Printed Page:- 05 **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 (2022-2023 **)**

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

(a) Enclosing

(b) Global

(c) built-ins

(d) All of the above

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

```
def say(message, times = 1):
    print(message * times)
say('Hello')
say('world', 5)
```

(a) Hello
world
world
world
world
world

(b) Hello
world, 5

(c) error

(d) None of the above

1-c. Which of the following statements is wrong about inheritance? (CO2) 1

(a) Protected members of a class can be inherited

(b) The inheriting class is called a subclass

(c) Private members of a class can be inherited and accessed

(d) Inheritance is one of the features of OOP

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

```
odd=lambda x: bool(x%2)
numbers=[n for n in range(10)]
print(numbers)
n=list()
for i in numbers:
        if odd(i):
           continue
        else:
           break
```

(a) [0, 2, 4, 6, 8, 10]

(b) [0, 1, 2, 3, 4, 5, 6, 7, 8, 9]

(c) [1, 3, 5, 7, 9]

(d) Error

1-f. The single line equivalent of the following Python code? (CO3) 1

```
l=[1, 2, 3, 4, 5]
def f1(x):
      return x<0
m1=filter(f1, l)
print(list(m1))
```

(a) filter(lambda x:x<0, l)

(b) filter(lambda x, y: x<0, l)

(c) filter(reduce x<0, l)

(d) reduce(x: x<0, l)

1-g. How pack() function works on tkinter widget ? (CO4) 1

(a) According to x,y coordinate

(b) According to row and column-wise

(c) According to left,right,up,down

(d) None of the above

1-h. Is it possible to draw a circle directly in tkinter canvas ? (CO4) 1

(a) Yes

(b) No

(c) No(but possible by oval)

(d) None of the above

1-i. Which of the following is/are ways to create data frames? (CO5) 1

(a) create by using list of dictionary

(b) create by using dictionary with list

(c) create by using series

(d) All of the mentioned

1-j. Identify the right type of chart using the following hints. (CO5) 1

Hint 1: This chart is often used to visualize a trend in data over intervals of time.

Hint 2: The line in this type of chart is often drawn chronologically

(a) Line chart

(b) Bar chart

(c) Pie Chart

(d) Scatter plot

2. Attempt all parts:-

2.a. Differentiate between class variable and instance variable. (CO1) 2

2.b. How abstract method is different from the concrete method ? (CO2) 2

2.c. What is the difference between an Iterator and Iterable? (CO3) 2

2.d. How to resize an image using tkinter? (CO4) 2

2.e. Write code to print 4 integers random numbers range between 1 To 15. (CO5) 2

SECTION B **30**

3. Answer any <u>five</u> of the following:-

3-a. What is encapsulation in python and what are the different benefits provided by encapsulation? (CO1) 6

3-b. Write a program to create a class called Complex and write a menu driven program to read, display, add and subtract two complex numbers by creating corresponding instance methods. (CO1) 6

3-c. What is method overriding? Explain it with an example. (CO2) 6

3-d. Write names of the special functions to overload the assignment operators in python. (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. Give syntax of int_slider, float _slider, int_range_slider and float_range_slider in Ipywidgets. (CO4) 6

3.g. How can you initialize a 4*4 numpy array with only ones? Reshape this into 2*8 array. (CO5) 6

SECTION C **50**

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

4-a. Explain object oriented programming concept in python with proper example. (CO1) 10

4-b. Write a program that has a class Point with attributes x and y. (CO1) 10

a. Write a method called midpoint that returns a midpoint of a line joining two points.

b. Write a method called length that returns the length of a line joining two points.

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

5-a. What is method resolution order (MRO)? Explain the principles followed by MRO with example? (CO2) 10

5-b. What is Code Introspection ? Explain any five built-in functions that are used for code introspection in python. (CO2) 10

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

6-a. What is generator, explain the use of generator expression with example. Also give the advantage of Generator. (CO3) 10

6-b. Explain the following:- (CO3) 10

i) Closure

ii) Decorators

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. Write a program to display two buttons and print a message when a button is clicked. Write a program to display a text on the console when a button is pressed. (CO4) 10

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

8-a. Write a program to create Bar plot and box plot using Matplotlib take your own data to draw these plot. (CO5) 10

8-b. What is a DataFrame in pandas and also write a program to read data from student.csv file with attributes Student_Name , Student_Marks and Roll_Number . Calculate average marks, minimum marks and maximum marks of student using dataframe. (CO5) 10