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Subject Code:- ACSE0202

Roll. No:

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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 - MAY 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 statement/s is False? (CO1) 1
- (a) Object is the instance of a class
 - (b) Instance variable belongs to class
 - (c) Class variable belong to class
 - (d) All are true
- 1-b. If a class has one class variable , then how many copies will be created for that variable? (CO1) 1
- (a) 0
 - (b) 1
 - (c) n
 - (d) infinite
- 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. Overriding means changing behaviour of methods of derived class methods in the base class. (CO2) 1
- (a) TRUE
- (b) FALSE
- 1-e. Which of the following is more memory efficient? (CO3) 1
- (a) list comprehension
- (b) generator
- (c) array
- (d) tuples
- 1-f. Iterators must have _____. (CO3) 1
- (a) `__iter__()`
- (b) `__next__()`
- (c) `__next__()`
`__iter__()`
- (d) None
- 1-g. Which of the following is essential to create a window screen using tkinter ? (CO4) 1
- (a) Call Tk() function
- (b) create a button
- (c) To define a geometry
- (d) All of the above
- 1-h. 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-i. Numpy in the Python provides the _____. (CO5) 1
- (a) Function
- (b) Lambda function
- (c) Type casting
- (d) Array

- 1-j. 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

**2. Attempt all parts:-**

- 2.a. Differentiate between class variable and instance variable. (CO1) 2
- 2.b. What is the use of super() function? (CO2) 2
- 2.c. Write application of yield keyword in python. (CO3) 2
- 2.d. What is the purpose of tkinter library in python. (CO4) 2
- 2.e. Write a short note on Series in Pandas. (CO5) 2

**SECTION B**

**30**

**3. Answer any five of the following:-**

- 3-a. Differentiate between instance method ,class method and static method with example. (CO1) 6
- 3-b. 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-c. How to create an abstract class in python explain with example. (CO2) 6
- 3-d. What is diamond problem, how python solve diamond problem explain with example. (CO2) 6
- 3.e. Write a program to create a decorator in python which will convert lowercase string into uppercase. (CO3) 6
- 3.f. Write a Python GUI program to create a button Remove and a label Hello using tkinter module. Remove button should delete the label on click. (CO4) 6
- 3.g. What is a Numpy Array. Give syntax to create 1-d, 2-d and 3-d array using Numpy. (CO5) 6

**SECTION C**

**50**

**4. Answer any one of the following:-**

- 4-a. Explain \_\_lt\_\_() , \_\_eq\_\_(),\_\_ne\_\_(),\_\_ge\_\_() and \_\_gt\_\_() by implementing a class. 10

(CO1)

- 4-b. Write a program that uses a class attributes to define some default titles (Mr./Ms.) for faculty in a college .Display the name of faculty along with the title and their department(CSE/IT/ etc.). (CO1) 10

**5. Answer any one of the following:-**

- 5-a. What is polymorphism. Explain different types of polymorphism supported in python with example. (CO2) 10
- 5-b. Write a program to implement hybrid inheritance in python. (CO2) 10

**6. Answer any one of the following:-**

- 6-a. What do decorators do in Python? Where are Python decorators used? How do you decorate a class in Python? (CO3) 10
- 6-b. What is iterator in python. write a program in python to print numbers from 1 to 10 using user define iterator. (CO3) 10

**7. Answer any one of the following:-**

- 7-a. What are called widgets in GUI? Create an Arithmetic calculator in tkinter using required widgets. (CO4) 10
- 7-b. Explain different types of geometry manager used in tkinter with example. (CO4) 10

**8. Answer any one of the following:-**

- 8-a. Explain Barplot and boxplot, with example. (CO5) 10
- 8-b. Why should one use NumPy arrays instead of nested Python lists? (CO5) 10