RetenaAI

Cohort 2

Practice & Assessment Questions

Foundational Guide for Your AI Assessment

Introduction

Welcome to the **Practice Questions** section of your Cohort 2 Home Study Kit! 🎓
This document has been designed to help you **revise, reinforce, and apply** the concepts you've learned throughout the course.
Here, you'll find **50 case-study-based multiple-choice questions (MCQs)** that span **all the major topics** from your training material.

Unlike standard fact-recall quizzes, these questions are **scenario-driven** — meaning each one is set in a realistic context, allowing you to:

- **Think critically** about real-world applications of Generative AI.
- **Identify correct solutions** using principles from your course.
- **Recognise challenges** and best practices in AI use.

How to Use This Document

1. **Read each case study carefully** — the details matter!
2. **Analyse the options** before selecting your answer. Many questions are designed to test your understanding of subtle differences between concepts.
3. **Think about the "why"** — after answering, reflect on why your choice is correct or incorrect.
4. **Revisit relevant sections** of your Home Study Kit to strengthen your understanding.

Topics Covered

These practice questions will test your knowledge across:

- History and evolution of Generative AI
- Key AI concepts: Machine learning, neural networks, transformers
- Applications of Generative AI in different industries
- Limitations and challenges of AI systems
- Role of data in model training
- Ethics and responsible AI use
- Understanding LLMs and foundation models
- Open-source vs proprietary models
- Models vs services in AI deployment
- Real-world integration examples
- Prompt engineering basics
- Using ChatGPT effectively
- Technical literacy for no-code builders
- AI tools overview (n8n, Supabase, OpenAI)

Final Tips Before You Begin

- This is a **learning tool**, not just a test — use it to **spot gaps** in your knowledge.
- If you get stuck, revisit your Home Study Kit for reference.
- Remember: AI is a rapidly evolving field, so staying curious and adaptable is just as important as getting the “right” answer today.
- For further learning, check out:
    - **Google Skill Boost – Introduction to Generative AI**
    - **Prompt Engineering Guides** from OpenAI and other reputable sources

Once you’re ready, dive in — and enjoy the process of **thinking like an AI expert**! 🚀

Case Study 1: Launching an AI-powered Student Support Bot

Scenario: LearnSmart, an edtech startup, wants to build a chatbot to assist students with academic queries and mental health guidance.

1. Which of the following was a major limitation of early chatbots that generative AI has overcome?
   a) Ability to store chat history
   b) Ability to generate creative, context-aware responses
   c) Ability to operate without electricity
   d) Ability to translate documents instantly

2. Why is machine learning preferred over rule-based programming for LearnSmart's chatbot?
   a) It requires zero data for training
   b) It can learn from patterns in large datasets and handle varied queries
   c) It works only with pre-programmed answers
   d) It avoids the need for computing power

3. Transformers are better than RNNs for long student queries because:
   a) They use less training data
   b) They use attention mechanisms to process context regardless of sequence position
   c) They only process one word at a time
   d) They do not require tokenization

4. How could generative AI personalise chatbot responses for each student?
   a) By storing static answers for all users
   b) By adjusting responses based on user history and preferences
   c) By limiting answers to pre-written scripts
   d) By ignoring user-specific details

Case Study 2: Improving Customer Service in a Bank

Scenario: A bank plans to use AI to answer queries and detect fraud.

5. Which combination of machine learning tasks would best suit the bank's needs?
   a) Unsupervised learning for fraud detection, supervised learning for answering queries
   b) Reinforcement learning for fraud detection, supervised learning for queries
   c) Supervised learning for both tasks
   d) Clustering for queries, classification for fraud detection

6. What is a major risk of bias in banking AI systems?
   a) AI refusing to process transactions
   b) Discrimination in loan approvals or service recommendations
   c) Reduced electricity costs
   d) Faster transaction speeds

7. Which of the following is a limitation of generative AI in banking customer service?
   a) Real-time knowledge updates are always available
   b) It can produce confident but incorrect answers (hallucinations)
   c) It can only generate code, not text
   d) It requires zero computing resources

Case Study 3: Healthcare Report Assistant

Scenario: A hospital uses AI to summarise reports and explain diagnoses.

8. Why is training data quality critical for this AI system?
   a) Poor data can lead to inaccurate and unsafe outputs
   b) Poor data will reduce the AI's electricity consumption
   c) Poor data speeds up training time
   d) Poor data eliminates the need for fine-tuning

9. Which is an ethical risk of using generative AI in healthcare?
   a) Generating patient-friendly explanations
   b) Producing misleading or incorrect medical advice
   c) Translating patient reports
   d) Automating appointment reminders

10. Which type of foundation model is most appropriate for summarising reports and generating text explanations?
    a) Image generation model
    b) Embedding model
    c) Large Language Model (LLM)
    d) Video generation model

Case Study 4: Marketing Campaign Generator

Scenario: An agency wants AI for creative ad content.

11. Which of these is NOT a valid marketing use of generative AI?
    a) Personalised ad copy creation
    b) Automated social media post generation
    c) Fraud detection in bank statements
    d) Image creation for branding

12. In AI terms, what does “hallucination” mean?
    a) AI refusing to generate outputs
    b) AI producing confident but incorrect information
    c) AI repeating previous answers
    d) AI slowing down due to large prompts

13. Which is a key difference between proprietary and open-source LLMs?
    a) Proprietary LLMs always have smaller datasets
    b) Open-source LLMs can be customised, proprietary ones cannot
    c) Open-source LLMs are never free
    d) Proprietary LLMs are always slower

Case Study 5: Building a Tourism Virtual Assistant

Scenario: A travel company wants an AI to help users plan trips.

14. Which prompt engineering technique would improve the assistant's responses?
    a) Writing vague, open-ended prompts
    b) Using role-based prompts and providing clear context
    c) Limiting prompts to single keywords
    d) Avoiding user feedback in prompt refinement

15. Which is an advantage of using a cloud-based AI service over hosting your own model?
    a) Lower control but easier scalability and maintenance
    b) Full control over training and weights
    c) No cost at all
    d) No need for internet connectivity

Case Study 6: AI in Education Content Creation

Scenario: A university wants to use generative AI to create learning materials, quizzes, and feedback reports.

16. Which type of model would be most suitable for generating lecture notes and summaries?
    a) Image generation model
    b) Large Language Model (LLM)
    c) Audio classification model
    d) Object detection model

17. Why is pre-training important for the AI model in this context?
    a) It ensures the AI learns specific student names before deployment
    b) It equips the AI with general language understanding before fine-tuning for academic tasks
    c) It prevents the AI from using attention mechanisms
    d) It ensures the AI consumes less power

18. Which factor will have the greatest impact on the accuracy of generated educational content?
    a) Length of prompts
    b) Quality and relevance of the training dataset
    c) Randomness of AI outputs
    d) Number of student queries per day

Case Study 7: AI in Retail Recommendations

Scenario: A fashion e-commerce store uses AI to suggest products to customers based on browsing history.

19. Which AI feature would help the store recommend similar products to what a customer has viewed?
    a) Embeddings to measure semantic similarity between product descriptions
    b) Image generation to create new clothing designs
    c) Translation to change language of product titles
    d) Hallucination to guess customer preferences

20. Which is an ethical consideration in AI-powered recommendations?
    a) Preventing discriminatory bias in product visibility
    b) Increasing server uptime
    c) Reducing cloud costs
    d) Ensuring faster webpage loading

21. If the company uses a proprietary LLM for recommendations, what is a likely trade-off?
    a) No transparency into training data but higher production readiness
    b) Full transparency but slower processing
    c) Open licensing with full code access
    d) Lower performance but greater control

Case Study 8: Journalism and AI Content Creation

Scenario: A news agency uses AI to write first drafts of articles.

22. Which limitation of generative AI is most concerning for a news agency?
    a) Speed of content generation
    b) Risk of generating factually incorrect content (hallucination)
    c) Ability to write in multiple languages
    d) Producing human-like text

23. What is the best way to ensure AI-generated articles remain trustworthy?
    a) Remove human editors from the process
    b) Implement fact-checking and human review
    c) Use only long prompts
    d) Avoid using context in prompts

24. Which type of LLM application is most suitable for creating article summaries for quick reads?
    a) Image generation
    b) Text summarisation
    c) Speech-to-text transcription
    d) Object detection

Case Study 9: Healthcare AI Diagnostics

Scenario: An AI tool is being developed to interpret X-ray images and generate patient reports.

25. Which type of foundation model would handle X-ray interpretation?
    a) Vision model
    b) Audio classification model
    c) Large Language Model
    d) Embedding model

26. If the AI is trained on low-quality or biased medical data, what is the risk?
    a) It will generate more creative patient stories
    b) It may produce unsafe or incorrect diagnoses
    c) It will always generate longer reports
    d) It will consume less storage space

27. What's one way to fine-tune this AI for the hospital's specific needs?
    a) Feed it random public data
    b) Train it further using the hospital's own anonymised patient data
    c) Remove all patient history from prompts
    d) Use unrelated datasets like movie scripts

Case Study 10: Building a No-Code AI App

Scenario: An entrepreneur with no coding skills wants to use AI to automate social media post scheduling.

28. Which tool would best serve as a no-code automation platform?
    a) n8n
    b) GPT-4
    c) Stable Diffusion
    d) LLaMA

29. Why might the entrepreneur choose an AI *service* rather than hosting a model themselves?
    a) It allows for quick deployment without managing infrastructure
    b) It guarantees free GPU access forever
    c) It prevents AI from generating images
    d) It reduces the need for prompt engineering

30. Which prompt engineering method could improve the AI's social media captions?
    a) Few-shot prompting with examples of successful past captions
    b) Only using vague one-word prompts
    c) Avoiding role definitions in prompts
    d) Refusing to adjust based on AI output

Case Study 11: Choosing Between a Model and a Service

Scenario: A startup wants to build a chatbot for customer service. They are deciding between hosting their own open-source model and using a managed AI service like Azure OpenAI.

31. What's the main advantage of using a managed AI service?
    a) Full control over every parameter
    b) No need to handle infrastructure or scaling manually
    c) Free unlimited usage
    d) Ability to train without any data

32. Which is a drawback of hosting your own model instead of using a service?
    a) Higher responsibility for hardware and maintenance
    b) Less flexibility in model architecture
    c) Inability to fine-tune
    d) Slower learning curve for the AI

33. If the startup values transparency and the ability to customise the model deeply, which option is better?
    a) Proprietary AI service
    b) Open-source self-hosted model
    c) Pre-trained image model
    d) Paid subscription chatbot

Case Study 12: AI in Marketing Campaigns

Scenario: A marketing agency wants to generate personalised ad copy for different customer segments.

34. Which prompt engineering technique would help the AI tailor responses to each segment?
    a) Few-shot prompting with examples of past campaign successes
    b) Zero-shot prompting with no context
    c) Using only generic keywords
    d) Completely random prompt inputs

35. Which ethical risk must be considered in AI-generated marketing content?
    a) Biased or stereotypical language toward certain groups
    b) Increased server response speed
    c) Faster model inference time
    d) API token management

36. If the agency integrates Supabase into their workflow, what could it be used for?
    a) Storing customer profiles and campaign data securely
    b) Generating ad graphics
    c) Converting text prompts to embeddings
    d) Managing GPU load balancing

Case Study 13: AI for Multilingual Customer Support

Scenario: A company uses AI to automatically translate and respond to customer queries in multiple languages.

37. What's the main reason to use a large language model here?
    a) It can understand context and produce natural-sounding translations
    b) It can detect hardware failures
    c) It can host the company's website
    d) It can compress database files

38. Which limitation might affect AI's translations?
    a) Lack of real-time updated knowledge for certain slang or expressions
    b) The model's ability to use chain-of-thought reasoning
    c) Overuse of few-shot prompting
    d) Excessive use of embeddings

39. If customer queries need to be matched to pre-written answers, which model feature would be most useful?
    a) Embedding-based similarity search
    b) Image captioning
    c) Audio synthesis
    d) Video summarisation

Case Study 14: Fact-Checking with AI

Scenario: A non-profit organisation uses AI to summarise articles and check facts before publishing reports.

40. Which AI limitation should they be most aware of?
    a) Hallucinations — AI producing false but convincing statements
    b) Lack of storage space
    c) Limited prompt length
    d) Low GPU speed

41. How could prompt engineering help reduce fact errors?
    a) By clearly instructing the AI to cite sources and verify claims
    b) By giving only one-word prompts
    c) By avoiding instructions altogether
    d) By disabling attention mechanisms

42. Which AI service would allow this non-profit to scale fact-checking without managing servers?
    a) A cloud-hosted API like OpenAI's GPT-4 service
    b) A locally hosted LLaMA model
    c) Stable Diffusion running on a laptop
    d) Manual human-only review without AI

Case Study 15: AI in Product Design

Scenario: A design studio wants to use generative AI to brainstorm new product ideas with images and descriptions.

43. Which type of generative model would be best for creating the product visuals?
    a) Image generation model like DALL·E or Stable Diffusion
    b) Large language model like GPT-4
    c) Audio transcription model
    d) Tabular data regression model

44. Which limitation could affect the usefulness of AI-generated designs?
    a) The model might not create completely original concepts, leading to copyright concerns
    b) The model always produces perfect, unique designs
    c) The model cannot process text inputs
    d) The model consumes too little energy

45. If the studio wanted AI to suggest product ideas *and* generate matching images, which model type would be most suitable?
    a) Multi-modal model that handles both text and images
    b) Speech recognition model
    c) Simple embedding model
    d) Optical character recognition model

Case Study 16: AI for Automated Tutoring

Scenario: An edtech platform is building an AI-powered tutor that explains concepts, asks quiz questions, and gives feedback in real time.

46. Which **prompting technique** would help the AI maintain a consistent teaching style across multiple questions in the same session?
    a) Few-shot prompting with examples of desired tutor responses
    b) Zero-shot prompting with no example context
    c) Random prompt changes for each question
    d) Chain-of-thought prompting without any examples

47. Which **ethical concern** must be addressed when using AI in education?
    a) Ensuring generated explanations do not contain biased or culturally insensitive examples
    b) Reducing server load time
    c) Avoiding open-source datasets entirely
    d) Limiting API calls for cost reasons

Case Study 17: AI in Journalism

Scenario: A newsroom is testing generative AI to draft news articles from press releases and social media posts.

48. What's the **biggest risk** in publishing AI-generated news without review?
    a) The AI might hallucinate facts, creating misinformation
    b) The AI will use excessive electricity
    c) The AI will refuse to answer
    d) The AI will only produce bullet-point lists

49. To make the AI-generated articles **factually accurate**, which **data-related factor** is most important during training?
    a) Using high-quality, diverse, and credible datasets
    b) Minimising token usage
    c) Using only proprietary datasets without testing
    d) Avoiding fine-tuning for specific writing styles

Case Study 18: Building a No-Code AI App

Scenario: A small business owner with no coding background wants to create a customer FAQ bot using **n8n, Supabase, and OpenAI**.

50. Which **role** would each tool play in this no-code AI app?
    a) **n8n** for workflow automation, **Supabase** for storing FAQ data, **OpenAI** for generating natural-language answers
    b) **n8n** for image generation, **Supabase** for summarising data, **OpenAI** for database hosting
    c) **n8n** for manual query handling, **Supabase** for prompt engineering, **OpenAI** for file storage
    d) **n8n** for coding, **Supabase** for GPU acceleration, **OpenAI** for customer segmentation