

(1) Explain Python's role in Data science.

- Python is an open-source, high-level programming language that allows users to write clear and readable code.
- It is one of the most popular programming languages used by data scientists.
- In Data science, Python is used for many important tasks to work with data.
- Purposes of Python in Data science,

- (i) Data collection and cleaning.
- (ii) Data Analysis and Manipulation.
- (iii) Data visualization.
- (iv) Machine learning and predictive modeling.
- (v) Automation and Integration.

→ (i) Data Collection and cleaning:

→ It helps to collect data from different places like files, websites or databases.

→ It also has tools to clean the data, like removing errors or empty values.

→ (ii) Data Analysis and Manipulation:

→ we can easily look into large datasets and find useful information.



→ Libraries like pandas and Numpy help in doing math, filtering data and organizing in a simple way.

### → (iii) Data Visualization :-

→ It can turn numbers into colourful charts and graphs.

→ Tools like matplotlib, seaborn, and plotly to create visuals.

### → (iv) Machine Learning and Predictive Modeling :-

→ It can be used to build smart models that learn from data and make predictions.

→ Libraries like scikit-learn, TensorFlow and PyTorch help in building AI systems.

### → (v) Automation and Integration :-

→ It can do repeated tasks automatically like downloading files and creating reports.

→ Python holds a very important role in Data Science because it is simple, flexible and powerful.

→ It helps in all steps of data science.

ex, Collecting, cleaning and analyzing or making predictions.