Q1.What is python?

Python is an interpreted, high-level, general-purpose programming language. Created by Guido van Rossum and first released in 1991, Python's design philosophy emphasizes code readability.

Q2. What are the main features of Python?

- Python is an **interpreted** language. That means that, unlike languages like *C* and its variants, Python does not need to be compiled before it is run. Other interpreted languages include *PHP* and *Ruby*.

Q3.What is dynamically typed?

Python is **dynamically typed**, this means that you don't need to state the types of variables when you declare them or anything like that. You can do things like x=111 and then x="I'm a string" without error

Q3.Does python allows OOPS Concepts?

Python is well suited to **object orientated programming** in that it allows the definition of classes along with composition and inheritance. Python does not have access specifiers (like C++'s public, private).

Q4. What type of language is python? Programming or scripting?

Ans: Python is capable of scripting, but in general sense, it is considered as a general-purpose programming language.

Q5.How is Python an interpreted language?

Ans: An interpreted language is any programming language which is not in machine level code before runtime. Therefore, Python is an interpreted language.

Q6. How is memory managed in Python?

1. Memory management in python is managed by *Python private heap space*. All Python objects and data structures are located in a private heap. The programmer does not have access to this private heap. The python interpreter takes care of this instead.
2. The allocation of heap space for Python objects is done by Python's memory manager. The core API gives access to some tools for the programmer to code.
3. Python also has an inbuilt garbage collector, which recycles all the unused memory and so that it can be made available to the heap space.

Q7. What are python modules? Name some commonly used built-in modules in Python?

Python modules are files containing Python code. This code can either be functions classes or variables. A Python module is a .py file containing executable code.

Some of the commonly used built-in modules are:

- os
- sys
- math
- random
- data time
- JSON

Q8.What are local variables and global variables in Python?

Global Variables:

Variables declared outside a function or in global space are called global variables. These variables can be accessed by any function in the program.

Local Variables:

Any variable declared inside a function is known as a local variable. This variable is present in the local space and not in the global space.

When you try to access the local variable outside the function add(), it will throw an error.

Q9. Is python case sensitive?

Ans: Yes. Python is a case sensitive language.

Q12.What is type conversion in Python?

Ans: Type conversion refers to the conversion of one data type iinto another.

int() – converts any data type into integer type

float() – converts any data type into float type

ord() – converts characters into integer

hex() – converts integers to hexadecimal

oct() – converts integer to octal

tuple() – This function is used to convert to a tuple.

set() – This function returns the type after converting to set.

list() – This function is used to convert any data type to a list type.

dict() – This function is used to convert a tuple of order (key,value) into a dictionary.

str() – Used to convert integer into a string.

complex(real,imag) – This functionconverts real numbers to complex(real,imag) number.

Q13. Is indentation required in python?

Indentation is necessary for Python. It specifies a block of code. All code within loops, classes, functions, etc is specified within an indented block. It is usually done using four space characters. If your code is not indented necessarily, it will not execute accurately and will throw errors as well.

Q14. What are functions in Python?

A function is a block of code which is executed only when it is called. To define a Python function, the **def** keyword is used.

Q15.What is __init__?

__init__ is a method or constructor in Python. This method is automatically called to allocate memory when a new object/ instance of a class is created. All classes have the __init__ method.

Q16.What is a lambda function?

An anonymous function is known as a lambda function. This function can have any number of parameters but, can have just one statement.

Q17.What is self in Python?

Self is an instance or an object of a class. In Python, this is explicitly included as the first parameter. However, this is not the case in Java where it's optional. It helps to differentiate between the methods and attributes of a class with local variables.

Q18. How does break, continue and pass work?

Break-Allows loop termination when some condition is met and the control is transferred to the next statement.

Continue-Allows skipping some part of a loop when some specific condition is met and the control is transferred to the beginning of the loop

Q19. How can you randomize the items of a list in place in Python?

Using shuffle() method you can randomize the elements in list.

Q20. What are python iterators?

Iterators are objects which can be traversed though or iterated upon.

Q21. How can you generate random numbers in Python?

Random module is the standard module that is used to generate a random number

Q22. How do you write comments in python?

Comments in Python start with a # character. However, alternatively at times, commenting is done using docstrings(strings enclosed within triple quotes).

Q23. What is pickling and unpickling?

Pickle module accepts any Python object and converts it into a string representation and dumps it into a file by using dump function, this process is called pickling. While the process of retrieving original Python objects from the stored string representation is called unpickling.

Q24. How will you capitalize the first letter of string?

In Python, the capitalize() method capitalizes the first letter of a string. If the string already consists of a capital letter at the beginning, then, it returns the original string.

Q25. How will you capitalize each word's first letter of string?

In Python, the title() method is used to convert the first letter of each word in a string to upper case.

Q26. How will you convert a string to all lowercase?

Ans: To convert a string to lowercase, tolower() function can be used.

Q27.What are docstrings in Python?

Docstrings are not actually comments, but, they are ***documentation strings***. These docstrings are within triple quotes. They are not assigned to any variable and therefore, at times, serve the purpose of comments as well.

Q28. What is the purpose of is, not and in operators?

Operators are special functions. They take one or more values and produce a corresponding result.

is: returns true when 2 operands are true

not: returns the inverse of the boolean value

in: checks if some element is present in some sequence

Q29. How can the ternary operators be used in python?

The Ternary operator is the operator that is used to show the conditional statements. This consists of the true or false values with a statement that has to be evaluated for it.

Syntax:

The Ternary operator will be given as:
[on_true] if [expression] else [on_false]

x, y = 25, 50

output = x if x < y else y

Q30. What does len() do?

It is used to determine the length of a string, a list, an array, etc.

Q31. What are negative indexes and why are they used?

Ans: The sequences in Python are indexed and it consists of the positive as well as negative numbers. The numbers that are positive uses '0' that is uses as first index and '1' as the second index and the process goes on like that.

The index for the negative number starts from '-1' that represents the last index in the sequence and the sequence carries forward.

Q32. What are Python packages?

Python package contains multiple modules(python files).

Q33.How can files be deleted in Python?

To delete a file in Python, you need to import the OS Module. After that, you need to use the os.remove() function.

Q34. What are the built-in types of python?

Built-in types in Python are as follows –

- Integers
- Floating-point
- Complex numbers
- Strings
- Boolean
- Built-in functions

Q35. Does Python have OOps concepts?

Ans: Python is an object-oriented programming language. This means that any program can be solved in python by creating an object model. However, Python can be treated as procedural as well as structural language.

Q36. How is Multithreading achieved in Python?

1. Python has a multi-threading package but if you want to multi-thread to speed your code up, then it's usually not a good idea to use it.
2. Python has a construct called the Global Interpreter Lock (GIL). The GIL makes sure that only one of your 'threads' can execute at any one time. A thread acquires the GIL, does a little work, then passes the GIL onto the next thread.

Q37. What are Python libraries? Name a few of them.

Python libraries are a collection of Python packages. Some of the majorly used python libraries are – Numpy, Pandas, Matplotlib, Scikit-learn and many more.

Q38. What is split used for?

The split() method is used to separate each word from a given string in Python.

Q39. Explain Inheritance in Python with an example.

Ans: Inheritance allows One class to access all the members(say attributes and methods) of another class. Inheritance provides code reusability, makes it easier to create and maintain an application. The class from which we are inheriting is called super-class and the class that is inherited is called a derived / child class.

Q40. Does python support multiple inheritance?

Ans: Multiple inheritance means that a class can be derived from more than one parent classes. Python does support multiple inheritance, unlike Java.

Q41. What is Polymorphism in Python?

Polymorphism means the ability to take multiple forms. So, for instance, if the parent class has a method then the child class also can have a method with the same name having its own parameters and variables. Python allows polymorphism.

Q42. Define encapsulation in Python?

Ans: Encapsulation means binding the code and the data together. A Python class in an example of encapsulation.

Q43. How do you do data abstraction in Python?

Data Abstraction is providing only the required details and hiding the implementation. It can be achieved in Python by using interfaces and abstract classes.

Q44.Does python make use of access specifiers?

Python does not deprive access to an instance variable or function. Python gives the concept of prefixing the name of the variable, function or method with a single or double underscore to imitate the behavior of protected and private access specifiers.

Q45.Explain about list datatype in python
-->List is index based
-->List will follow insertion order
-->List is mutable(Changeable/Modifiable)
-->List will also allow duplicates

Q46.Explain about set datatype in python
---->Mutable object
--->does not maintain any order
--->value based(not index-based)
--->Doesnt allow duplicates

Q47.Explain about tuple datatype in python

--->Immutable object

--->It is index-based

--->It allows duplicates

Q48.Explain about dict datatype in python

--->key and value based

--->key will not duplicates

---->value will allow duplicates

--->Based on the key we can get the value

Q49.What are methods available in set to remove elements?

1.var.remove(value)

If the given element not present--it will throw key error

2.var.discard(value)

If value present---given value will get removed from the set

If value not present----it will ignore

It is better to use discard() method over remove() method

3.var.pop()

Randomly it will remove one element from set

(We cannot specify index since set is value-based)

Q50.List some String methods available in python.

upper()

lower()

capitalize()

title()

lstrip()

rstrip()

strip()

index()

find()
startsWith()
endswith()
isupper()
islower()