



SLOT : F1			
School of Information Technology and Engineering			
Winter Semester 2022-2023		Continuous Assessment Test – I	
Programme Name & Branch		M.C.A & Computer Application	
Course Code:	ITA6017	Course Title:	Python Programming
Class Number(s)	VL2022230500534, VL2022230500502, VL2022230500452		
Faculty Name(s)	Arun Kumar A, Jothish Kumar M, Arun Pandian J,		

Exam Duration: 90 Min.

Maximum Marks: 50

General instruction(s):

Q.No.	Question	Max Marks
1.	(a) Define Data Type. Explain in detail about the <u>effects</u> of numeric Data Types on <u>operators</u> , <u>type conversion</u> functions, and <u>variables</u> along with their syntax and examples (6 marks) (b) Differentiate four unique features of python with C and C++ (4 marks).	10
2.	Explain briefly about the python conditional statements <u>along</u> with the simple decision <u>structure</u> and their respective syntax and pseudocode. List out the comparison of <u>one-way</u> , <u>two-way</u> , and multi-way decisions in the form of a <u>flow chart</u> .	10 20 20
3.	Develop the <u>step-by-step</u> program for <u>guessing game</u> using following constraints. Note: <u>The player only gets five turns.</u> Hint: use <u>randint()</u> function for <u>secret num</u> . The program tells the player after each <u>guess</u> if the <u>number is higher</u> or <u>lower</u> . The program prints appropriate messages for when the player <u>wins and losses</u> .	10 25 30 50 10
4.	(a) Write a python program to print the following hollow square pattern (5 marks)	10

	<pre> ***** * * * * * * * * ***** </pre> <p>(b) Write a python code that calculates and displays the end time. Get the starting time and duration of the event as input from the user. Start time and duration are given as a pair of hours (0....23) and minutes (0.....59). For example, if the event starts at 12:17 and lasts for 0:59 minutes, it will end at 13:16 (5 marks)</p>	
5.	<p>(a) State the difference between List and Tuples in table form (2 marks)</p> <p>(b) Describe briefly with examples about different methods supported by the list objects. Discuss the list types and its operations with syntax (4 marks)</p> <p>(c) Explain why tuples are Immutable? Describe briefly on different tuples operators, notations and functions with examples (4 marks)</p>	10

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SLOT: F2			
School of Information Technology and Engineering			
Winter Semester 2022-2023		Continuous Assessment Test – I	
Programme Name & Branch		MCA & Computer Applications	
Course Code:	ITA6017	Course Title:	Python Programming
Class Number(s)	VL2022230500538, VL2022230500251 & VL2022230500489		
Faculty Name(s)	NIVEDHITHA M, ARUNKUMAR A & BALASUBRAMANI M		

Exam Duration: 90 Min.

Maximum Marks: 50

General instruction(s): Answer all the questions

Q.No.	Question	Max Marks
1.	a) Write Python code that can compute perimeter and area of the circle using the variables radius and pi=3.14159. Take input radius from the user. b) Write Python script to swap two numbers a=12, b=24 (i) using third variable c (ii) without using third variable	5 5
2.	a) Evaluate the following expressions in python i) $24 // 6 \% 3$ ii) $\text{float}(4 + \text{int}(2.39) \% 2)$ iii) $2 ** 2 ** 3$ iv) $\text{not}((125 < 45.9) \& (6 * 2 <= 13))$ v) $(125 == 521) \& (2 < 3)$ b) Write a python program to solve the quadratic equation $ax^2 + bx + c = 0$.	5 5
3.	a) Appraise with an example nested if and elif ladder in Python b) If you are given three sticks, you may or may not be able to arrange them in a triangle. For example, if one of the sticks is 12 inches long and the other two are one inch long, you will not be able to get the short sticks to meet in the middle. For any three lengths, there is a simple test to see if it is possible to form a triangle: If any of the three lengths is greater than the sum of the other two, then you cannot form a triangle. Otherwise, you can. Write a python code that prints either true or false, depending on whether you can or cannot form a triangle from sticks with the given lengths.	5 5
4.	a) Explain with an example while loop, break statement and continue statement in Python. b) Write a Python program to generate first 'N' Fibonacci series numbers. (Note: Fibonacci numbers are 0, 1, 1, 2, 3, 5, 8... where each number is the sum of the preceding two). <div style="text-align: center;">2 3 4 5 6</div>	5 5
5.	a) Write a python program to insert a number in a list of sorted numbers without using built in function. b) Write a Python program to replace last value of tuples in a list. Sample list: [(10, 20, 40), (40, 50, 60), (70, 80, 90)] Expected Output: [(10, 20, 100), (40, 50, 100), (70, 80, 100)]	5 5

 $2n^2 + 4n + 1$



School of Information Technology and Engineering

Winter Semester 2022-2023 (Freshers)

Continuous Assessment Test – II

Programme Name & Branch: MCA

Course Name & code: Python Programming (ITA6017)

Class Numbers: VL2022230500538, VL2022230500489, VL2022230500251

Faculty Names: Nivedhitha M, Balasubramani M, Arun Kumar A

Exam Duration: 90 Min.

Maximum Marks: 50

General instruction(s): Read the questions carefully and answer.

Q.No.	Question	Max Marks
1.	Government of India has appointed two separate teams with <u>three members</u> each for investigating a case. After forming the two teams with three members each, as a cost-cutting measure, the government decides to merge the two teams in to a single team with five members, by eliminating the member with the least experience among all the six members from the two teams. Use <u>dictionaries</u> to store the <u>two teams</u> and form a new team by <u>concatenating</u> the two teams. The chairperson of the new team is the person with the maximum experience. Write a python code to store the members of the two teams as dictionaries, print the new (concatenated) dictionary with the names in an increasing order of experience, to check whether a given name is present in the new dictionary or not and to print the name of the chairperson of the new team. Note: Assume that there is only one person with least experience in the two dictionaries.	10
2.	'pneumonoultramicroscopicsilicovolcanoconiosis' is the longest word in a dictionary with 45 characters. Given the value of 'i' and the value of 'k', write a Python code to output five letters which are in position that are the first five multiples of $2*i+k$. If the multiple greater than the length of the string then continue the counting from the beginning of the string. For example, if the value of $i = 5$ and $k = 2$ then the letters are 'r', 'c', 'n', 'e', and 'i'. The longest string is stored in a variable named as 's' in the precode, used it for coding.	10
3.	John's mother will take him to the doctor's clinic for a check-up. She asks the time by which John has to book a taxi. His	10

	<p>mother has some works: going to the dry-cleaners in the mall, have lunch in the restaurant, buy some dog food at the pet-shop, take money in the bank, to be done on the way, It takes 'x' minutes to drive to the mall and park the vehicle, and 'y' minutes to get the clothes dry cleaned, 'z' minutes for lunch, 'a' minutes to get dog food, 'b' minutes to get money at the bank and 'c' minutes to drive to the doctor's office from the mall. Given the values for 'x', 'y', 'z', 'a' and 'b' and the time of appointment as 'h' hour 'm' minutes, write a Python code to determine when John should leave home. For example if x is 20, y is 10, z is 45, a is 10, b is 10, c is 20 and h is 14 and m is 0, then John has to start from home by 12 hour 05 minutes (assuming it as the current time).</p> <p>Write appropriate functions for accomplishing the task.</p>	
4.	<p>Write a python code for interactive calculator along with a flowchart. User input is assumed to be a formula that consist of a number, an operator (at least + and -), and another number, separated by white space (e.g. 1 + 1). Split user input using <code>str.split()</code>, and check whether the resulting list is valid:</p> <ul style="list-style-type: none"> • If the input does not consist of 3 elements, raise a <code>FormulaError</code>, which is a custom Exception. • Try to convert the first and third input to a float (like so: <code>float_value = float(str_value)</code>). Catch any <code>ValueError</code> that occurs, and instead raise a <code>FormulaError</code> • If the second input is not '+' or '-', again raise a <code>FormulaError</code> <p>If the input is valid, perform the calculation and print out the result. The user is then prompted to provide new input, and so on, until the user enters quit</p>	10
5.	<p>a) Write a REGEX to validate the pin code of India Test Cases:</p> <ol style="list-style-type: none"> 1. It can be only six digits. 2. It should not start with zero. 3. First digit of the pin code must be from 1 to 9. 4. Next five digits of the pin code may range from 0 to 9. 5. It should allow only one white space, but after three digits, although this is optional. <p>b) Write a REGEX to validate Identifier Test Cases:</p> <ol style="list-style-type: none"> 1. It must start with either lower case alphabet[a-z] or upper case alphabet[A-Z] or underscore(_). 2. It should be a single word, the white spaces are not allowed. 3. It should not start with digits. 	5+5



KEEPING MOBILE PHONE/SMART WATCH, EVEN IN "OFF" POSITION IS TREATED AS EXAM MALPRACTICE

Answer any TEN Questions

(10 X 10 = 100 Marks)

1. a) Explain the basic principles of python language and how is it advantageous than other languages. [4]
- b) Describe the list of python operators and their expression along with their description. Write a python program using Bitwise/operators. [6]
2. Explain the basic structure of Loops and their types. Represent the conditions in steps and structure it in the form of flowchart. Write a python program using the looping constructs and represent the output.
3. Write a Python Program to Convert Integer to Roman numeral using function. Use the following symbols to represent Roman numerals: I, V, X, L, C, D and M.

Value	Symbol
1	I
5	V
10	X
50	L
100	C
500	D
1000	M

Test Case:

Input: 58

Output: "LVIII"

Explanation: L = 50, V= 5, III = 3.

4.

Define Dictionaries. State the difference between Dictionaries and tuples in table format. Explain in detail about indexing, sorting, object storage (adding and deleting) elements in dictionary with syntax and example. List out various methods and functions in dictionaries along with their description and syntax.

5.

Write a program to check whether digits in a number appear more than once using List.

Test Case:

Enter the Digit:12341

Enter the Number to Search:1

Appears More than Once in a List

6.

Write a short note on pandas dataframe object. Create your own dataframe object, discuss four Pandas functions that can be applied on Dataframes.

7.

Explain in detail about pattern matching in python with Regular Expressions (RegEx).

i) Write a program to extract the protocol and hostname from the given URL:
https://www.vit.ac.in using RegEx using meta characters.

ii) Write a program to perform the validation of an e-mail address using string methods. Write the necessary steps required for validation.

8.

Consider the following matrix:

$$\begin{bmatrix} 12 & 11 & 10 & 9 \\ 10 & 9 & 8 & 7 \\ 8 & 7 & 6 & 5 \\ 6 & 5 & 4 & 3 \\ 4 & 3 & 2 & 1 \end{bmatrix}$$

(i) Convert the above list into a NumPy array

(ii) Using appropriate slicing techniques, extract the subarrays

$$U = \begin{bmatrix} 12 & 11 \\ 10 & 9 \\ 8 & 7 \end{bmatrix} \quad V = \begin{bmatrix} 10 & 9 & 8 \\ 8 & 7 & 6 \end{bmatrix}$$

(iii) Find the matrix product $B = UV$

(iv) Determine the shape of B.

(v) Is it possible to broadcast the row [1 2] with B? Justify your answer.

9. What is an Exception? State three features of exception handling and assertions in table format. List the types of standard exceptions with the description. Explain in detail about two forms of handling an exception using try statement along with their syntax and an example program.

10. a) Explain briefly about the modules available for the python integration with MySQL and list their advantages. Describe the benefits of python for database programming. [4]
- b) What is MySQL Connector Python? Write the steps required for connecting MySQL database in python using MySQL Connector Python. Write a python program for creating the Tips table given below by importing MySQL. [6]

	total_bill	tip	sex	smoker	day	time	size
0	16.99	1.01	Female	No	Sun	Dinner	2
1	10.34	1.66	Male	No	Sun	Dinner	3
2	21.01	3.50	Male	No	Sun	Dinner	3
3	23.68	3.31	Male	No	Sun	Dinner	2
4	24.59	3.61	Female	No	Sun	Dinner	4
5	25.29	4.71	Male	No	Sun	Dinner	4
6	8.77	2.00	Male	No	Sun	Dinner	2
7	26.88	3.12	Male	No	Sun	Dinner	4
8	15.04	1.96	Male	No	Sun	Dinner	2
9	14.78	3.23	Male	No	Sun	Dinner	2

11. Define embedded python and its principles. List out the functions for getting information from within C/C++ along with the syntax and an example program. Also state the five - stage process for getting the return values from a function call.
12. Describe the Application development with python using Rapid Application Development (RAD) tool. State the various RAD requirements and its solutions using standard libraries.

