

QB365 Question Bank Software Study Materials

Python Classes and Objects Important 2, 3 & 5 Marks Questions With Answers (Book Back and Creative)

12th Standard

Computer Science

Total Marks : 75

2 Marks

10 x 2 = 20

1) What is class?

- Answer :** (i) Class is the main building block in Python.
(ii) Class is a template for the object.
(iii) Object is a collection of data and function that act on those data.
(iv) Objects are also called as instances of a class.

2) What is instantiation?

- Answer :** Once a class is created, next to create an object or instance of that class. This process of creating object is called as "Class Instantiation".

3) What is the output of the following program?

Class Sample:

```
__num=10
def disp(self):
    print(self.__num)
S=Sample()
S.disp()
print(S.__num)
```

Answer : Output:

```
> > >
10
line 7, in < module >
print(S.__num)
AttributeError: 'Sample' object has no attribute '__num'
> > >
```

4) How will you create constructor in Python?

- Answer :** (i) "**Init**" is a special function begin an end with double underscore in Python act as a Constructor .
(ii) Constructor function will automatically executed when an object is created.

General format of `__init__` method

(Constructor function)

```
def __init__(self, [args.....])
< statements >
```

5) What is the purpose of Destructor?

- Answer :** Destructor is also a special method to destroy the objects. In Python, `__del__()` method is used as destructor. It is just opposite to constructor.

6) Write the general form of declaring class in Python.

- Answer :** In Python, a class is defined by using the keyword `class`. Every class has a unique name followed by a colon (:).

Syntax:

```
class class_name:
statement_1
statement_2
.....
```

.....
.....
statement_n

7) How will you access the class members?

Answer : Any class member i.e. class variable or method (function) can be accessed by using object with a dot (.) operator.

8) What are self arguments?

Answer : Python class function or method is very similar to ordinary function with a small difference that, the class method must have the first argument named as self.

9) How will you declare a class variable?

Answer : When we declare a class variable within the class, methods must be prefixed by the class name and dot operator.

10) What are private members?

Answer : A variable prefixed with double underscore becomes private in nature. These variables can be accessed only within the class.

3 Marks

10 x 3 = 30

11) What are class members? How do you define it?

Answer : Variables defined inside a class are called as "Class Variable" and functions are called as "Methods. Class variable and methods are together known as members of the class. The class members should be accessed through objects or instance of class. A class can be defined anywhere in a Python program.

Defining classes: In Python, a class is defined by using the keyword class. Every class has a unique name followed by a colon (:).

Syntax for Defining a Class:

```
class class_name:  
statement_1  
statement_2  
.....  
.....  
statement_n
```

12) Write a class with two private class variables and print the sum using a method.

Answer : Code:

```
class Sample:  
def __init__(self, n1, n2):  
    self._n1=n1  
    self._n2=n2  
def sum(self):  
    print ("Class Variable 1:" self._n1)  
    print ("Class Variable 2:", self._n2)
```

```
S=Sample (5,10)  
S.sum()
```

Output:

```
Class Variable 1:5  
Class Variable 2: 10  
Sum: 15
```

13) **Find the error in the following program to get the given output?**

```
class Fruits:  
def __init__(self, f1, f2):  
    self.f1 = f1  
    self.f2 = f2  
def display(self):  
    print("Fruit 1 = %s, Fruit 2 = %s" %(self.f1, self.f2))  
F = Fruits ('Apple', 'Mango')
```

```
del F.display
```

```
F.display()
```

Output: Fruit 1 = Apple, Fruit 2 = Mango

Answer : In line No.8, del F.display will not come.

14) **What is the output of the following program?**

```
class Greeting:
def __init__(self, name):
    self.__name = name
def display(self):
    print("Good Morning ", self.__name)
obj=Greeting ('Bindu Madhavan')
obj.display()
```

Answer : Good Morning Bindu Madhavan.

15) How to define constructor and destructor in Python?

Answer : Constructor :

(i) Constructor is the special function that is created. In Python, there is a special function called "init", which act as a constructor.

(ii) It must begin and end with double underscore.

General format of Constructor :

General format of __init__ method (Constructor function)

```
def __init__(self, [args .... ]):
```

```
< statement >
```

Destructor :

(i) Destructor is also a special method to destory the objects.

(ii) In Python, __del__() method is used as destructor.It is just opposite to constructor.

16) Write a note on object.

Answer : (i) Object is a collection of data and function that act on those data. Class is a template for the object

(ii) According to the concept of Object Oriented Programming, objects are also called as instances of a class or class variable.

(iii) In Python, everything is an object. For example, all integer variables that we use in our program is an object of class into Similarly all string variables are also object of class string.

17) Write a note on self argument used in python class function.

Answer : (i) Python class function or Method is very similar to ordinary function with a small difference that, the class method must have the first argument named as self.

(ii) No need to pass a value for this argument when we call the method. Python provides its value automatically.

(iii) Even if a method takes no arguments, it should be defined with the first argument called self.

(iv) If a method is defined to accept only one argument it will take it as two arguments ie. self and the defined argument.

18) Write a python program to find total and average marks using class.

Answer : class Student:

```
mark1, mark2, mark3 = 45, 91, 71
#class variable
#class method
def process(self):
sum = Student.mark1 + Student.mark2 + Student.mark3
avg = sum/3
print("Total Marks = ", sum)
print("Average Marks = ", avg)
return
S=Student()
S.process()
```

Output:

Total marks = 207
Average Marks = 69.0

- 19) Write a python program that illustrate the use of destructor.

Answer : Program to illustrate about the `_del_()` method

```
class Sample:
num=()
def _init_(self, var):
Sample.num+= 1
self.var=var
print("The object value is = ", var)
print("The value of class variable is = ", Sample.num)
def _del_(self):
Sample.num-=1
print("Object with value %d is exit from the scope"%self.var)
S1=Sample(15)
S2=Sample(35)
S3=Sample(45)
```

- 20) Read the following program. Answer the following question. Class sample:

```
x, y= 10, 20
s= sample ()
print (s. x + s. y)
```

1. What does sample denotes?
2. What does x, y denotes?
3. What does s denotes?

Answer : 1. It denotes class name
2. x, y is a class variables of the class
3. S is an object created to access the members of the class

5 Marks

5 x 5 = 25

- 21) Write a program to check and print if the given number is negative or positive using class.

```
Answer : class test;
def check (self, num)
if num > 0:
print (num, "is positive number")
else:
print (num, "is negative number")
n = test ()
x = int (input("Enter the number"))
n. check (x)
```

- 22) Write a program to calculate area and circumference of a circle.

Answer : class Circle:

```
pi=3.14
def __init__(self.radius):
self.radius=radius
def area(self):
return Circle. pi*(self.radius**2)
def circumference(self):
return 2*Circle.pi*self.radius
r=int(input("Enter Radius: "))
Ce=Circle(r)
print("The Area =",C.area())
print("The Circumference =", C.circumferencet())
```

- 23) Write a menu driven program that keeps record of books available in you school library.

Answer : class Library:

```
def __init__(self):
self.bookname= ""
self.author=""
def getdata(self):
self.bookname = input("Enter Name of the Book: ")
self.author = input("Enter Author of the Book: ")
def display(self):
print("Name of the Book: ",self.bookname)
print("Author of the Book: ",self.author)
print("\n")
book= [] #empty list
ch = 'y'
while( ch=='y'):
print("1. Add New Book \n 2.Display Books")
resp = int(input("Enter your choice: "))
if(resp==1):
L=Library()
L.getdata()
book.append(L)
elif(resp==2):
for x in book:
x.display()
else:
print("Invalid input...")
ch = input("Do you want continue ....")
```

Output

```
1. Add New Book
2. Display Books
Enter your choice: 1
Enter Name of the Book: Programming in C++
Enter Author of the Book: K. Kannan
Do you want to continue...y
1. Add New Book
2. Display Books
Enter your choice: 1
Enter Name of the Book: Advanced Python
Enter Author of the Book: Dr. vidhya
Do you want continue.... n
```

- 24) Rewrite the following program to get the given output.

Output:

```
Enter radius: 5
```

The Area = 78.5

The circumference = 31.400000000000002

Error program:

Class Circle:

```
pi = 3.14
def __init__(self, radius):
    self = radius
    DEF area (SELF):
    Return Circle.pi* (self.radius**2)
    Def circumference(self):
    Return 2* Circle.pi *self.radius
r= int (input("Enter Radius:"))
c= circle(r)
print (" The Area =", c.area( ))
print("The circumference= ", C.circumference( ))
```

Answer : Output program:

Class Circle:

```
pi = 3.14
def __init__(self, radius):
    self.radius = radius
    def area (self):
    return Circle.pi* (self.radius**2)
    def circumference(self):
    return 2* Circle.pi *self.radius
r = int (input("Enter Radius:"))
C = Circle (r)
print ("The Area =", C. area( ))
print("The circumference= ", C.circumference( ))
```

25) How do define constructor and destructor in python explain with example?

Answer : In Python, a class is defined by using the Keyword class. Every class has a unique name followed by a colon (:).

Syntax :

```
class class_name:  
statement_1  
statement_2  
-----  
-----  
statement_n
```

Where, a statement in a class definition may be a variable declaration, decision control, loop or even a function definition. Variables defined inside a class are called as "Class Variable" and function are called as "Methods". Class variable and methods are together known as members of the class. The class members should be accessed through objects or instance of class. A class can be defined anywhere in a Python program.

Example:

Program to define a class

class Sample:

```
x,y = 10, 20
```

In the above code, name of the class is Sample and it has two variables x and y having the initial value 10 and 20 respectively.

To access the values defined inside the class, we need an **Object or instance of the class**.

Creating() objects:

Once a class is created, next we should create an object or instance of that class. The process of creating object is called as "**Class Instantiation**"

Syntax:

```
object_name = class_name( )
```

Accessing class members:

Syntax:

```
object_name = class_name( )
```

Any class member ie. class variable or method can be accessed by using object with a **dot (.)** operator.

Syntax:

```
object_name.class_member
```