Q1: Explain the primary differences between TensorFlow and PyTorch. When would you choose one over the other?

TensorFlow uses static computation graphs, while PyTorch uses dynamic computation graphs, allowing easier debugging and flexibility.

- a.Choose TensorFlow for large-scale production and deployment (e.g., via TensorFlow Serving).
- b.Choose PyTorch for research, experimentation, and rapid prototyping due to its simplicity and Pythonic style.
- Q2: Describe two use cases for Jupyter Notebooks in AI development.
- 1.Interactive experimentation: Running and visualizing AI models step-by-step with immediate feedback.
- 2.Data analysis and reporting: Combining code, text, and visualizations for explainable, shareable AI research.
- Q3: How does spaCy enhance NLP tasks compared to basic Python string operations?

spaCy enhances NLP by providing optimized, pre-trained models for tokenization, part-of-speech tagging, and entity recognition—tasks that go far beyond simple string splitting or searching. It processes text linguistically and semantically, enabling deeper understanding of context and meaning.

2.Compare Scikit-learn and TensorFlow in terms of:

Target applications (e.g., classical ML vs. deep learning).

Ease of use for beginners.

Community support.

Feature TensorFlow 	Scikit-learn
classification, clustering RNNs, Transformers). Ease of Use (Beginner) documented examples. of tensors, graphs, and mo	Large community focused on data science and ML Very large and active community, especially in