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**NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA  
(An Autonomous Institute Affiliated to AKTU, Lucknow)**

**B.Tech**

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 one 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 one 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 one 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 one 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