

Unit 4: Object Oriented Programming (OOP) in Python

1. What is OOP?

👉 Object-Oriented Programming is a programming paradigm based on objects and classes.

2. What is a class?

👉 A blueprint for creating objects.

3. What is an object?

👉 Instance of a class.

4. How to define a class?

👉 Using class keyword

👉 Syntax:

```
class ClassName:  
    pass
```

5. How to create an object?

👉 `obj = ClassName()`

6. What is encapsulation?

👉 Wrapping data and methods into a single unit (class).

7. How is encapsulation achieved in Python?

👉 Using classes and access modifiers.

8. What are access modifiers?

👉 public, protected (`_`), private (`__`)

9. What is inheritance?

👉 Mechanism where one class acquires properties of another.

10. What is syntax of inheritance?

👉

```
class Child(Parent):  
    pass
```

11. What are advantages of inheritance?

👉 Code reuse and easier maintenance.

12. What is polymorphism?

👉 Ability to take many forms (same function behaves differently).

13. Example of polymorphism?

👉 Same method name with different behavior.

14. What are class attributes?

👉 Variables shared by all objects.

15. What are instance attributes?

👉 Variables unique to each object.

16. What is method in class?

👉 Function defined inside a class.

17. What is constructor?

👉 Special method called automatically when object is created.

18. What is constructor syntax?

👉

```
def __init__(self):  
    pass
```

19. What is destructor?

👉 Method called when object is destroyed.

20. Destructor syntax?

👉

```
def __del__(self):  
    pass
```

21. What is single inheritance?

👉 One child and one parent class.

22. What is multiple inheritance?

👉 One child inherits from multiple parents.

23. What is multilevel inheritance?

👉 Chain of inheritance (grandparent → parent → child).

24. Can Python support multiple inheritance?

👉 Yes

25. What is method overriding?

👉 Redefining parent method in child class.

26. What is method overloading in Python?

👉 Not directly supported (handled using default arguments).

27. What is self keyword?

👉 Refers to current object.

28. Can we create object without class?

👉 No

29. What is difference between function and method?

👉 Function → independent

👉 Method → inside class

30. When is constructor executed?

👉 Automatically when object is created