# Module 9.1 Class Introduction: Theory Questions

## Question 1: Explain the concept of a class in object-oriented programming and how it differs from an object.

Consider a class as a blueprint and an object as an instance of that blueprint.

## Question 2: Why is encapsulation considered a fundamental concept in object-oriented programming?

Discuss how encapsulation helps in bundling data with the methods that operate on that data.

## Question 3: How can classes help in modeling real-world problems in software development?

Think about examples like representing employees, products, or services in a system.

## Question 4: Describe the relationship between a superclass and a subclass.

Explain inheritance and how a subclass can extend or override functionality of a superclass.

## Question 5: What role do constructors play in a class?

Describe how constructors are used for initializing new objects.

## Question 6: Give an example of how polymorphism is used in object-oriented programming.

Consider scenarios where different classes have a method with the same name but different implementations.

## Question 7: What is method overriding and when would you use it?

Explain how a subclass can provide a specific implementation of a method that is already defined in its superclass.

## Question 8: How do access modifiers (public, private, protected) affect the visibility of class members?

Discuss the purpose of each access modifier in controlling access to the members of a class.

## Question 9: In what scenarios would you use static methods or variables within a class?

Consider the use of static members that belong to the class itself rather than to any specific object instance.

## Question 10: How does composition differ from inheritance, and when might you choose one over the other?

Think about composing objects by including them as fields versus inheriting all properties and behaviors from a parent class.