Dec-24-0322 (NEP)

MCA-6105 (Python Programming)

MCA-1st CBCS/NEP

Time : 3 Hours   **Max. Marks : 60**

The candidates shall limit their answers precisely within the answer-book (40 pages) issued to them and no supplementary/continuation sheet will be issued.

Note: Attempt five questions in all, select one question each from section A, B, C, D. Section E (Question-9) is compulsory.

Section A   (12)

1. Explain the difference between lists and tuples in Python. Write a short Python script demonstrating at least two differences in their behavior.

Or

2. Write a Python function that takes a list of integers as input and returns a new list containing only the even numbers from the original list. Provide example input and output.

Section B   (12)

3. Define a Python class Rectangle with attributes length and width. Include methods to calculate the area and perimeter of the rectangle. Demonstrate creating an instance of Rectangle using these methods.

Or

4. Write a Python script that reads a text file, counts the number of words in the file, and write this count to a new file named word_count.txt. Explain how you handle file exceptions.

Section C   (12)

5. Using Tkinter, create a simple GUI application in Python that contains a button and a label. When the button is clicked, the label should display the text "Button Clicked!". Provide the complete code for the application.

Or

6. Write a Python function that divides two numbers and handles division by zero using exception handling. The function should return a custom error message if division by zero is attempted.

Section D   (12)

7. Write a Python function using NumPy to generate a 3×3 matrix with random integers between 1 and 100. Include code to find the maximum value in the matrix and its position.

Or

8. Write a Python script that sends an email with an attachment using the smtplib and email libraries. Include code to handle authentication and specify the required headers for the email.

SECTION E (Compulsory)

9.
a. Write a Python expression to create a list of the first 5 odd numbers starting from 1.

b. Name the two main Python libraries typically used to send emails and explain their roles briefly.

c. Write a Python program to append the text "Hello, World!" to a file named greetings.txt.

d. Write a Python program to handle an exception where a dictionary key does not exist. Use the dictionary data = {'name': 'Alice', 'age': 25} and try to access the key address.

e. In Tkinter, what widget would you use to create a clickable button and which method is used to handle its click event?

f. Define the term "method overriding" and give a brief example in Python.

(6×2=12)