1 Ans::Artificial Intelligence (AI) refers to the simulation of human intelligence processes by machines, especially computer systems. These processes include learning, reasoning and self-correction.

Examples of AI applications are:

1. Machine Learning
2. Natural Language Processing
3. Computer Vision
4. Robotics

5.Virtual Personal Assistants

6.Autonomous Vehicles

7.Financial Trading

8.Gaming

2Ans::

\_\_Supervised Learning:

- In supervised learning, the algorithm is trained on a labeled dataset, meaning each example in the training data is associated with a label or target output.

- The goal is to learn a mapping from input variables to output variables based on the labeled data.

- During training, the algorithm adjusts its parameters to minimize the difference between its predictions and the true labels.

- Example algorithms: Linear Regression, Logistic Regression, Decision Trees, Neural Networks.

\_\_Unsupervised Learning:

- In unsupervised learning, the algorithm is trained on an unlabeled dataset, where there are no predefined target outputs.

- The algorithm seeks to find hidden patterns or structures in the data without explicit guidance.

- The main objective is to explore the data and extract meaningful insights or representations.

- Example algorithms: K-means Clustering, Hierarchical Clustering, Principal Component Analysis (PCA), Autoencoders.

3Ans::Python is a high-level, interpreted programming language known for its simplicity, readability, and versatility.

:Here are some of its main features and advantages:

>Simple and Readable Syntax

>Extensive Standard Library

>Large Ecosystem of Third-Party Packages

>Interpreted and Interactive

>Cross-Platform Compatibility

4Ans::Using Python for artificial intelligence (AI) and machine learning (ML) offers several advantages:

\_Rich Ecosystem: Python has a vast ecosystem of libraries and frameworks specifically tailored for AI and ML tasks. Libraries like TensorFlow, PyTorch, scikit-learn, and Keras provide powerful tools and pre-built models for various AI and ML applications.

\_Ease of Learning and Use: Python’s simple and readable syntax makes it accessible to both beginners and experienced developers.

\_Integration with Data Science Tools: Python seamlessly integrates with popular data science tools and libraries such as NumPy, Pandas, Matplotlib, and Jupyter Notebooks, enabling data preprocessing, analysis, visualization, and modeling within the same ecosystem. This integration streamlines the end-to-end AI and ML workflow.

5Ans::In Python, indentation plays a crucial role in defining the structure and readability of the code. Unlike many other programming languages that use curly braces or keywords to denote blocks of code, Python uses indentation to signify the beginning and end of code blocks.

6Ans::In Python, a variable is a symbolic name that refers to a value stored in memory.

\_Variables are used to store and manipulate data within a program.

\_ To define a variable in Python, you simply assign a value to a name using the assignment operator “=”.

Examples of valid variable names in Python:

x = 5 # integer variable

Name = “John” # string variable

Is\_active = True # boolean variable

Pi\_value = 3.14 # float variable

My\_list = [1, 2, 3]# list variable

My\_dict = {“a”: 1, “b”: 2} # dictionary

7Ans::

1. Keywords:

- Keywords are reserved words that have predefined meanings and functionalities in Python.

- These words are part of the language syntax and cannot be used as identifiers (variable names, function names, etc.).

- Examples of keywords in Python include ‘ if’, ‘else’, ‘for’ etc

2. Identifiers:

- Identifiers are user-defined names used to identify variables, functions, classes, modules, or any other entities in a Python program.

- Unlike keywords, identifiers are not predefined and can be chosen by the programmer.

- They can contain letters (both lowercase and uppercase), digits, and underscores.

- They cannot start with a digit.

- They are case-sensitive

- They cannot be keywords.

8Ans::

In python, the basic data types include:

1. Integer (int)

2. Floating-point number (float)

3. String (str)

4. Boolean (bool)

5. List

6. Tuple

7. Dictionary

8. Set

9Ans::In Python, the syntax for an if statement is:

If condition:

# Code block to execute if condition is True

Elif another\_condition:

# Code block to execute if another\_condition is True

Else:

# Code block to execute if none of the above conditions are True

10Ans::The ‘elif’ statement in Python is short for “else if”. It allows you to check for multiple conditions in succession after an initial ‘if’ statement. If the condition in the ‘if’ statement is not met, Python evaluates the condition in the ‘elif’ statement. If the ‘elif’ condition is true, the corresponding block of code executes.