject marks student-wise)
ii) Percentage
iii) Print the first 3 class toppers.
iv) Find and print the name of students who scored the highest marks in Physics.
v) Drop the students having duplicate marks in the same subject. | (10) |