MID-SEMESTER EXAMINATION, November-2025
Introduction to Python Programming (CA3107)

Programme: MCA **Semester:1st**
Full Marks: 30 **Time: 2 Hours**

Subject/Course Learning Outcome	*Taxonomy Level	Ques. Nos.	Marks
Understand the basic programming syntax, semantics and building blocks of python	L1,L2,L4	1(a,b,c) 3(b)	8
Develop python applications using the programming constructs like control structures and function.	L3,L4	2(a,b,c) 3(a,c) 4(a,b,c)	16
Analyze the scope of the objects used in a program, debug and test the programs	L3	5(a,b,c)	6
Illustrate the process of structuring the data using lists, sets, tuples and dictionaries			
Solve the real-life problems using files, object-oriented concepts(classes I and classes II) and exception handling.			
Design application using sorting, searching and the concept of stack, queues, linked lists and trees			

*Bloom's taxonomy levels: Remembering (L1), Understanding (L2), Application (L3), Analysis (L4), Evaluation (L5), Creation (L6)

Answer all questions. Each question carries equal mark.

1. (a) Evaluate the following expressions and write the output if any. 2

   i) max("hello","Hello","star","h ello")

(ii)
```
x = 5
if x < =5:
    print("x is greater than 3")
elif x = = 3:
    print("x is equal to 3")
else:
    print("x is greater than 5")
```

(b) Evaluate the following expressions and write the output if any. 2

i) ~6-7^2 ii) 3 % 2 ** 5 – 6 * 8 // 5 iii)5^2 iv)5<<2

(c) Explain the significance of assert statement with an example. 2

2. (a) Write the output of the following codes 2

```
for i in range(5):
  if i == 3:
     break
  print(i)
```

(b) 2

```
count = 0
while count < 5:
    if count == 4:
        continue
    print(count)
    count += 1
```

(c) What is the job of else structure in a loop. Explain with example. 2

3. (a) Write a program to find the sum of the first n terms of the series fs=0!+1!+2!+3!+...+n! (where n>=0). 2

(b) Write a program to compute the harmonic mean for n input numbers. The harmonic mean is defined by 2

H = n / ((1/x1) + (1/x2) + (1/x3) + ... + (1/xn))

(c) Write a Python function to find the sum of the first n terms of the series $s=x+x^2/2!+x^3/3!+x^4/4!+....$ 2

4. (a) Write a Python program to calculate the number of unique characters in a string. 2

(b) Write a function that takes 2 numbers as parameter and returns true if the numbers are co-prime. 2 numbers are Co-prime if their GCD is 1. 2

(c) Write a function that takes two strings and returns True if they are anagrams and False otherwise. A pair of strings is anagrams if the letters in one word can be arranged to form the second one. 2

5. (a) Evaluate the following code and write the output: 2

```
x=5
def f( ):
    x=x-2
    x=8
f( )
```

(b) 2

```
a = 3
def f( ):
    a = 5
    def g( ):
        global a
        a = 1
        print('inside function g,', 'a = ',a)
    g( )
    print('inside function f,', 'a = ', a)
f( )
```

(c) Write a Python function to count the number of vowels and consonants in a string. 2