Subject Code: BMC301

PAPER ID-310609

Roll No: 2 4 0 0 5 7 0 1 4 0 0 2 3

MCA

(SEM III) THEORY EXAMINATION 2025-26

PYTHON PROGRAMMING

TIME: 3 HRS M.MARKS: 70

Note: Attempt all Sections. In case of any missing data; choose suitably.

SECTION A

1.Attempt *all* questions in brief. 02 x 7 = 14

Q no.	Question	CO	Level
a.	What is the purpose of the *id()* function in Python?	CO-1	K1
b.	How does list slicing differ from string slicing in Python?	CO-2	K2
c.	State one key property that distinguishes a dictionary from a list in Python.	CO-3	K1
d.	What is the role of the *__init__.py* file in a Python package?	CO-4	K1
e.	Define an 'exception' in the context of Python programming.	CO-5	K1
f.	Differentiate between the *break* and *continue* statements in a loop.	CO-1	K2
g.	Why are tuples considered 'immutable' data types?	CO-2	K1

SECTION B

2.Attempt any *three* of the following: 07 x 3 = 21

a.	Write a Python program to check whether a given number is an Armstrong number or not. Explain the logic used.	CO-1	K3
b.	Demonstrate with an example how negative indexing and slicing work on Python strings. Write a code snippet to reverse a string using slicing.	CO-2	K3
c.	Explain the concept of 'recursion' in Python functions. Write a recursive function to calculate the factorial of a number.	CO-3	K3
d.	Describe the different file opening modes in Python. Write a program to read a text file and count the number of lines in it.	CO-4	K3
e.	What is a DataFrame in the context of Python for data analysis? How is it different from a Series? Write code to create a simple DataFrame using pandas.	CO-5	K3

SECTION C

3.Attempt any *one* part of the following: 07 x 1 = 07

a.	Explain Python coding standards (PEP 8) with respect to indentation, naming conventions, and line length. Why is adherence to these standards important?	CO-1	K4
b.	Write a Python program that takes a number as input and prints its multiplication table up to 10, using nested loops. Also, handle invalid input using exception handling.	CO-1	K3

4.Attempt any *one* part of the following: 07 x 1 = 07

a.	Compare the methods and operations available for lists and tuples in Python. Under what circumstances would you prefer using a tuple over a list?	CO-2	K4
b.	Write a Python program that takes a list of numbers and returns a new list containing only the even numbers. Use list comprehension.	CO-2	K3

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5.Attempt any *one* part of the following: **07 x 1 = 07**

a.	Discuss the difference between mutable and immutable data types in Python. How does this distinction affect the way arguments are passed to functions?	CO-3	K4
b.	Write a Python function that accepts a dictionary as an argument and returns a new dictionary with keys and values swapped. Handle cases where values are not unique.	CO-3	K3

6.Attempt any *one* part of the following: **07 x 1 = 07**

a.	Explain the use of the *random* and *math* modules in Python with two examples each. How do these modules enhance the functionality of Python?	CO-4	K4
b.	Write a Python program that uses regular expressions to find all email addresses in a given text file.	CO-4	K3

7.Attempt any *one* part of the following: **07 x 1 = 07**

a.	Explain the *try, except, else,* and *finally* clauses in Python exception handling with a suitable example. How do user-defined exceptions improve error handling?	CO-5	K4
b.	Write a Python program to read a CSV file using pandas, display its first five rows, and handle any potential file-related exceptions.	CO-5	K3

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