Daffodil International University
Faculty of Science & Information Technology
Final Examination, Spring 2023
Course Code: CSE233
Course Title: Object Oriented Programming II
Level: L2   Term: T1,T2   Batch: 59 & 60

Time: 2:00 Hrs

Marks: 40

Answer <u>ALL</u> Questions
[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1.	a)	Define Object Oriented Programming and the main features of OOP in python with proper examples.	[5]	CO3
	b)	Create built-in and user-defined polymorphism with Python programming language.	[5]	
2.		Develop the functionalities given below: • Identify all the attributes and methods. Now you have to build base class and subclass from the UML with those attributes and methods. • Develop an appropriate OOP method where authority decides to waive 20% of the tuition fee if the student's CGPA is over 3.5 and 25% of tuition fee if the student's CGPA is over 3.75. Display their tuition fee after waiver using your method. • Illustrate which methods have overloading and overriding relations into different entities.	[15]	CO3
3.		Analyze the pseudo code given below. If there is any error, rephrase it so that the compiler runs. You can't change arithmetic operations or any argument. number = 22 divider = 0 result = number/divider print (result)	[5]	CO2

4.	Construct a 2D array using a 4X3 matrix where, first and third row will be 1 to 30 containing the same distance. Identify the following questions. i. Identify the shape of diagonal, above and below diagonal values. ii. Construct a 3X4 matrix from the previous one and identify mean, max, variance values of 2nd to 4th column. iii. Describe the difference between a numpy array can access previous memory or can not access.	[10]	CO1

Time: 2:00 Hrs   Marks: 40

Answer ALL Questions
[The figures in the right margin indicate the full marks and corresponding course outcomes. All portions of each question must be answered sequentially.]

1.	a)	Define Object Oriented Programming? Differentiate between class and object with proper example?	[5]	CO3
	b)	Implement a constructor in Python programming, and then introduce the constructor's primary keyword. Give an example to support your decision.	[5]	
2.		Starbucks has its own online food order functionalities. Using Python's Object Oriented ideas, their management system had to be developed. They want to hire you as their software developer. Now, develop the functionalities given below: • Create a program to take seller's input & print the menu (containing at least 3 coffee items) sorted by price. • Take customer order & print the details (customer can choose regular or customize coffee order). • Deliver the order to the customer and acknowledge it. • Print customer feedback and rating using order ID.	[10]	CO3
3.	a)	Explain shallow copy and deep copy in your words? With the help of Numpy, create a simple 3D array. Sample output: $$\begin{bmatrix} 5 & 8 & 2 \\ 6 & 3 & 9 \\ 7 & 4 & 1 \end{bmatrix}$$	[5]	CO2
	b)	Construct a Python program that creates a list called num list from the user-supplied numbers 0 to 99. *Change the array's shape into 10 rows and 10 columns. *Estimate the sum of all the columns in the array.	[5]	
4.	a)	Describe the main features of object oriented programming with proper examples.	[5]	CO1
	b)	Compare between method overloading and method overriding.	[5]	

Daffodil International University

Department of Computer Science and Engineering
Faculty of Science & Information Technology
Final Examination, Spring 2022
Course Code: CSE233 (Day), Course Title: Object-Oriented Programming II
Level: L2 T3; Section: All
Time: 2 Hours, Marks: 40

Questions(Answer All)

Marks

1 (a) Daffodil Family recently launched a Commercial Bank named Daffodil Bank Ltd. Any user can open a bank account in Daffodil Bank Ltd. Every user has an owner name, a balance & also has a deposit, withdrawal. Withdrawals may not exceed the available balance. Develop a system with the following statements in the given scenario.

[6]

CLO2

    i. Instantiate your class.
    ii. Show all attributes' names.
    iii. Make several deposits & also print the final amount after deposit.
    iv. Make several withdrawals & also print the final amount after withdrawal.

(b) What is Object-Oriented Programming? Does Python support Object-Oriented Programming? Explain your answer.

[2+2]

CLO2

(c) Daffodil International University has Admin and Faculty Members. They are both employees. Every employee has a name, email, and salary. There is some task that has to perform for both employees. Check-in and Check-out are one of them, 9 am to 5 pm. But they have also different individual tasks. Admin is responsible for administrative work such as management, monitoring. The faculty is responsible for academic work such as conducting classes, counseling students. Now you have to solve the following statements in the given scenario

[12]

CLO2

    i. Identify all the attributes and methods. Now you have to build base class and subclass from the above scenario with those attributes, and methods. Then create their instance.

    ii. Authority decided to raise 10% of faculty salary and 15% of admin salary. Now you have to develop an appropriate method for this decision and also display their salary after raising using your method.

    iii. If check-in and checkout time is different for admin (8 am to 6 pm) and faculty

(9:30 am to 5:30 pm). What OOP technique do you apply? Evaluate it with code.

Employee	Name	Email	Salary	Raise Amount(%)
Admin	Kamran	ka@gmail.com	50000	15
Faculty	Riya	ri@gmail.com	50000	10

Analyze the below code. If there is any error rephrase it that compiler runs. You can't change arithmetic operations or any argument.   [3] CLO2

```
def divide(num):
    result = 10/num
    print(result)


divide(0)
```

2 (a) Write a python program that takes 0 to 99 from the user & create a list with those elements that named num_list.   [5] CLO3

   i.   Now create a NumPy array with num_list.
   ii. Change the array's shape into 10 rows and 10 columns.
   iii. Estimate the sum of all the columns in the array.

(b) This is a NumPy array dimension with 10 x 10.   [3] CLO3

```
array([[ 0,  1,  2,  3,  4,  5,  6,  7,  8,  9],
       [10, 11, 12, 13, 14, 15, 16, 17, 18, 19],
       [20, 21, 22, 23, 24, 25, 26, 27, 28, 29],
       [30, 31, 32, 33, 34, 35, 36, 37, 38, 39],
       [40, 41, 42, 43, 44, 45, 46, 47, 48, 49],
       [50, 51, 52, 53, 54, 55, 56, 57, 58, 59],
       [60, 61, 62, 63, 64, 65, 66, 67, 68, 69],
       [70, 71, 72, 73, 74, 75, 76, 77, 78, 79],
       [80, 81, 82, 83, 84, 85, 86, 87, 88, 89],
       [90, 91, 92, 93, 94, 95, 96, 97, 98, 99]])
```

From the above array you have to show highlighted elements like below-

```
array([[24, 25, 26],
       [34, 35, 36],
       [44, 45, 46]])
```

3 Why we use NumPy array rather than List? Explain Briefly.   [2] CLO3

Id	Gender	Income	Age	Genre	AvgPerVisit	Rentals
1	F	20000	25	Comedy		25
2	M	35000	30	Action	3.4	
3	M	30000		Comedy	4.2	16
4	F	40000	35	Drama	3.2	12
5	F	27000	30	Drama	3.5	41

[5]

CLO3

Analyze the table & demonstrate the following statement.

i.   Write a program that analyze & count the number of records is included under the 'Age' attributes.

ii. Write a program that analyze & group the data according to Female Gender.

ii. Discover the particular attribute is bringing Null values?

iv. Dropping the row where there are missing values & show rest of the data.

v.   Missing data will be replaced by '5' value of the particular column & show all data.

Daffodil International University
Department of Computer Science and Engineering
Faculty of Science & Information Technology
Final Examination, Fall 2021
Course Code: CSE233 (Day), Course Title: Object-Oriented Programming II
Level: 2;   Term: 3;   Section: All

Time: 2 Hours   Marks: 40

[Answer all the Questions. Obtain marks in the right side]

1. (a) Write a program to build a Student Management System using Python Object Oriented Programming Concept which can perform following operations: (2.5×3=7.5)

   - **Accept Function**- it takes details from the user like name, roll number, and marks for two different subjects
   - **Display Function** – This method displays the details of every student.
   - **Search Function** – This method searches for a particular student from the list of students. This method will ask the user for roll number and then search according to the roll number

   (b) From the above scenario, discuss where exception handling is needed so that the program normal flow is not disrupted. (5)

   (c) Why transpose is required in data analysis phase? Write a program to make the following transformation with the help of Numpy. (4)

$$\begin{bmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{bmatrix} = \begin{bmatrix} 1 & 4 & 7 \\ 2 & 5 & 8 \\ 3 & 6 & 9 \end{bmatrix}$$

2. (a) Create a Time class and initialize it with hours and minutes. (2.5×3=7.5)

   - Make a method add Time which should take two time object and add them. Example- (2 hour and 50 min) + (1 hr and 20 min) is (4 hr and 10 min)
   - Make a constructor which should print the time which is calculated by add Time method.
   - Make a method Display Minute which should display the total minutes in the Time. Example – (1 hr 2 min) should display 62 minute.

   (b) Give an example of how a built in function is used in polymorphism concept. (3)

   (c) Write a Python Program to implement multiple inheritance. (3)

3. (a) Write a program to create an array with 5 elements. It will generate an exception if we call an element which is out of bound. (5)

   (b) Write a function which will take two input arrays as arguments and then multiply element wise on the diagonal elements of the two matrices and then display the multiplied elements in another array. N.B. Create array using Numpy. (5)