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

Course: BTECH GG
Program: PROGRAMMING WITH PYTHON
Course Code: CSAI 3005

Semester: VI
Time : 03 hrs.
Max. Marks: 100

Instructions: Attempt all Questions

SECTION A
(5Qx4M=20Marks)

S. No.		Marks	CO
Q 1	Write a Recursive function recurfactorial(n) in python to calculate and return the factorial of number n passed to the parameter.	4	CO1
Q 2	WAP to input a list of scores for N students in a list data type. Find the score of the runner-up and print the output. **Sample Input** N = 5 Scores= 2 3 6 6 5 **Sample output** 5 **Note:** Given list is [2, 3, 6, 6, 5]. The maximum score is 6, second maximum is 5. Hence, we print 5 as the runner-up score.	4	CO2
Q 3	What do you understand by local and global scope of variables? How can you access a global variable inside the function, if function has a variable with same name	4	CO3
Q 4	Discuss numpy array search. How searchsorted() works.	4	CO4
Q 5	Discuss inheritance in Python programming language.	4	CO2

SECTION B
(4Qx10M= 40 Marks)

Q 6	What is Pandas. With the help of an example discuss Basic Functions for Chart Creation.	10	CO4
Q 7	Discuss Numpy and also explain Numpy-Matrix Library with examples.	10	CO4

Q 8	Explain about the different types of Exceptions in Python.	**10**	**CO3**
Q 9	Explain in detail about Python File Handling, its types, functions and operations that can be performed on files with examples. OR Create a file (your_name.text) and write about your-self in that file through file handling function. Display the content of file (your_name.text) line by line. Display the number of lines in file (your_name.text) which are not starting with alphabet "A". Display the total number of words in file (your_name.text). Display the count of those words whose length is less than 4 in file (your_name.text)	**10**	**CO3**

SECTION-C
(2Qx20M=40 Marks)

Q 10	Describe Arithmetic Operators, Assignment Operators, Comparison Operators, Logical Operators and Bitwise Operators in detail with examples. Construct the program for: Given an integer *n*, perform the following conditional actions: • If *n* is odd, print Weird • If *n* is even and in the inclusive range of 2 to 5 , print Not Weird • If *n* is even and in the inclusive range of 6 to 20, print Weird • If *n* is even and greater than 20, print Not Weird Test cases- 4- Not Weird 18- Weird 29- Weird 5- Weird	**20**	**CO1**
Q 11	What are Access specifiers in python. Show their scope with the help of an example. Using class and objects in python, write a program to get the real and imaginary part of two real numbers. Get the real and imaginary part of one complex number from user and for second one set yourself. Then Using instance function display those two complex numbers. After that Using different instance function, find the sum, difference and multiplication of those two complex number, get that stored in another number and use the function created in previous part to show the result. Or What is Constructor in python. Discuss different types of constructor with example.	**20**	**CO2**

Create a Vehicle class with max_speed and mileage as instance attributes. Additionally, create a method named seating_capacity() using the below syntax:

```
def seating_capacity(self, capacity):
        return f"The seating capacity of a {self.name} is {capacity} passengers"
```

a) Create child class 'Bus' that will inherit all of the variables and methods of the Vehicle class. Set the seating capacity of the bus to 50 using super().
b) Create a Bus object that will inherit all of the variables and methods of the Vehicle class and display it.
c) Define a class attribute "color" with a default value white. I.e., Every Vehicle should be white.