**6. Object-Oriented Programming (OOPs) Concepts**

• **Theory:**

**1.Basics of OOP: Encapsulation, Inheritance, Polymorphism, Abstraction :-**

* **Encapsulation:-** The data member and member method of class in a single unit called encapsulation.
* Declare the class variable as a private
* Declare the class methods as a public.
* Two Types..1. Setter 2. Getter
* **Inheritance:-** It is to access properties to one class to another class.
* Three types:-

1. SingleLevel Inheritance:-One sub class & one Super class.

2. MultiLevel Inheritance:- One sub class & Multiple Super class.

3. Hirachical Inheritance:-One sub class & Two Super class.

* **Polymorphism:-** polymorphism is the Greek word whose meaning is same object having different behaviour.
* **Two types :**-

1.Method Overloading:- Same function name having different parameters.

2.Method Overriding:- Same name as class name in inheritance class.

* **Abstraction:- Data hiding.. internal details showing assensial information to user is called. in abstract class there put be abstract default and static function are their.**

**2.Inheritance: Single, Multilevel, Hierarchical :-**

* Three types:-

1. SingleLevel Inheritance:-One sub class & one Super class.

2. MultiLevel Inheritance:- One sub class & Multiple Super class.

3. Hirachical Inheritance:-One sub class & Two Super class.

**3.Method Overriding and Dynamic Method Dispatch:-**

**Method Overriding:-**

Method overriding occurs when a subclass provides a specific implementation of a method that is already defined in its superclass. This allows the subclass to modify or extend the behavior of the superclass method.

**Dynamic Method Dispatch:-**

Dynamic method dispatch is the mechanism by which a call to an overridden method is resolved at runtime rather than compile time. This means that the Java Virtual Machine (JVM) determines which method to invoke based on the actual object type, not the reference type.