Course Name: LEARNING PYTHON FOR DATA ANALYSIS AND VISUALIZATION

Course Outcome

CO1-Understand to solve problems with smaller Lines of Code using Python as compared to other programming languages.

CO2-To learn to write functions and pass arguments in Python. To learn how to build and package Python modules for reusability.

CO3-Use Object-Oriented Programming concepts while programming in Python.

CO4-Data Analysis and Visualization using python modules.

CO5-Work with Python using GUI.

Printed Pages:07   **University Roll No. ....**

End Term Examination, Even Semester 2021-22
B. Tech.(CS/VLSI Hons), I-Year, II-Semester
BCSC 0053 : LEARNING PYTHON FOR DATA ANALYSIS AND VISUALIZATION

Time: 3 Hours   **Maximum Marks: 45**

Instruction for students:

1. Read question paper carefully
2. Understand the ask by reading the explanation
3. Write entire code with proper explanation with comments
4. Proper indentation is mandatory
5. Read note for each question carefully
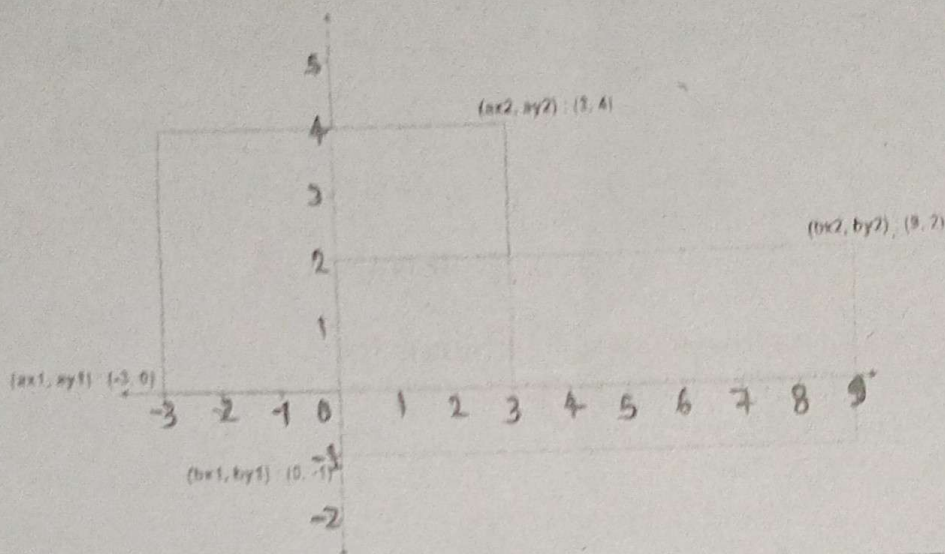
Section – A

Attempt AllQuestions   4 X 5 = 20 Marks

N o.	Detail of Question	Mar ks	C O	B L	K L
1	Write a Python Programme Given the coordinates of two rectilinear rectangles in a 2D plane, return the total area covered by the two rectangles. User Input: The first rectangle is defined by its bottom-left corner (ax1, ay1) and its top-right corner (ax2, ay2). The second rectangle is defined by its bottom-left corner (bx1, by1) and its top-right corner (bx2, by2). Sample Test Input: ax1 = -3, ay1 = 0, ax2 = 3, ay2 = 4, bx1 = 0, by1 = -1, bx2 = 9, by2 = 2	4	1	A	C

Output: 45

Example 1:

Part1: Write a Python Programme Given two strings s and t, return True if t is an anagram of s, and False otherwise.

An Anagram is a word or phrase formed by rearranging the letters of a different word or phrase, typically using all the original letters exactly once.

Example 1:

Input:

s = "anagram"

t = "nagaram"

Output: True

Example 2:

Input:

s = "rat"

t = "car"

Output: False

Part1: What is Function in Python? Explain its different types of arguments with examples. Write a function for checking the speed of drivers. This function should have one parameter: speed.

1 + 3	2	A	S

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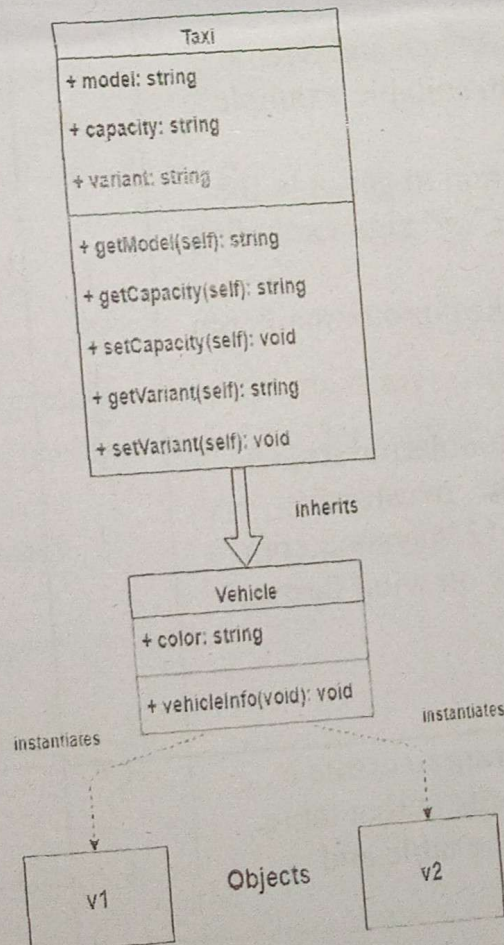|					
	1. If speed is less than 70, it should print "Ok". 2. Otherwise, for every 5km above the speed limit (70), it should give the driver one demerit point and print the total number of demerit points. For example, if the speed is 80, it should print: "Points: 2". 3. If the driver gets more than 12 points, the function should print: "License suspended"				
B	What is Inheritance and with the help of python program explain all the different Inheritance present in Python.	4	3	U	C
4	Implement the below UML/ Diagram in Python Programming Language where Taxi and Vehicle are two Classes. Output of Program : i20 Active SX in Bronze with 4 seats i20 Active Fortuner MT2755 in White with 7 seats Fortuner Python Inheritance Model	4	3	C	P

5	Part1: What is File Handling in Python? Demonstrate all the read operations with the file with examples. Part2: Explain the difference between function readlines() and readlines(n) in file handling with suitable examples.	2 + 2	3	C	5

Section – B

Attempt **All** Questions

3 X 5 = 15 Marks

No.	Detail of Question	Marks	CO	BL	KL
1	Write a function RevText() to read a text file " Story.txt " and return only words starting with 'I' in reverse order . Example: If value in text file is: INDIA IS MY COUNTRY Output will be: AIDNI SI MY COUNTRY.	3	3	C	S
2	What is Exceptional Handling? Explain user define exceptions and Write a Python lines to handle the multiple Exceptions with multiple excepts	3	3	U	C
3	What is Regular Expression? What is different between Match and Search functions explain each with suitable example? Write a regex Python program to get only the part of the email before the "@" sign excluding the "@" sign. i.e: only mike part from mike@protonmail.com. Sample input: str = 'The advancements in biomarine studies franky@google.com, with the investments necessary and Davos sinatra123@yahoo.com Then The New Yorker article on wind farms...' Expected Output: ['franky', 'sinatra123']	1 + 1 + 1	3	C	S
4	Demonstrate the python program to create a Studenttable and insert 5 records in that table. Finally selects all rows from the table and display the records.	3	3	C	C

		Marks			
C	5	Part1: How to compute the mean, median, standard deviation in Python using numpy? Part2: Write a Python program to Generate a 1-D array of 10 random integers. Each integer should be a number between 30 and 40 (inclusive) and convert 1-D array into a 2-D array with 5 rows?	1.5 + 1.5	4	A	P

Section – C

Attempt All Questions

5 X 2 = 10 Marks

No.	Detail of Question	Marks	CO	BL	KL
1	**Find the Runner-Up Score!** Given the participants' score sheet for your University Sports Day, you are required to find the runner-up score. You are given scores. Store them in a list and find the score of the runner-up. **Input Format** The first line contains. The second line contains an array of integers each separated by a space. **Output Format** Print the runner-up score. **Sample Input** 5 2 3 6 6 5	5	CO2	A	S

Sample Output

5

Explanation 0

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.

Create a GUI Marksheet using Tkintertoolkit python.

This is how the GUI would look:

```
✎ MARKSHEET                                          –  ☐  X

Name                              Reg.No
Roll.No
Sd.No    Subject         Grade    Sub Credit   Credit obtained
1        CS 201                   4
2        CS 202                   4
3        MA 201                   3
4        EC 201                   4

                                  Total credit

                                  SGPA
```

Or

		5	5	C	D
2					

Create basic Calculator for the addition of Two
Numbers using Tkinter.

Simple Calculator

Simple Calculator

Enter a number

Enter another number

Calculate

D