Reg. No.										

MANIPAL INSTITUTE OF TECHNOLOGY

MANIPAL

A Constituent Institution of Manipal University

IV SEMESTER B.TECH. OPEN ELECTIVE
END SEMESTER EXAMINATIONS, MAY/JUNE 2022
SUBJECT: PYTHON PROGRAMMING (CSE 4309)
REVISED CREDIT SYSTEM
(20/06/2022)

Time: 3 Hours MAX. MARKS: 50

Instructions to Candidates:

- Answer **ALL** the questions.
- Missing data may be suitably assumed. You may draw pictorial representations and algorithms to justify your code.

1A.	Taking assignment statement as an example, distinguish between type-safe languages and dynamically typed languages.	2

1B.	What is the output of *range(1,1), range (1,-1)*? Include these range statements in two separate *for* loops and show the output. Give equivalent *for* loop with range statement for the following Python code written using *while* loop.
	i)
	`n=1`
	`while n <= 10:`
	`  print(n, end = " ")`
	`  n += 1`
	ii)
	`i=1`
	`while i > -1:`
	`  print(i, end= " ")`
	`  i -= 1`
		5

1C.	Write a Python program to take two random integers *n1* and *n2* using *randint* method in the range [0-9]. The program should grade the result of arithmetic addition operation of *(n1+n2)* as Boolean value true or false. For example, if both *n1* and *n2* hold value 3 then the program should get the result of *(n1+n2)* from the user and grade the user's answer as true or false.	3
2A.	With a sample code, show how an empty set *s1* could be created and initialized with sample values. Show usage of a *for* loop to print the set values. Discuss the similarity between set values and dictionary keys.	3
2B.	What do you mean by the statement that tuples are sequences? With example, show how tuples are different from lists.	3
2C.	Given an empty list *lt*, write a Python program to input *n* names into the list using *while* loop. Traverse the list to display the elements using following *for* loop types: i) Traverse the list sequentially without using index variable ii) traverse the list to display elements at even numbered positions using index variable.	4
3A.	For a string variable *s* initialized with "abcdef", show a neat illustration of positive and negative indices and mark the slice i) 0 to 2 ii) 4 to 5 iii) -4 to -1 and display the output. Also, show atleast two slices for which empty strings are generated. Write complete Python code.	4

3B.	Show following features of Python dictionary data structure with an example i) Accessing values ii) Ordering of keys iii) Creating an entry to an empty dictionary	3
3C.	Given a dictionary *d*, write a Python program with a *for* loop statement to print keys and a *for* loop statements to print values separately without using any built-in methods. Taking a sample code, explain what happens if dictionary keys are not unique?	3
4A.	Illustrate the use of a file handle in managing different file operations by a block diagram. In a table form, show basic file access modes and their corresponding file handle location.	3
4B.	Write a Python program to define a function named *BuildList* which takes a file name titled *fname* as argument. The function has to read and store the content of file into a list named *ls* and should return the list to the main program. At the end, the function should also set the file pointer to the beginning of the file without changing the file access mode. The main program should supply a text file named "info.txt" to the function. Suppose the content of info.txt is *New Python* in the first line and *Funny Programming* in the second line, show the content of the list.	4
4C.	Represent a two-dimensional point on the cartesian coordinate plane in a Python class named *Point* with *x* and *y* as its coordinates. Specify a method named *distance* to return the distance between two points using the standard distance formula. Also, specify a *print-point* method to display its *x* and *y* values. Create a point *P1* with x= 3, *y=4* to display the point and display the distance.	3
5A.	With a neat diagram, show the workflow required to add a widget for creating a basic GUI window. Using this workflow, write a complete Python program to design a button widget followed by a label widget both packed to the left using a pack system call. Display the design.	3
5B.	With a neat diagram, show how the SQL commands are executed in our application program using cursor. Give an example of *Tracks* table in *music* database with attributes *title* and *plays*. Write a complete Python program to create the table, populate the content and display the same.	3
5C.	With an example each, illustrate the usage of operators + and * for numpy arrays and distinguish their usage from lists. Show how generation methods can be used to create numpy arrays.	4