Name: **Enrolment No:**	UPES UNIVERSITY WITH A PURPOSE

UNIVERSITY OF PETROLEUM AND ENERGY STUDIES

End Semester Examination, December 2020

Course: Programming with Python **Semester: VI**
Program: B.Tech CS +G&G **Time 03 hrs.**

Course Code: CSAI 3005 **Max. Marks: 100**

Instructions: Answer precisely.

SECTION A

1. Each Question will carry 5 Marks

2. Instruction: Complete the statement / Select the correct answer(s)

S. No.		CO

Q.1	How many times will the following loop execute and what will be its output for both the program
	
	a)
	
	`sum=0`
	`for i in range(20,0,-2):`
	`  sum=sum+i`
	`  print("i",i)`
	`  if i==14:`
	`  continue`
	`print(sum)`
	
	B)
		CO1

	``
	sum=0
	for i in range(20,0,-2):
	    sum=sum+i
	    print("i",i)
	    if i==14:
	        break
	print(sum)
	``	

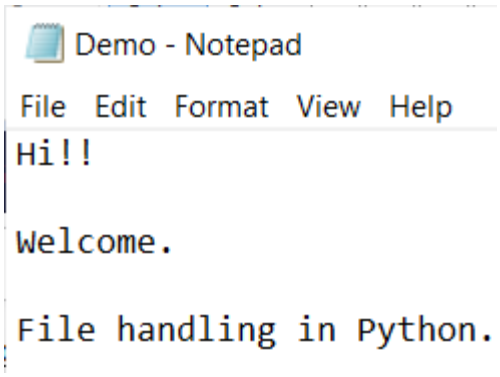
Q.2	I. Analyze the code and choose the appropriate option
	``
	class A:
	    def __init__(self):
	        self.P=10
	        self.__Q=20
	    def getY(self):
	        return self.__Q
	
	a=A()
	print(a.__Q)
	``
	a. Output: 20
	b. Q is private and can't be accessed outside the class
	c. P is private and can't be accessed outside the class
	d. self.__Q is an invalid statement
		CO2

Q.3	i. How many except statements can a try-except block have? a) zero b) one c) more than one d) more than zero ii. When will the else part of try-except-else be executed? a) always b) when an exception occurs c) when no exception occurs d) when an exception occurs in to except block	**CO2**
Q.4	State package(s) available in Python for:	**CO4**

	i. Linear algebra ii. Data analysis iii. OS module iv. Regular expression	
Q.5	Given List1=[10,23,5,56,78,90]. Evaluate the following expression one after another in sequence: a. List1[:-2:] b. List1[0:4] c. List1*List1.count(23) d. List1.pop(2) e. List1.reverse() Print(List1)	**CO3**

Q 6	Explain the regular expression [aeiou]+, and write the output of following code
	
	`import re`
	`x = 'My 2 favorite numbers are 19 and 42'`
	`y = re.findall('[aeiou]+',x)`
	`y`
		CO1

SECTION B **1. Each question will carry 10 marks** **2. Instruction: Write short / brief notes**		
Q 7	Write a program using while loop, which prints the sum of every fifth number from 0 to 500 (including both 0 and 500)	**CO1**
Q 8	Define binary file and list its applications. State the syntax to open, write text (Write your roll number, SAP Id and name) and close file in Python. OR Write a function find_smallest() which accepts the file name (Demo.txt) as parameter and reports the smallest line in the file.	**CO2**

<table>
<tr><td></td><td> 
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<tr><td>Q 9</td><td>List and define geometry manager classes to perform geometric configuration of the widgets while creating GUI. Write a program to design GUI for login page in Python.</td><td>CO3</td></tr>
<tr><td>Q 10</td><td>i. Create a NumPy array of 10 zeros. [1]
ii. Create a NumPy array of all even integers between the range 10 and 50. [1]
iii. Consider the matrix [8]

mat = np.arange(1,26).reshape(5,5)

mat

a. Write code that will produce the following output

<pre>array([[12, 13, 14, 15],
       [17, 18, 19, 20],
       [22, 23, 24, 25]])</pre>
b. Write code that will produce the following output

<pre>array([[2],
       [7],
       [12]])</pre>
c. Get the sum of all the columns in mat</td><td>CO4</td></tr>
<tr><td>Q 11</td><td>a. What happens when we prefix a parameter with an asterisk (*) and two asterisks (**)?
b. Define lambda function. Write a lambda function to check whether a number is even or odd.</td><td>CO1</td></tr>
<tr><td colspan="3">SECTION-C</td></tr>
</table>

1. Each Question carries 20 Marks.

2. Instruction: Write long answer.

Q 12	Write a program in Python to implement the concept of multiple inheritance a. Create the parent class Shape. Initialize the constructor with Shape. b. Create another class named Rectangle which inherits the properties of the parent class Shape. Define the attribute length and breadth in the Rectangle class. Initialize the length and breadth inside the constructor of the Rectangle class. Also call the constructor of the parent class to initialize the color of the Rectangle. Define the method calc_area() to return the area of rectangle. Also create the method Rectangle_Details() to return complete details about rectangle. c. Create another class named Triangle which inherits the properties of the parent class Shape. Define the attribute base and height in the Triangle class. Initialize the base and height inside the constructor of the Triangle class. Also call the constructor of the parent class to initialize the color of the Triangle. Define the method calc_area() to return the area of Triangle. Also create the method Triangle_Details() to return complete details about triangle. d. Finally, create the instance of the Rectangle and Triangle classes to calculate the area of rectangle and triangle Note: choose appropriate variables and parameter list wherever required. Show the output of your program by taking input as last digit of your roll number and sapid as length and breadth of rectangle respectively. OR Write a program in Python to implement single inheritance. a. Create the parent class Circle. Initialize the constructor with the radius of the circle. Define the method get_radius() and calc_area() to know the radius and area of the circle. b. Create the child class named Cylinder. Initialize the value of the height within the constructor and call the constructor of the parent class to initialize the radius of the cylinder. Define the method calc_area() in the class Cylinder to calculate the area of the cylinder Area of cylinder=2*pi*radius*height	**CO2**

	c. Finally, create the instance of the Cylibder class to calculate the area of Cylinder. Note: choose appropriate variables and parameter list wherever required. Show the output of your program by taking input as last digit of your roll number.	