**Academic Year 2024-25 Even**

**19CSE313 – Principles of Programming Language**

**B.Tech CSE 2022-26 F Section**

**Practice Set 9 – Scala Classes and Objects**

1. Define a class **Person** with attributes name and age. Create an object of this class and print the details.
2. Create a base class **Animal** with a method sound(). Derive a class **Dog** from Animal and override the sound() method to print "Bark".
3. Explore the concept called ‘Trait’ in Scala. Explain the same with an appropriate example code. Copy and paste the screenshots of code execution
   1. Define a **trait Flyable** with a method fly(). Create a **class Bird** that extends this trait and implements the fly() method.
4. Explore and explain the concept of ‘ case class and case object ’ in Scala, with the help of appropriate example code.
   1. Create a **case class Book** with attributes title and author. Demonstrate how to create an instance of this case class.
5. Create a class **BankAccount** with private attributes accountNumber and balance. Provide public methods to deposit and withdraw money, ensuring the balance cannot be negative.
6. Explore and explain the concept of ‘abstract class’ in Scala.
   1. Create an **abstract class Vehicle** with an abstract method move(). Derive a **class Car** from Vehicle and implement the move() method.
7. Create a **class Counter** with a private attribute count. Provide a companion object with a method to create a new Counter instance with an initial count.
8. Create a **class Calculator** with overloaded methods add() that can take two or three integers and return their sum.
9. Define a **trait Shape** with a method area(). Create **classes Circle and Rectangle** that extend this trait and implement the area() method. Write a function that takes a Shape and prints its area.
10. Create a **singleton object Logger** with a method log(message: String) that prints the message to the console.

**Note: For the theory questions 3, 4, and 6, mention the sources referred for answer compulsorily. For programming part, if you have used LLMs/GenAI tools, ensure that those are properly cited.**