Task: “Build & Judge a Mini AI”

Part 1 — Chronology of AI

Write **one real-world example** for each stage:

Machine Learning → Email Spam Detection
Deep Learning → Tumour Identification
Computer Vision → Self Driving Cars
NLP → Google Translator
LLMs → GPT-4

Part 2 — Deep Learning Architectures

Match the model to the use case:

1. **RNN**
2. **LSTM**
3. **CNN**
4. **Transformer**

Use cases:

Image recognition - 3
Text translation (old Google Translate) - 2
Predicting the next word in ChatGPT - 4
Early speech-to-text systems - 1

Part 3 — Frameworks

Choose one framework (PyTorch / TensorFlow / Keras).
In **one sentence**, explain why you would use it if you were a student making a cat-vs-dog classifier.

-> If I were a student making a cat-vs-dog classifier, I would use Keras because it has a simple, user-friendly API ideal for beginners to quickly build and experiment with neural networks using minimal code.

Part 4 — Evaluation Metrics

Imagine you built a spam filter. Answer:

Precision: If it marks 10 emails as spam and 7 are truly spam → what’s Precision?
= 7 / 10 = 0.7 or 70%
Recall: If there were 12 spam emails in total, how many did it catch? (use same example)
= 7
F1 Score: Use the formula and calculate (round to 2 decimals).
= 2 * 0.406 / 1.28 = 0.63
MSE/MAE: Predict your friend’s age (actual = 15, prediction = 18). Which metric punishes the error more?
-> MSE punishes larger errors more than MAE because it squares the errors, making bigger mistakes have exponentially greater impact on the final value, while MAE treats all errors linearly.
BLEU/ROUGE: AI translated “The cat sat on the mat” as “Cat is on the mat.” Which metric (BLEU/ROUGE) do you think would give a high score?
-> The AI translation “Cat is on the mat.” is closer in meaning but shorter than the reference “The cat sat on the mat.”
BLEU focuses on exact n-gram precision, so it might score lower due to fewer words.
ROUGE focuses on recall and semantic overlap, so ROUGE would likely give a higher score than BLEU in this case.

Part 5 — Responsible AI & Explainability

You built an AI that predicts loan approvals.

A customer asks, “Why was my loan rejected?”

Write **one simple way** to explain the decision fairly (e.g., “Your income was too low compared to the loan size”).

-> We understand this is disappointing. Your loan was not approved because your current income is not enough to comfortably cover the loan repayments. Lenders need to make sure you won’t face difficulties repaying on time. Improving your income or lowering the loan amount could increase your chances next time.

Deliverable: Each trainee should write answers in 5–7 short lines.