Class: IX	Department: Computer Science
WORKSHEET	**ARTIFICIAL INTELLIGENCE (417)** **Part B Unit 5 Introduction to python**

Objective Type Questions

1. What is defined as a formal language that specifies a set of instructions used to produce various kinds of output?
A) A computer program B) **A programming language** C) A Python statement D) An Identifier

2. Out of Lisp, Prolog, C++, Java, and Python, which language gains maximum popularity for developing Artificial Intelligence (AI) applications?
A) Java   B) C++ C) Prolog   D) **Python**

3. What is the name of the standard, most popular Python development environment that is installed when Python is installed?
A) Pycharm B) Anaconda C) **IDLE** D) Script Shell

4. What does the acronym IDLE stand for?
A) Input Data Logic Engine B) Interactive Debugging and Learning Environment C) **Integrated Development Environment** D) Independent Data Language Execution

5. Which mode of the Python shell allows the user to interact with the OS and is convenient for beginners and for testing small pieces of code immediately?
A) Script Mode B) Debug Mode C) Execution Mode D) **Interactive Mode**

6. What is a collection of Python statements written in a particular sequence to solve a problem known as?
A) Python Statement B) Python Comment C) Python Keyword D) **Python Script/Program**

7. In Python, which symbol is used to start writing a comment?
A) $ B) % C) @ D) #

8. Words reserved in Python and used by the Python interpreter to recognize the structure of the program are known as:
A) Identifiers B) Variables C) **Keywords** D) Statements

9. What characteristic of Python means that `Variable` and `variable` are not the same?
A) Mutable B) Data Typed C) **Case-sensitive** D) Dynamically linked

10. What is a named location used to store data in the memory, which can be changed later throughout programming?
A) Identifier B) Keyword C) Constant D) **Variable**

11. What is a type of variable whose value cannot be changed, often helpful to think of as a container that holds information that cannot be changed later?
A) Variable B) List C) Identifier D) **Constant**

12. Numbers that consist of fractions or a decimal point, such as `15.2963` or `0.0`, are categorized as which type of numerical data?
A) Integer B) Long Integer C) Complex D) **Floating Point**

13. Strings in Python are enclosed using which of the following?
 A) Parentheses ( ) B) Square brackets [ ] C) Curly braces { } D) **Single quotes (' ') or double quotes (" ")**

14. Which sequence data type in Python is described as being immutable?
A) Strings B) Lists C) **Tuples** D) Dictionaries (Not mentioned in the list)

15. In Implicit Type Conversion, Python converts data types automatically to avoid the loss of data. How does Python achieve this?
A) By converting larger data type to smaller data type. B) By requiring user involvement. C) By converting all types to strings. D) **By converting smaller data type to larger data type.**

Subjective Type Questions

15. Define a programming language and a computer program.
A programming language is a formal language that specifies a set of instructions used to produce various kinds of output. It acts as a vocabulary and set of grammatical rules for instructing a computer to perform specific tasks. A computer program is a collection of instructions written in a programming language that perform a specific task when executed by a computer.

17. Why is Python a popular choice for developing Artificial Intelligence (AI) applications?
Artificial intelligence (AI) is the trending technology of the future. While various languages like Lisp, Prolog, C++, and Java can be used, Python gains maximum popularity for developing AI applications.

18. What is IDLE? State its full form and main purpose.
IDLE (GUI integrated) is the standard, most popular Python development environment. IDLE stands for **Integrated Development Environment**. Its purpose is to let one edit, run, browse, and debug Python Programs from a single interface, making it easy to write programs.

19. Differentiate between the Interactive Mode and Script Mode of the Python shell.
Interactive Mode allows the user to interact directly with the Operating System (OS). It is convenient for beginners and for testing small pieces of code immediately. **Script Mode** lets the user create and edit a Python source file, where the Python program is typed into a file and then executed by the interpreter.

20. What is a Python Script/Program? Give an example of a basic Python statement.
A Python Script/Program is a collection of Python statements written in a particular sequence to solve a problem. An instruction written in the source code for execution is called a statement. An example of an assignment statement is `n = 50`.

21. Explain the function of comments in a Python program and indicate how they are started.
A comment is text that does not affect the outcome of a code. Its purpose is solely to provide information to a human reader, letting someone know what has been done in a program or what is being done in a block of code. In Python, the hash (`#`) symbol is used to start writing a comment.

22.Distinguish between Python Keywords and Identifiers.
Keywords are reserved words in Python that are used by the Python interpreter to recognize the structure of the program. **Identifiers** are names given to entities like classes, functions, or variables, helping to differentiate one entity from another.

23. Explain the meaning of "Python is a case-sensitive language" with an example.
Python being case-sensitive means that uppercase and lowercase letters are treated as distinct. For instance, the identifier `Variable` and the identifier `variable` are not considered the same.

24. Define Variables and Constants, explaining the key difference in their use.
A **Variable** is a named location used to store data in the memory. It holds data that can be changed later throughout programming. A **Constant** is a type of variable whose value cannot be changed. It holds information that is fixed and cannot be changed later.

25. What are Floating Point Numbers in Python? Provide two examples.
Floating point numbers are those that consist of fractions or a decimal point. A floating-point number will consist of a sign (+ or -), a sequence of decimal digits, and a dot. Examples include `0.0`, `-21.9`, and `15.2963`.

26. Define Strings in Python. How does Python recognize where a string begins and ends?
A String is an ordered sequence of letters/characters. Strings are enclosed using either single quotes (` `) or double quotes (" "). These quotes are not part of the string itself, but they tell the computer where the string constant begins and ends.

27. Identify and describe the difference between two sequence data types based on mutability.
Lists are a sequence of values of any type, enclosed in square brackets (`[ ]`). **Tuples** are also a sequence of values of any type, but they are enclosed in parentheses (`( )`) and are specifically described as **immutable** (cannot be changed).

28. Define Operators and Operands, and explain how they relate to forming an expression.
Operators are special symbols which represent computation. **Operands** are the values or variables upon which the operators are applied. When operators are applied on operands, they form an **expression**.

29. What is Implicit Type Conversion? Why does Python perform this conversion from smaller to larger data types?
Implicit Type Conversion is a process where Python automatically converts one data type to another data type without any user involvement. Python always converts the smaller data type to a larger data type to avoid the loss of data.

30. What is Explicit Type Conversion (Typecasting)? Give an example of a function used for this purpose.
Explicit Type Conversion is when users convert the data type of an object to a required data type. This process is also called **typecasting** because the user casts (changes) the data type of the objects. Predefined functions like `int()`, `float()`, or `str()` are used to perform this conversion.