Register No : _____

THE KAVERY ENGINEERING COLLEGE

(An Autonomous Institution)

MCA DEGREE END SEMESTER THEORY EXAMINATIONS, APRIL-MAY 2025

First Semester

Master of Computer Applications

MC4103/PMCT2403 – Python Programming

Regulations – 2021/2024

Duration : 3 Hrs ***Maximum : 100 Marks***

PART – A (ANSWER ALL QUESTIONS) (Marks 10*2=20)

Q.No	*Questions*	*BLT*	*CO*	*Marks*
1.	Evaluate the expression ((10 + 5) * 3) - (20 / 4) > (15 % 3) && !(7 != 8).	L5	1	2
2.	Compare and contrast the while loop and for loop in python.	L2	1	2
3.	Find output. data1={'Id':100, 'Name':'Suresh', 'Profession':'Developer'} data2={'Id':101, 'Name':'Ramesh', 'Profession':'Trainer'} data1['Profession']='Manager' data2['Salary']=20000 data1['Salary']=15000 print (data1) print (data2)	L3	2	2
4.	Write a python code to import and use the math module to calculate the square root of a number.	L3	2	2
5.	Comment on the importance of a file path when working with files in python.	L2	3	2
6.	Differentiate try-except and try-finally.	L2	3	2
7.	How would you use NumPy to create a 2D array?	L3	4	2
8.	Name four popular python library for data analysis.	L1	4	2
9.	Discuss the need for encapsulation in object-oriented programming.	L2	5	2
10.	Mention the key differences between a class method and a static method in Python.	L2	5	2

PART – B (ANSWER ALL QUESTIONS) (Marks 5*16 = 80)

Q.No		*Questions*	*BLT*	*CO*	*Marks*
11.	a i	Write a Program to perform arithmetic operations such as i. Addition ii. Subtraction iii. Multiplication iv. Division Perform the continuity of operations by getting the choice from the user and display the result. Use while loop to Iterate the process.	L4	1	10

	ii	Analyze the following python code and explain its output
		x = 10
		y = 20
		if x > y:
		print("x is greater than y")
		elif x == y:
		print("x is equal to y")
		else:
		print("x is less than y")
			L4	1	6

		Or			
	b i	Examine the following with a sample program: • Function with no arguments no return values • Function with arguments no return values • Function with no arguments and with return values • Function with arguments and with return values	L4	1	10
	ii	Design a program to find the factorial of a given number using recursive function.	L4	1	6
12.	a i	You are tasked with creating a python program to manage a library's book inventory. The program should allow users to: a. Add new books to the inventory b. Search for books by title, author, or ISBN c. Remove books from the inventory d. Display the entire book inventory Tasks: a. Data structure: Decide on an appropriate data structure (list, tuple, dictionary, or a combination) to store the book information b. Input and Output: Design a user-friendly interface to interact with the program c. Functions: Create functions to perform each of the required tasks: adding, searching, removing, and displaying books	L4	2	10
	ii	Discuss the concept of slicing in python list using example	L2	2	6
		Or			
	b i	Elaborate in detail about how packages are created and imported in python. Demonstrate with an example.	L3	2	10
	ii	Given a tuple (1, 2, 3, 4, 5), Illustrate and write a python code to create a new tuple with the first and last elements.	L3	2	6
13.	a i	Write a python script that generates a file named "numbers.txt" containing a list of 20 integers. Read the “numbers.txt” file and identify the odd numbers, and write them to a new file called as “odd_numbers.txt” and then extract the even numbers and store them to a new file named “even_numbers.txt”. Display the output of both the txt files.	L4	3	10
	ii	Explain the difference between text files and binary files.	L3	3	6

Or

b	i	Demonstrate the concept of exception handling for built in and user defined exceptions in python with suitable examples.	L4	3	10
	ii	Construct a python function to handle a zero-division error exception.	L3	3	6
14.	a	i	Given a dataset called as EMPDATASET.CSV which contains the following fields EMPID, GENDER, AGE, SALES, BMI, INCOME. The sample data set is	L5	4	10

EMPID	GENDER	AGE	SALES	BMI	INCOME
E001	M	34	123	Normal	350
E002	F	40	114	Overweight	450
E003	F	37	135	Obesity	169
E004	M	30	139	Underweight	189
E005	F	44	117	Underweight	183
E006	M	36	121	Normal	80
E007	M	32	133	Obesity	166
E008	F	26	140	Normal	120
E009	M	32	133	Normal	75
E010	M	36	133	Underweight	40

- Calculate basic statistics for numerical columns (mean, median, mode, standard deviation)
- Use box plots or z-scores to identify outliers in numerical columns (age, sales, income)
- Determine if any data is missing in the dataset. If so, decide on appropriate imputation techniques (e.g., mean, median, mode, or more advanced methods)
- Calculate the correlation between numerical variables (age, sales, income, BMI)

	ii	Develop a python code to draw a bar chart using matplotlib with GENDER AND INCOME as parameters.	L5	4	6

Or

b	i	Develop a python code snippet that demonstrates the creation of a NumPy array named “arr” containing integers from 0 to 9. Explain the basic process of creating a NumPy array and explain how indexing and slicing operations are performed in a NumPy array using appropriate code snippets.	L3	4	10
	ii	List the steps for python flask windows development environment.	L2	4	6

15.	a	Class Design: • Create an Employee class with appropriate attributes like name, designation, salary, and employee_id. • Implement a constructor to initialize these attributes. • Define methods to display employee details, calculate salary, and apply increments. User Interface: • Design a user-friendly command-line interface to interact with the system. • Implement options to add, remove, search, and display employee information.	L6	5	16
		Or			
	b i	Create a base called as hotel with the following attributes: • Table number • AC/NON AC • Veg / Non Veg Create a derived class called as Hotel order • Get the order Item name • Get the number of quantities • Get the cost Perform a single inheritance and display the cost to be paid with the complete bill display.	L6	5	8
	ii	Consider a simple example where a person class is defined with attributes name and age. We can demonstrate object persistence by saving an instance of this class to a file and then loading it back. Create python code snippets.	L6	5	8