Printed Page:- 05 **Subject Code**:- AMICSE0202

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

M.Tech (Integrated)

SEM:II CARRY OVER THEORY EXAMINATION - AUGUST 2023

Subject: Problem Solving using Advanced Python

Time: 3 Hours **Max. Marks: 100**

General Instructions:

IMP: *Verify that you have received the question paper with the correct course, code, branch etc.*

1. *This Question paper comprises of* **three Sections -A, B, & C.** *It consists of Multiple Choice Questions (MCQ's) & Subjective type questions.*

2. *Maximum marks for each question are indicated on right -hand side of each question.*

3. *Illustrate your answers with neat sketches wherever necessary.*

4. *Assume suitable data if necessary.*

5. *Preferably, write the answers in sequential order.*

6. *No sheet should be left blank. Any written material after a blank sheet will not be evaluated/checked.*

SECTION A **20**

1. Attempt all parts:-

1-a. To access the document string of a class, class attribute used is: (CO1) 1

(a) __doc__

(b) __name__

(c) __dict__

(d) __main__

1-b. Which of the following is type of namespace? (CO1) 1

(a) Enclosing

(b) Global

(c) built-ins

(d) All of the above

1-c. What type of inheritance is illustrated in the following Python code? (CO2) 1

```
classA():
    pass
class B(A):
    pass
```

```
class C(B):
        pass
```

(a) Multi-level inheritance

(b) Multiple inheritance

(c) Hierarchical inheritance

(d) Single-level inheritance

1-d. What will be the output of the following Python code? (CO2) 1

```
class A:
    def test(self):
        print("test of A called")
class B(A):
    def test(self):
        print("test of B called")
        super().test()
class C(A):
    def test(self):
        print("test of C called")
        super().test()
class D(B,C):
    def test2(self):
        print("test of D called")
obj=D()
obj.test()
```

(a) test of B called
test of C called
test of A called

(b) test of C called
test of B called

(c) test of B called
test of C called

(d) Error, all the three classes from which D derives has same method test()

1-e. What will be the output of the following Python code? (CO3) 1

```
import functools
ls=[1,2,3,4]
print(functools.reduce(lambda x,y:x*y,ls))
```

(a) Error

(b) 10

(c) 24

(d) No output

1-f. Iterators must have _____. (CO3) 1

(a) __iter__()

(b) __next__()

(c) __next__()
__iter__()

(d) None

1-g. Config() in tkinter is used for_____? (CO4) 1

(a) destroy the widget

(b) place the widget

(c) change property of the widget

(d) configure the widget

1-h. To delete any widget from the window or frame which of the following function is used ? (CO4) 1

(a) stop()

(b) destroy ()

(c) pack() function

(d) delete()

1-i. What will be output for the following code? (CO5) 1

```
import pandas as pd
import numpy as np
s = pd.Series(np.random.randn(4))
print (s.ndim)
```

(a) 0

(b) 1

(c) 2

(d) 3

1-j. Which is a python package used for 2D graphics? (CO5) 1

(a) matplotlib.pyplot

(b) matplotlib.pip

(c) matplotlib.numpy

(d) matplotlib.plt

2. Attempt all parts:-

2.a.	Write static method to check all numbers of list are even or odd. (CO1)	2
2.b.	Write syntax of getattr() and hasattr() method? (CO2)	2
2.c.	Why iterator is used in python? (CO3)	2
2.d.	How to change the color of a tkinter label programmatically? (CO4)	2
2.e.	What is meaning of axis=0 and axis=1? (CO5)	2

SECTION B **30**

3. Answer any five of the following:-

3-a.	Write a program that has a class Circle, use a class variable to define the value of constant PI, use this class variable to calculate area and circumference of a circle with specified radius (CO1)	6
3-b.	What do you understand by constructor? Explain different type of constructor with example. (CO1)	6
3-c.	Write names of the special functions to overload the Relational operators in python. (CO2)	6
3-d.	What is diamond problem, how python solve diamond problem explain with example. (CO2)	6
3.e.	What is iterator ?Also write a program that generate an iterator to print odd numbers from 1-20. (CO3)	6
3.f.	Explain the use of grid. Differentiate among place(), pack() and grid() functions in tkinter. (CO4)	6
3.g.	Create a dictionary with keys: Name, Department, City. Convert this dictionary into DataFrame. Rename column City as District ? (CO5)	6

SECTION C **50**

4. Answer any one of the following:-

4-a. Create a class called Numbers, which has a single class attribute called MULTIPLIER, and a constructor which takes the parameters x and y (these should all be numbers). (CO1) 10

a. Write an instance method called add which returns the sum of the attributes x and y.

b. Write a class method called multiply, which takes a single number parameter a and returns the product of a and MULTIPLIER.

c. Write a static method called subtract, which takes two number parameters, b and c, and returns b - c.

d. Write a method called value which returns a tuple containing the values of x

and y.

4-b. What is the role of __init() and __new__() method? How can override new method from object class. (CO1) 10

5. Answer any <u>one</u> of the following:-

5-a. What is Inheritance? How code reusability is achieved using inheritance? Explain with the help of a program. (CO2) 10

5-b. Write the names of five methods that are used in Code Introspection. Explain each method with proper syntax and example. (CO2) 10

6. Answer any <u>one</u> of the following:-

6-a. What is functional Programming? How well does Python support Functional Programming? (CO3) 10

6-b. How to create a co-routines in python. Explain its importance and advantages with an example. (CO3) 10

7. Answer any <u>one</u> of the following:-

7-a. Write a program to display a menu on the menu bar. Write a program to display a pop-up dialog box. (CO4) 10

7-b. What is canvas? Write a step for how can you change the background color of a canvas? Write a program to draw colored shapes on canvas. (CO4) 10

8. Answer any <u>one</u> of the following:-

8-a. What is pandas used for? What are the different ways a DataFrame can be created In pandas? (CO5) 10

8-b. Explain any five sub-modules of scipy. (CO5) 10