Python Basics Questions Answers

1. What is Python, and why is it popular?
 - Python is a high-level, interpreted programming language known for its simple syntax, readability, and versatility. It is widely used in web development, data science, AI, automation, and more. Its popularity comes from its extensive libraries, large community support, and ease of learning.

2. What is an interpreter in Python?
 - An interpreter in Python is a program that executes Python code line by line instead of compiling the entire program at once. It helps in debugging and allows interactive execution of code.

3. What are pre-defined keywords in Python?
 - Pre-defined keywords are reserved words in Python that have special meanings and cannot be used as variable names. Examples include if, else, while, for, import, def, return, True, and False.

4. Can keywords be used as variable names?
 - No, keywords cannot be used as variable names because they have predefined meanings in the Python language.

5. What is mutability in Python?
 - Mutability refers to whether an object can be modified after its creation. Mutable objects (e.g., lists, dictionaries) can be changed, while immutable objects (e.g., tuples, strings) cannot be altered once created.

6. Why are lists mutable, but tuples are immutable?
 - Lists are mutable to allow dynamic modifications, such as adding, removing, or updating elements. Tuples are immutable to maintain data integrity, improve performance, and allow their use as dictionary keys.

7. What is the difference between == and is operators in Python?
   ○ == compares values and checks if they are equal.
   ○ is checks if two variables refer to the same memory location (identity comparison).

8. What are logical operators in Python?
  Logical operators are used to combine multiple conditions:
   ○ and → Returns True if both conditions are true.
   ○ or → Returns True if at least one condition is true.
   ○ not → Negates the condition.

9. What is type casting in Python?
 - Type casting is the process of converting one data type into another, such as converting an integer to a string (str(10)) or a float to an integer (int(3.5)).

10. What is the difference between implicit and explicit type casting?
   ○ Implicit Type Casting: Python automatically converts one data type to another when necessary (e.g., int to float).
   ○ Explicit Type Casting: The programmer manually converts a data type using functions like int(), float(), or str().

11. What is the purpose of conditional statements in Python?
 - Conditional statements (if, elif, else) allow a program to make decisions based on conditions, executing different code blocks depending on the given inputs.

12. How does the elif statement work?
 - The elif (else if) statement checks multiple conditions sequentially. If the if condition

is false, Python evaluates the elif condition before executing the else block if no conditions are met.

13. What is the difference between for and while loops?
    - For loop: Used when the number of iterations is known, typically iterating over sequences like lists or strings.
    - While loop: Used when the number of iterations is unknown and depends on a condition being met.

14. Describe a scenario where a while loop is more suitable than a for loop.
    - A while loop is more suitable for cases where the loop should run until a certain condition is met. Example: A login system that keeps asking for a correct password until the user enters the right one.