

✓ AI / ML Related Testing — Crisp One-Liner Answers

1. In LLM, what is your role, what business problem were you solving, and how did you tackle it?

👉 I integrated LLM with API automation to reduce manual test creation, improve coverage, generate pytest scripts from Swagger, and embed them into CI/CD for continuous validation.

2. What kind of testing did you perform using LLM? How did you validate test cases and scripts? Provide examples.

👉 I used LLM for functional API test generation (positive/negative/edge cases) and validated scripts via pytest using status checks, schema assertions, and Postman cross-verification.

3. Give examples of AI features you tested, input you provided, and expected output.

👉 I tested AI-driven test case generation and response validation by feeding API specs and expecting accurate scenarios, assertions, and defect identification aligned with requirements.

4. What exactly did you work on with AI/ML features using DeepEval automation framework?

👉 I used DeepEval to automate evaluation of LLM outputs by measuring accuracy, relevance, consistency, and hallucination through defined validation metrics.

5. How did you approach AI/ML for regression testing, especially via APIs?

👉 I built automated regression suites that compare current LLM API outputs with baseline responses to detect drift, inconsistencies, and behavioral regressions.

6. How do you handle anomaly detection in API responses?

👉 I detect anomalies by validating schema, status codes, field values, and comparing AI outputs with historical baselines to identify unexpected deviations.

7. API response schema validation using AI/ML approach?

👉 I combine traditional schema validation with AI-based semantic checks to detect structural mismatches and hidden logical inconsistencies.

8. What LLM tools and libraries did you use for API automation with Pytest?

👉 I used OpenAI APIs, LangChain, DeepEval, pytest, requests, JSON schema validation, and Jenkins for AI-powered API automation.

9. Purpose of hallucination check, and how do you tackle it?

👉 Hallucination checks ensure factual correctness by validating LLM outputs against API specs, business rules, and trusted baselines using evaluation metrics.

10. Explain LLM-EB testing. Why is it needed in API?

👉 LLM-EB testing validates non-deterministic AI outputs using evaluation metrics like accuracy and relevance instead of fixed assertions.

11. Explain NUMPY, Matplotlib, PANDAS, PPTX, Requests libraries and their usage in API automation.

👉 NumPy handles numeric data, Pandas processes structured datasets, Requests performs API calls, Matplotlib visualizes test metrics, and Python-PPTX generates automated reports.

12. When you have prediction models, explain what type of model you used for predictions.

👉 I used supervised ML models (classification/regression) and fine-tuned LLMs to predict trends, classify inputs, and generate intelligent recommendations.

✅ AI / LLM / ML / MCP – Interview One-Liners

1. What is Artificial Intelligence (AI)?

👉 AI enables machines to simulate human intelligence for learning, decision-making, and automation.

2. What is Machine Learning (ML)?

👉 ML is a subset of AI where systems learn patterns from data to improve predictions automatically.

3. What is a Large Language Model (LLM)?

👉 An LLM is a deep learning model trained on massive text data to understand and generate human-like language.

4. What is MCP (Model Context Protocol)?

👉 MCP is a protocol that lets LLMs securely interact with external tools and files for automated workflows.

5. Difference between AI, ML, and LLM?

👉 AI is the broad field, ML is data-driven learning, and LLMs are advanced ML models specialized in language.

6. How can AI help in API testing?

👉 AI automates test generation, edge case detection, anomaly analysis, and regression testing.

7. What is Prompt Engineering?

👉 Prompt engineering is crafting precise inputs to guide LLMs toward accurate outputs.

8. What is an API in AI systems?

👉 AI APIs expose models for applications to access predictions and responses programmatically.

9. What is Training Data in ML?

👉 Training data is clean, diverse labeled data used to teach ML models patterns.

10. What is Supervised vs Unsupervised Learning?

👉 Supervised uses labeled data; unsupervised discovers hidden patterns without labels.

11. What is NLP?

👉 NLP enables machines to understand and process human language.

12. What is Model Accuracy?

👉 Accuracy measures how correctly a model predicts expected outcomes.

13. What is AI Hallucination?

👉 Hallucination occurs when an LLM generates confident but incorrect information.

14. What is Fine-Tuning in LLMs?

👉 Fine-tuning adapts pretrained models using domain-specific data.

15. What is an AI Pipeline?

👉 An AI pipeline covers data collection, preprocessing, training, deployment, and monitoring.

16. What is Model Bias?

👉 Bias is unfair or skewed predictions caused by imbalanced training data.

17. What is REST API testing in AI systems?

👉 It validates AI API inputs, response quality, latency, and error handling.

18. What is Tokenization in LLMs?

👉 Tokenization splits text into units for model processing.

19. What is an Embedding?

👉 Embeddings convert text into numerical vectors representing semantic meaning.

20. What is RAG (Retrieval-Augmented Generation)?

👉 RAG combines LLMs with external knowledge retrieval for improved accuracy.

21. What is Latency in AI APIs?

👉 Latency is the response time of an AI API request.

22. What are Guardrails in AI?

👉 Guardrails restrict unsafe or invalid AI outputs.

23. What is Model Deployment?

👉 Deployment makes AI models accessible in production via APIs.

24. What is Zero-Shot vs Few-Shot Learning?

👉 Zero-shot performs tasks without examples; few-shot learns from limited examples.

25. How do you test AI API reliability?

👉 By validating consistency, performance, error handling, and security.

26. What is Explainable AI (XAI)?

👉 XAI makes AI decisions transparent and understandable.

27. What are Rate Limits in AI APIs?

👉 Rate limits restrict API usage to prevent overload.

28. What is Data Preprocessing?

👉 Data preprocessing cleans and prepares raw data for training.

29. What is a Prompt Injection Attack?

👉 It's a security exploit where malicious prompts manipulate AI behavior.

30. How would you explain your AI experience as a tester?

👉 I test AI APIs by validating accuracy, performance, and reliability while using LLMs to accelerate automated test generation.

How do you use LLMs to generate test cases and pytest API scripts using an real API key?

✓ Overview — What You Are Building

You will use an **LLM API** (like OpenAI/Gemini) to:

1. Send API documentation as input
2. Ask LLM to generate test cases
3. Ask LLM to generate pytest automation script
4. Save output as files

Flow:

Your Python Script → LLM API → Test cases + pytest code → Save to file

✓ Step 1 — Get API Key

You need an API key from an LLM provider:

Example:

- OpenAI
- Google (Gemini)

After signup:

📋 Copy your API key

✓ Step 2 — Install Required Libraries

`pip install openai python-dotenv requests`

✓ Step 3 — Store API Key Securely

Create `.env` file:

`OPENAI_API_KEY=your_api_key_here`

Never hardcode keys in script.

✓ Step 4 — Python Script to Generate Test Cases

Example: Generate API Test Cases

```
import os
from dotenv import load_dotenv
from openai import OpenAI

load_dotenv()

client = OpenAI(api_key=os.getenv("OPENAI_API_KEY"))

api_doc = """
POST /login
Payload: { "username": "string", "password": "string" }
Response: 200 success, 401 unauthorized
"""

prompt = f"""
Generate positive and negative API test cases in table format
for the following API:

{api_doc}
"""

response = client.chat.completions.create(
    model="gpt-4o-mini",
    messages=[{"role": "user", "content": prompt}],
    temperature=0.3
)

print(response.choices[0].message.content)
```

👉 This prints structured test cases.

✅ Step 5 — Generate pytest Automation Script

Python Script to Generate pytest Code

```
prompt = f"""
Generate pytest API automation script using requests library
for the following API:

{api_doc}

Include:
- Positive test
- Negative test
- Status code validation
- JSON validation
"""

response = client.chat.completions.create(
    model="gpt-4o-mini",
    messages=[{"role": "user", "content": prompt}]
)

print(response.choices[0].message.content)
```

✅ Example Output (LLM Generated pytest Script)

LLM will generate something like:

```
import requests

BASE_URL = "https://api.example.com"
```

```
def test_login_success():
    payload = {"username": "valid", "password": "valid"}
    response = requests.post(f"{BASE_URL}/login", json=payload)

    assert response.status_code == 200
    assert "token" in response.json()

def test_login_failure():
    payload = {"username": "invalid", "password": "wrong"}
    response = requests.post(f"{BASE_URL}/login", json=payload)

    assert response.status_code == 401
```

✓ Step 6 — Save Generated Code to File

```
with open("test_login.py", "w") as f:
    f.write(response.choices[0].message.content)
```

Now run:

```
pytest test_login.py
```

✓ Advanced Automation Workflow (Real Project)

In real projects:

1. Input

- Swagger/OpenAPI JSON
- API docs
- CSV test data

2. LLM Generates

- Test cases

- pytest scripts
- Edge cases
- Mock data

3. CI/CD Integration

- Auto commit generated scripts
 - Run in Jenkins pipeline
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Best Practices

Security

- Never expose API keys
- Use environment variables

Prompt Engineering

Be specific:

✗ Bad prompt:

Generate test

✓ Good prompt:

Generate pytest API automation script with fixtures, parameterization, and assertions for login endpoint

Always Validate LLM

LLM code is not perfect.

You must:

- Review generated scripts
 - Fix edge cases
 - Add custom validations
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Interview Answer (Short Version)

If interviewer asks:

👉 *“How do you use LLM to generate pytest scripts?”*

You can say:

I use an LLM API with Python by sending API documentation as prompts. The LLM generates structured test cases and pytest automation scripts. I store API keys securely using environment variables, validate generated code, and integrate it into our automation framework. This improves productivity and accelerates test development.
