# ASSIGNMENT -1

1. Define Artificial Intelligence and provide examples of its applications.

Artificial Intelligence , is the simulation of human intelligence by machines ,especially computer systems.

Examples of its applications:

Expert systems , natural language processing , Speech recognition and machine vision.

2. Differentiate between supervised learning and unsupervised techniques in ML.

Supervised learning:

- It uses labeled training data as a input.
- It predict output based on input.
- Examples: classification, regression.

Unsupervised learning:

- It does not uses labeled training data as a input.
- It aims to learn the underlying structure or distribution of the data.

- Examples: clustering, dimensionality reduction.

3.What is Python? Discuss its main features and advantages.

Python is an interpreted , object-oriented high level programming language with dynamic semantics developed by Guido van Rossum.

Features of python:

- Interpreted language
- Object – oriented language
- High level language

Advantages of python:

- Easy to learn
- Reduces maintenance cost
- It needs less coding

4. What are the advantages of using python as a programming language for AI and ML?

Advantages of using python as a programming l

language for AI and ML

- Great library ecosystem

- Good visualization options
- A low entry barrier
- Community support
- Flexibility
- Readability
- Platform independence

5. Discuss the importance of indentation in python code.

Indentation is a very important concept Python because without properly indenting the python code, we will end up seeing indentation error and the code will not get compiled.

Python indentation refers to adding white space before a statement to a particular block of code.

6. Define a variable in python. provide examples of valid variable names.

The variable acts as an address for where the data is stored in memory.

A variable must be start with a letter or the underscore character.

A variable name cannot start with a number.

Examples for variable names:

- _age
- age_
- gender

7.Explain the difference between a keyword and an identifier in python.

Keyword:

- Set of predefined words, called keywords, that have special meanings.
- Python keywords cannot be used as the names of variables, functions, and classes.
- Keywords are used to define syntax of the coding.

Identifier:

- Identifier is a used-defined name given to a variable, function, class, module, etc.
- The identifier is a combination of character digits and an underscore.
- They are case-sensitive i.e., ‘num’ and ‘Num’ and ‘NUM’ are three different identifiers in python.

8. List the basic data types available in python.

Python data types are the classification or categorization of data items.

It represents the kind of value that tells what operations can be performed on a particular data.

- Numeric data type:
  The numeric data type in python represents the data that as a numeric value.

  A numeric value  can be an integer, floating number, even or complex number.

- Sequence data type:

  The sequence data type in python is the ordered collection of similar or different python data types.

- Boolean data type:
  Boolean objects that are equal to true are truthy, and those equal to false are falsy.
- Set data type:

Set is an unordered collection of data types that is iterable, mutable and has no duplicate

elements.

- Dictionary data type:

  A dictionary in python is an unordered collection of data values, used to store data values like a map, unlike other python data types that hold only a single value as a element.

9. Describe the syntax for an if statement in python.

If the condition is true, the code block indented below the if statement will be executed.

If the condition is false, the code block will be skipped.

Syntax:

If <condition>:

<expression>

Example:

X=3;

Y=10;

If x<y:

Print(“X is smaller than Y”)

10. Explain the purpose of the elif statement in python.

‘elif’ stands for ‘else if’ and is used in python programming to test multiple conditions.

It is written following an if statement in python to check an alternative condition if the first condition false.

The code block under the elif statement will be executed only if true.

Example:

```
a=33
b=33
if  b>a:
    print(“ b is  greater than a “)
elif a==b:
    print(“a  and b are equal”)
```