Oral Questions and Answers: Introduction to Machine Learning

Q: What is Artificial Intelligence (AI)?

A: AI is the broader concept of machines being able to carry out tasks in a way that we would consider "smart," mimicking human intelligence.

Q: What is Machine Learning (ML)?

A: ML is a subset of AI that allows systems to learn from data and improve their performance without being explicitly programmed.

Q: How is Deep Learning related to Machine Learning?

A: Deep Learning is a subset of Machine Learning that uses multi-layered neural networks to mimic the human brain and learn complex patterns.

Q: Why is Machine Learning important?

A: ML enables automation, enhances decision-making, and powers intelligent applications such as recommendation systems, image recognition, and self-driving cars.

Q: What are the three types of Machine Learning?

A: 1. Supervised Learning (uses labeled data)

2. Unsupervised Learning (uses unlabeled data)

3. Reinforcement Learning (uses feedback via rewards and penalties)

Q: Give examples of supervised learning.

A: Predicting student grades, house prices, spam detection.

Q: Give examples of unsupervised learning.

A: Customer segmentation, market basket analysis.

Q: What is reinforcement learning?

A: It's where agents learn by interacting with an environment to maximize cumulative rewards, e.g., game playing or robotics.

Q: Where is Machine Learning used in daily life?

A: Voice Assistants, Social Media feeds, Google Maps, Product recommendations.

Q: How is ML used in healthcare?

A: For disease prediction, personalized treatments, and analyzing medical records.

Q: What are the steps in a Machine Learning process?

A: 1. Problem Definition

2. Data Collection

3. Data Preprocessing

4. Model Selection

5. Model Training

6. Model Evaluation

7. Deployment

Q: What happens during data preprocessing?

A: Cleaning missing data, normalizing values, handling duplicates, and splitting datasets.

Q: What is model training?

A: Feeding data into an algorithm so it can learn patterns from it.

Q: What is model evaluation?

A: Testing the trained model using a separate dataset to check performance using metrics like accuracy, precision, recall, F1-score.