1) What is python? Who developed python?
→ Python is interpreted, object-oriented, high-level programming language with dynamic semantics.
→Python was developed by **Guido Van Rossum,** and first released on February 20, 1991.

2) What are the key features of python?
→ Cleans syntax plus high-level data types :- Leads to fast coding
→ Uses white space to delimit blocks :- Humans generally do, so why not the language ? Try it you will end up liking it
→ Variables do not need declaration and although not a type-less language
→ Reduced development time: - Code is 2-10x shorter than other language
→ Improved program maintenance: -Code is extremely readable
→ Less training: - Language is very easy to learn

3) What is a collection in python?
→ Collections in python are basically **container data types**, namely lists, sets, tuples, dictionary.
→ There are four collections type in python: -
1) Lists: [1,2]
2) Tuples: ()
3) Sets: {}
4) Dictionary: {key: values}

4) Explain difference between list and tuple
→ list – list is a collection of data that is ordered and changeable.
→ tuple – Tuple is a collection of data that is unordered and unchangeable.

There are four collection data types in the Python programming language:
- **List** is a collection which is ordered and changeable. Allows duplicate members.
- **Tuple** is a collection which is ordered and unchangeable. Allows duplicate members.
- **Set** is a collection which is unordered and unindexed. No duplicate members.
- **Dictionary** is a collection which is unordered, changeable and indexed. No duplicate members.

5) What is the namespace in python?
→ The namespace in python is just called name where we used to define class name, function name, dictionary key name, module name, packages name, there are all namespace in python.

6) What is meaning of mutable and immutable
→ Objects whose value can change are said to be mutable and objects whose values is unchangeable once they are created are called immutable.

7) What is the lambda function in python?
→ A lambda function is small anonymous function.
→ A lambda function can take any number of arguments, but can only have one expression

8) When do we use a pass statement?
→ The pass statement is used **as a placeholder for future code**. Nothing happens when the pass statement is executed, but you avoid getting an error when empty code is not allowed. Empty code is not allowed in loops, function definitions, class definitions, or in if statements.

9) What is slicing?

→ The slice () function returns a slice object.

A slice object is used to specify how to slice a sequence. You can specify where to start the slicing, and where to end. You can also specify the step, which allows you to example: slice only every other item.

10) How to get the last character from the string in python?
→ We get the last character from the string in python using index: -

```
Example:
 string = “Hello World”
print (string [-1])
```

11) Explain extend () and append () in python
→ append () is used to add items in the collection of python at last.
→ extend () is used to join two string lists etc. in python.

12) How to find no. of elements in a list?
→ We can use the len () function to return the number of elements present in the list.

13) What is the meaning of negative index in python?
→ we can use the negative index in python. Like, string [-1] is given the last element of the string. Using a negative index, we can easily access the last property of any collection in python.

14) Explain the range () function in python?
→ range () function is a built-in function in python. It returns a sequence of numbers starting from zero by default and incrementing by 1 by default and stops the given number in range ().
→ range () is used in for loop.

15) What are the rules for local and global variables in python?
→ Local variable is used in that specified function and it cannot be used outside the function.
→ Global variable is used in the entire project in python which defines outside the function

16) Explain categories of functions in python
→ Built-in Function: These types of functions are pre-defined in python.
→ User-define Function: These types of functions are defined by user to perform any specific task.

17) What is the use of format function in python?
→ It allows multiple substitutions and value formatting.
→ This method lets us concatenate elements within a string through positional formatting.

→ Example: print (f" You can add multiple elements {variable} in curely brackets")

18) Explain how you can access a module in Python?

→ Modules are accessed by using the import statement in python.

19) Explain the use of the // operator in python?

→ The // operator is called floor division and it gives us results down to the nearest whole number.

20) What is the use of the split function in python?

→ The split () method splits a string into a list in python.

→ You can specify a separator and the default separator is any whitespace.

21) What is a keyword and how many keywords are available in python?

→ Keywords are predefined or reserved words that have special meanings to the compiler. There are 32 keywords in python.

→ ['False', 'None', 'True', 'and', 'as', 'assert', 'async', 'await', 'break', 'class', 'continue', 'def', 'del', 'elif', 'else', 'except', 'finally', 'for', 'from', 'global', 'if', 'import', 'in', 'is', 'lambda', 'nonlocal', 'not', 'or', 'pass', 'raise', 'return', 'try', 'while', 'with', 'yield']

22) What is PEP 8?

→ PEP 8, sometimes spelled PEP8 or PEP-8, is **a document that provides guidelines and best practices on how to write Python code**. It was written in 2001 by Guido van Rossum, Barry Warsaw, and Nick Coghlan. The primary focus of PEP 8 is to improve the readability and consistency of Python code.

23) How to check which version of python is installed in the system?

→ Types in the terminal box: python --version

24) What is a list constructor?

→ The Python list () constructor returns a list in python.

25) What is slicing?

→ It returns a range of characters by using the slice syntax.

→ Using slicing we can access string from the user start index to the end index.

Example:

Print (String [2:4])

26) How will you capitalize the first letter of a string?

→ Using the title () method, we can capitalize the first letter of a string.

27) How to sort a list?

→ The sort () method sorts the list ascending by default.

→ list.sort(reverse=True|False, key=myFunc)

28) What is the function? difference between function and method

→ Function – A function is a set of instructions or procedures to perform a specific task.

→ Method – A function is a set of instructions that are associated with an object.

29) What are the datatypes in python?

→ There are five types of datatypes in python: -

1. Strings
2. Integer
3. Float
4. Booleans
5.

30) What is a list comprehension python?

→ With list comprehension you can do all that with only one line of code.

→ Example – without using comprehension:

```
fruits = ["apple", "banana", "cherry", "kiwi", "mango"]
newest = []

for x in fruits:
  if "a" in x:
    newest.append (x)

print(newest)
```

→ Example – With using comprehension:

```
fruits = ["apple", "banana", "cherry", "kiwi", "mango"]

newest = [x for x in fruits if "a" in x]

print(newest)
```

31) What is a dictionary in python?
→ A dictionary is a collection that is ordered, changeable and indexed.
→ In Python, dictionaries are written with curly brackets, and they have keys and values.

32) What is __pycache__?
→ When you run a program in Python, the interpreter compiles it to bytecode first (this is an oversimplification) and stores it in the __pycache__ folder. If you look in there you will find a bunch of files sharing the names of the .py files in your project's folder, only their extensions will be either .pyc or .pyo. These are bytecode-compiled and optimized bytecode-compiled versions of your program's files, respectively.

33) How to find all keywords in python?
→ Using the keyword module, we can find the all keywords in python.
→ Example –

```
Import keyword
From keyword import kwlist
Print (Kwlist)
```

34) Explain the difference between del, remove, and pop in a list?
→ pop: It removes the last elements of the list.
→ remove: It removes the specific element of the list like list.remove("elements")

35) Difference between **from** and **import** in python
→ "import" in Python loads a module into its own namespace whereas "from" imports a module into the current namespace.
→ When "from" is used we don't need to mention the module name whereas, when "import" is used we should mention the module name.

36) What is the use of yield?

→ The yield keyword in Python controls the flow of a generator function.
→ This is similar to a return statement used for returning values in Python.

37) How to get a current date?
→ Using the datetime module we can get a current date.

```
From datetime import date
X = date. Today ()
Print (x)
```

---

38) What is the meaning of OOPs

→ **OOP stands for Object-Oriented Programming.**

→ Procedural programming is about writing procedures or functions that perform operations on the data, while object-oriented programming is about creating objects that contain both data and functions.

39) Which function is used to get all attributes of a module?
→ dir () is a built-in function that also returns the list of all attributes and functions in a module.

40) Explain class and object in python.
→ class – It is a collection of data member and member function
→ object – It is an instance of the class so we say where the class is present the object is present there.

41) What is __init__ in python?

→ All classes have a function called __init__(), which is always executed when the class is being initiated.

→ Use the __init__() function to assign values to object properties or other operations that are necessary to do when the object is being created.

42) What is the main purpose of polymorphism in python?

→ The main purpose of polymorphism in python is to overriding which means the function defines in the parent with the same name we can define in the child class it is called overriding which is an important part of polymorphism.

43) How can we restrict access to methods and attributes?
→ There are three Access Modifiers in Python.

1. Public Access Modifiers – In this data member and member functions can be accessible outside of class by defaults.

2. Private Access Modifiers – In this data member and member functions can be accessible outside other classes only.

3. Protected Access Modifiers – In this data member and member functions can be accessible within that class only.

44) What is a constructor in python?
→ There are two types of constructor in python :-

1. Default constructor
2. Parameterized constructor

→ 1. Default constructor syntax :

```
def __init__(self):
    body of the constructor
```

→ 2. parameterized constructor

```
def __init__ (self, f, s):
    self. first= f
    self. second= s
```

45) What is the zip () function in python?
→ The zip () function returns a zip object, which is an iterator of tuples where the first item in each passed iterator is paired together, and then the second item in each passed iterator is paired together, etc.

46) How to create an empty class?

→ An empty class create using a pass statement in python.
→ Pass is a special statement in python that does nothing.

47) What is a pip?
→ pip is a package manager for python packages, or modules if you like.
→ Using pip, we can install third-party libraries, packages, etc. in python

48) How to create a package?
→ Whenever you want to create a package, then you have to include __init__.py file in the directory.
→You can write code inside or leave it as blank as your wish.
→ It doesn't bother Python.
Create a directory and include an __init__.py file in it to tell Python that the current directory is a package.

49) Is the python platform independent?
→ Python is an independent platform because
→ Python programs can be developed and executed on multiple operating system platforms.
→ Python can be used on Linux, Windows, Macintosh, Solaris, and many more.

50) Difference between python 2 and python 3
→ One difference between Python 2 and Python 3 is the print statement.

→ In Python 2, the “print” statement is not a function and therefore can be invoked without a parenthesis.

→ However, in Python 3, it is a function, and must be invoked with parentheses.

```
# Python2
        Print "Hello"
#Python3
        print("Hello")
```

51) Which tools python uses for finding bugs?
→ PyChecker is a tool for finding bugs in python source code.
→ Pylint is also one type of tool to find errors bugs in python.

52) How to create a new file using python?
→ Using the open () function we can create a new file in python –
Example – file = open (file name, mode)
Modes in file to create:
W mode – To create and write content in the file
X mode – To create a file in python
A mode – To create a file and write content in the file without clear previous data

53) Types of inheritance in python
→ There are five types of inheritance in python.
1. Single Inheritance.
2. Multiple Inheritance.
3. Multilevel Inheritance.
4. Hierarchical Inheritance.
5. Hybrid Inheritance.

54) Default datatype of the input function
→ Python input () function is used to take user input. By default, it returns the user input in form of a string.

55) What is an exception in python?
→ An exception is when we execute or run the program it shows an exception that disrupts the normal flow of the program's instructions.
→ In simple words we can say that it crashed our program.

56) What are The Benefits and Downsides of the Python Programming Language
→
1. Designed to be easy to learn and master

- Clean, clear syntax
- Very few keywords

2. Highly portable
   - Runs almost anywhere – high-end servers and workstations, down to windows CE
   - Uses machine-independent byte-code
3. Extensible
   - Designed to be extensible using C/C++,
   - allowing access to many external libraries