**1.What is Object-Oriented Programming, and how does it differ from procedural programming?**

| **Object Oriented Programming** | **Procedural Programming** |
| --- | --- |
| In this programming we use objects, classes for real world projects and also it is user friendly. Even if we create new data or programs it doesn't affect the old codes or data..  Data can be hide from big codes using abstraction and hence it provides more secure.  Programs can be divided into different parts using objects in which user can easily understand or go through it.. | In this programming it uses step by step approach by dividing the tasks into parts which can be called as collections.  Main programs will be divided into small small sections depending on the functions  The data which ae present can be easily moved within one function to another also. |

Main difference between these two are in the approach OOPS follows bottoms up

Whereas procedural programming goes withtop down approach.

Importance to data is more focused by oops while procedural gives more important to functions and.

**2.Explain the principles of OOP and how they are implemented in Python.**

**Describe the concepts of encapsulation, inheritance, and polymorphism in Python.**

The main features of oops are classes and objects in which it allows defining classes and creating objects according to user programs.

There are 4 main principles in the oops

* Abstraction, encapsulation, polymorphism, and inheritance

Encapsulation

It wraps the code or hides the unwanted code to make it simpler and user friendly.

Inheritance

It allows users to create classes which include parent, child classes or derived classes.

Polymorphism

The word poly means multiple or more than one, it allows one to create a function in different forms.

**3.What is the purpose of the self keyword in Python class methods?**

Self key is used to name classes which are present in the programs and makes the user to find it faster. In python @ syntax cannot be used hence self keywords are used.

**4.How does method overriding work in Python, and why is it useful?**

If there are two methods having the same and performing different actions ten this method is very useful. Main feature of this is, child class function can be modified which are derived by parent or ancestry class.

**5.What is the difference between class and instance variables in Python?**

| **Class** | **Instance** |
| --- | --- |
| It defines particular attribute of class or property  It recollects the value until the program ends  It can be recalled using class name | Value is specified to the Instance and can be shared within instance  It recollects the value till the object is present  It can be recalled using the variable names within the class. |

**6.Discuss the concept of abstract classes and how they are implemented in Python.**

It is also called the blueprint of the classes. Methods can be created within the child class.

It is implemented by creating abstract class in the code or program.

**7.Explain the importance of the super() function in Python inheritance.**

It gives access to method and also properties of parent and child classes.

Importance using this is it allows only once to call parent class in right order

**8.How does Python support multiple inheritance, and what challenges can arise from it?**

It allows to create more than one superclass in the code and allows more flexibility and organises the class.

**9.What is a decorator in Python, and how can it be used in the context of OOP?**

It allows additional functionality to an object which is present in the code.

And can be modify the behaviour of function or class.

**10. What do you understand by Descriptive Statistics? Explain by Example.**

It gives a brief idea or describes the main feature of the dataset.

measures of central tendency, such as mean, median, and mode,

**11. What do you understand by Inferential Statistics? Explain by Example**

The process of using a random sample to draw conclusions about a population

regression analysis, confidence range are some examples