**C**

Reg. No. :

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### Question Paper Code: R3E03

B.E./B.Tech. DEGREE EXAMINATION, NOV 2024

Third Semester

Artificial Intelligence & Data Science

R21UAD303 – OBJECT ORIENTED PROGRAMMING USING PYTHON

(Regulations R2021)

Duration: Three hours                                                    Maximum: 100 Marks

Answer All Questions

PART A - (5 x 1 = 5Marks)

1. Which of the following is not a type of inheritance?                    CO1- U

    (a) Double level        (b)Single level        (c)Multiple        (d)Multi-level

2. What is setattr() used for?                                            CO1- U

    (a) to access the attribute of the object        (b) to set an attribute

    (c) to check if an attribute exists or not        (d) to delete an attribute

3. Which among the following is not a necessary condition for constructors?    CO1- U

    (a) Its name must be same as that of class        (b)It must not have any return type

    (c)It must contain a definition body        (d) It can contains arguments

4. Which keyword is used for function in Python language?                CO1- U

    a) Function        b) def        c) Fun        d) Define

5. What will be the output of the following Python code?                CO2-App

    sentence ='we are humans'

    matched=re.match(r'(.*) (.*?) (.*)', sentence)

    print(matched.group())

    (a) ('we', 'are', 'humans')                (b) (we, are, humans)

    (c) ('we', 'humans')                        (d) 'we are humans'

PART – B (5 x 3= 15Marks)

6. Create a class Student with attributes name and marks. Write methods to assign   CO2-App
   marks and to display the student's details. Instantiate an object of Student,
   assign marks, and display the details.

7. Define Encapsulation.                                                             CO1 U

8. Give an example for overriding.                                                   CO1 U

9. Define Abstractmethod.                                                            CO1 U

10. Define TDD.                                                                      CO1 U

PART – C (5 x 16= 80Marks)

11. (a) Create a Python program that uses the given Animal and Dog   CO2-App   (16)
        classes. The program should create a Dog object with the breed
        "Poodle". Then, display the following information about the dog:
                The species of the dog.
                The breed of the dog.
                The sound the dog makes
                            Or
    (b) Using inheritance you have defined classes, Employee and   CO2-App   (16)
        Manager. The Manager class is derived from the Employee class
        and includes an additional attribute department, which represents
        the department the manager belongs to. Give the Explanation of
        Inheritance

12. (a) Write a Python program that uses an abstract class Book with an   CO2-App   (16)
        abstract method get_details(). The Book class should represent a
        common interface for different types of books. Create two
        concrete classes, Novel and Magazine that inherit from the Book
        abstract class. Give the explanation of Abstraction.
                            Or
    (b) Create a Student class to represent a student identified by name,   CO2-App   (16)
        roll number, and marks. Make all attributes private and methods
        public. Use a constructor to initialize the attributes. Then, display
        the academic performance of a student named Ragu using the
        appropriate methods.

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13. (a) Can you briefly explain class relationships and provide a suitable  CO1- U    (16)
        example to illustrate them?

                                    Or

    (b) Provide a brief explanation of polymorphism and its types.         CO1- U    (16)


14. (a) Write a program where a constructor throws an exception if  CO2- App   (16)
        invalid parameters are provided. For example, create a
        BankAccount class with a constructor that throws an
        IllegalArgumentException if the initial balance is negative. Ensure
        that the exception is caught and handled when an object of this
        class is created.

                                    Or

    (b) In a payment processing system, you have a base class  CO2- App   (16)
        PaymentMethod with a method processPayment (). Derived
        classes such as CreditCardPayment, PayPalPayment, and
        BankTransferPayment override the processPayment() method.
        Write a function that accepts an object of type PaymentMethod
        and processes the payment, regardless of the specific payment
        method.


15. (a) What are the differences between normal expressions and python  CO1- U    (16)
        RegEx? Explain with examples

                                    Or

    (b) What are the distinctions between standard string literals and  CO1- U    (16)
        Python's regular expressions? Provide examples to demonstrate
        these differences.

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