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**Task-5 Date-11/08/2025**

1.What is inheritance?

Inheritance is the process of acquiring the properties present in some other class. Here properties means ”variables and methods” .The class which provide all its properties is called as “parent class” or “Base class”.

2.Why use this keyword?

this() method can be present in the first line of every constructor. This() method would be participate in local chaining.

3.What is method overriding and overloading ?

Method overloading refers to methods with same name but different parameters.

Method overriding refers to the method with same name and same parameters.

4.What is object instantiation?

In Java, **object instantiation** means **creating an actual object (instance) from a class** so that you can use its variables and methods.

A **class** is just a blueprint, but **instantiation** is when you bring that blueprint to life in memory.

5.Explain single vs multiple inheritance.

* Single Inheritance → A class inherits from only one parent class.
* Multiple Inheritance → A class inherits from more than one parent class (Java doesn’t allow this with classes to avoid ambiguity, but supports it through interfaces).

6.What is Encapsulation?

Encapsulation is wrapping data (fields) and methods (functions) together in a single unit (class) and controlling access using access modifiers like private, public, protected. It hides internal details and protects data from unauthorized access.

7.What is constructor overloading?

When a class has multiple constructors with different parameter lists (different number or types of arguments). It allows creating objects in different ways.

8. Can we override static methods?

No, static methods cannot be overridden because they belong to the class, not an object. If you define the same static method in a subclass, it hides the parent’s method (method hiding).

9. What is runtime polymorphism?

It’s when the method to be executed is determined at runtime using method overriding and dynamic binding. The object type (not reference type) decides which method runs.

10. Difference between class and object?

* Class → Blueprint or template for creating objects.
* Object → A real instance of a class stored in memory.
* Class defines properties/methods; object actually uses them.