Printed Page:- 04 **Subject Code:- ACSE0202**

Roll. No:

NOIDA INSTITUTE OF ENGINEERING AND TECHNOLOGY, GREATER NOIDA

(An Autonomous Institute Affiliated to AKTU, Lucknow)

B.Tech

SEM: II - THEORY EXAMINATION - (2023 - 2024)

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. Which variable are usually used to keep a count of number of objects created from a class? (CO1) 1

(a) class

(b) object

(c) Temporary

(d) ordinary

1-b. What will be the output of the following Python code? (CO1) 1

```
class fruits:
        def __init__(self, price):
            self.price = price
obj=fruits(10)
obj.quantity=50
obj.bags=2
print(obj.quantity+len(obj.__dict__))
```

(a) 12

(b) 52

(c) 53

(d) 13

1-c. Which of the following best describes polymorphism? (CO2) 1

(a) Ability of a class to derive members of another class as a part of its own definition

(b) Means of bundling instance variables and methods in order to restrict access to certain class members

(c) Focuses on variables and passing of variables to functions

(d) Allows for objects of different types and behaviour to be treated as the same general type.

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

```
import sys

def function():
        pass

class MyObject(object):

        def __init__(self):
            pass

o = MyObject()

print(type(function))
```

(a) <class 'tuple'>

(b) <class 'type'>

(c) <class 'function'>

(d) <class 'dict'>

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. Which of the following is true? (CO3) 1

(a) generator consumes value
coroutine produces value

(b) generator produces value
coroutine consumes value

(c) Both produces value

(d) Both consumes value

1-g. From which keyword we import the Tkinter in program? (CO4) 1

(a) call

(b) from
(c) import
(d) All of the above

1-h. What is Tk() in tkinter python ? (CO4) 1

(a) It is function
(b) It is constructor
(c) It is widget
(d) All of the above

1-i. Which of the following makes use of pandas and returns data in a series or dataFrame? (CO5) 1

(a) pandaSDMX
(b) fred api
(c) OutPy
(d) Inpy

1-j. Point out the wrong combination with regards to kind keyword for graph plotting. (CO5) 1

(a) 'scatter' for scatter plots
(b) 'kde' for hexagonal bin plots
(c) 'pie' for pie plots
(d) none of the mentioned

2. Attempt all parts:-

2.a. Find the output: (CO1) 2

```
class A:
        var=20
        def __init__(self):
            self.var=30
obj=A()
obj.var=23
print(obj.var+len(obj.__dict__))
```

2.b. What is introspection in Python? (CO2) 2

2.c. Differentiate between a generator function and a normal function. (CO3) 2

2.d. How to create a Button on a Tkinter Canvas? (CO4) 2

2.e. How to create a random 2-d array in python using numpy? (CO5) 2

SECTION-B 30

3. Answer any five of the following:-

3-a. Elaborate with a help of an example the difference between Data Abstraction and Data Encapsulation. (CO1) 6

3-b. Write short note on built-in functions that are used with objects. (CO1) 6

3-c. Define inheritance. How many types of Inheritance? (CO2) 6

3-d.	What is constructor in python with example? (CO2)	6
3.e.	When and how Reduce() function is used with Lambda Function and calculate the sum of all the values in a list (CO3)	6
3.f.	What does mainloop () mean? What is the use of the mainloop () in Python tkinter? (CO4)	6
3.g.	How you set the darkgrid background of a plot with example. (CO5)	6

SECTION-C 50

4. Answer any one of the following:-

4-a.	Elaborate the term 'magic method'. Mention any 5 magic methods in python with example. (CO1)	10
4-b.	What is python class method? Create class method using Classmethod(). (CO2)	10

5. Answer any one of the following:-

5-a.	Discuss following method with an example. (CO2) a) Class method b) Static method	10
5-b.	What is constructor and its types in Python? Is constructor overloading possible in python? (CO2)	10

6. Answer any one of the following:-

6-a.	Use list comprehension to construct the following list: (CO3) (a) ['1a', '2a', '3a', '4a'] (b) ['ab', 'ac', 'ad', 'bb', 'bc', 'bd] (c) ['ab', 'ad', 'bc'] , from the list created above(using slice operation) (d) Multiples of 10	10
6-b.	Differentiate between Iterators and Generators in Python. Also with the help of python program elaborate the working of 'yield' and 'return' statement. (CO3)	10

7. Answer any one of the following:-

7-a.	Create a simple calculator with the help of GUI programming. (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: (CO5) (a) scipy.interpolate (b) scipy.misc	10