❖ What is OOP ? List OOP concepts.

Ans : Object-oriented programming (OOP) is a computer programming model that organizes software design around data, or objects, rather than functions and logic. An object can be defined as a data field that has unique attributes and behavior.

Object :

means a real word entity such as pen, chair, table etc. **Object-Oriented Programming** is a methodology or paradigm to design a program using classes and objects. It simplifies the software development and maintenance by providing some concepts:

- Object
- Class
- Inheritance
- Polymorphism
- Abstraction
- Encapsulation

- Object

- Any entity that has state and behavior is known as an object. For example: chair, pen, table, keyboard, bike etc. It can be physical and logical.

- Class

- **Collection of objects** is called class. It is a logical entity.

- Inheritance

- **When one object acquires all the properties and behaviours of parent object** i.e. known as inheritance. It provides code reusability. It is used to achieve runtime polymorphism.

- Polymorphism

- When **one task is performed by different ways** i.e. known as polymorphism. For example: to convince the customer differently, to draw something e.g. shape or rectangle etc.
- In C++, we use Function overloading and Function overriding to achieve polymorphism.

- Abstraction

- **Hiding internal details and showing functionality** is known as abstraction. For example: phone call, we don't know the internal processing.
- In C++, we use abstract class and interface to achieve abstraction.

- Encapsulation

- **Binding (or wrapping) code and data together into a single unit is known as encapsulation.** For example: capsule, it is wrapped with different medicines.

❖What is the difference between OOP and POP?

Ans :

Parameters	OOP	POP
Basic Definition	OOP is object-oriented.	POP is structure or procedure-oriented.
Program Division	The program is divided into objects.	The program is divided into functions.
Approach	Bottom-Up approach	Top-down approach
Data Control	Data in each object is controlled on its own.	Every function has different data, so there's no control over it.
Entity Linkage	Object functions are linked through message passing.	Parts of a program are linked through parameter passing.
Expansion	Adding new data and functions is easy.	Expanding data and function is not easy.
Inheritance	Inheritance is supported in three modes: public, private & protected.	Inheritance is not supported.
Access control	Access control is done with access modifiers.	No access modifiers supported.
Data Hiding	Data can be hidden using Encapsulation.	No data hiding. Data is accessible globally.
Overloading or Polymorphism	Overloading functions, constructors, and operators are done.	Overloading is not possible.
Friend function	Classes or functions can be linked using the keyword "friend, only in C++.	No friend function.

Virtual classes or functions	The virtual function appears during inheritance.	No virtual classes or functions.
Code Reusability	The existing code can be reused.	No code reusability.
Problem Solving	Used for solving big problems.	Not suitable for solving big problems.
Example	C++, JAVA, VB.NET, C#.NET.	C, VB, FORTRAN, Pascal