**Python Basics Content and MCQs**

**What is Python?**

Python is a high-level, interpreted, general-purpose programming language known for its simplicity and readability. Created by Guido van Rossum and first released in 1991, Python supports multiple programming paradigms, including procedural, object-oriented, and functional programming.

**Examples:**

print("Python is powerful!")

print("Learning Python is fun!")

**Why Learn Python?**

Python is widely used in various domains like web development, data science, automation, and artificial intelligence. Its simple syntax makes it a great choice for beginners and professionals alike.

**Examples:**

print("Python has simple syntax")

print("Python is versatile")

**First Python Program**

The first program typically prints "Hello, World!" to the console.

**Examples:**

print("Hello, World!")

print("Welcome to Python!")

**Features of Python (Explained)**

1. **Easy to Learn and Use**  
   Python has a simple syntax similar to English, which makes it easier for beginners to read and write code.

print("Hello, World!")

1. **Interpreted Language**  
   Python code is executed line by line, which makes debugging easier. You don’t need to compile the code like C/C++.

print(10 + 5)

1. **Dynamically Typed**  
   You don’t need to declare the data type of a variable. Python decides the type at runtime.

a = 10 # integer

b = "text" # string

1. **High-Level Language**  
   Python abstracts low-level details like memory management, which allows you to focus on logic instead of hardware.
2. **Extensive Standard Libraries**  
   Python comes with a rich set of built-in modules and libraries (like math, datetime, os, etc.).

import math

print(math.sqrt(16))

**Applications of Python (Explained)**

1. **Web Development**  
   Python frameworks like Django and Flask help in building secure, scalable, and fast web applications.
2. **Data Analysis and Visualization**  
   Python is widely used in analyzing large datasets and visualizing them using libraries like Pandas, Matplotlib, and Seaborn.
3. **Machine Learning and AI**  
   Python supports ML and AI development with libraries like Scikit-learn, TensorFlow, and PyTorch.
4. **Automation and Scripting**  
   You can automate repetitive tasks like sending emails, reading files, or scraping websites using Python scripts.
5. **Game Development**  
   Python is also used in game development (e.g., using the Pygame library) for building 2D games or scripting game behavior.

**Advantages of Python**

* Readable and maintainable code
* Vast standard library
* Community support
* Platform-independent
* Productivity and speed

**Examples:**

print("Python code is easy to read")

print("Python has great community support")

**Drawbacks of Python**

* Slower compared to compiled languages
* Not suitable for mobile app development
* High memory usage
* Runtime errors due to dynamic typing

**Multiple Choice Questions**

**(Single Correct Answer)**

1. What type of language is Python?  
   a) Low-level  
   b) High-level  
   c) Machine language  
   d) Assembly language  
   **Answer:** b
2. Who developed Python?  
   a) Dennis Ritchie  
   b) Guido van Rossum  
   c) Bjarne Stroustrup  
   d) James Gosling  
   **Answer:** b
3. What is the correct output of print("Hello")?  
   a) Hello  
   b) "Hello"  
   c) Hello"  
   d) Error  
   **Answer:** a
4. Python supports which of the following programming paradigms?  
   a) Procedural  
   b) Object-oriented  
   c) Functional  
   d) All of the above  
   **Answer:** d
5. What is the output of: print(type("Python"))?  
   a) <class 'str'>  
   b) string  
   c) str  
   d) Error  
   **Answer:** a
6. Which of the following is a Python web framework?  
   a) Django  
   b) TensorFlow  
   c) NumPy  
   d) SciPy  
   **Answer:** a

**(Multiple Correct Answers)**

1. Which of the following are valid applications of Python?  
   a) Web Development  
   b) Data Science  
   c) Machine Learning  
   d) Kernel Development  
   **Answer:** a, b, c
2. Which of the following are features of Python?  
   a) Interpreted language  
   b) Strong typing  
   c) Easy syntax  
   d) Compiled by default  
   **Answer:** a, c
3. Which of the following are advantages of Python?  
   a) Easy to read  
   b) Extensive libraries  
   c) Mobile development support  
   d) Platform independent  
   **Answer:** a, b, d
4. Which of the following options is correct regarding Python drawbacks?  
   a) Not suitable for mobile apps  
   b) High speed  
   c) High memory usage  
   d) Slower execution than C++  
   **Answer:** a, c, d