**INT426 (Gen AI) CA-1 Set 6**

Certainly! Below are 15 multiple-choice questions (MCQs) categorized by Bloom's Taxonomy levels (L2, L3, L5) for the topics of Introduction to Generative AI and Prompt Engineering. The questions align with the specified course outcomes related to the basics of generative models, prompt engineering, the reinforcement learning feedback loop, and the application of prompt engineering.

\*\*Bloom Level L2 (Comprehension): Basics of Generative Models\*\*

1. \*\*Question: What is the primary goal of generative models in artificial intelligence?\*\*

a) Classify input data

b) Generate new data samples

c) Optimize model parameters

d) Evaluate model performance

\*\*Answer: b) Generate new data samples\*\*

2. \*\*Question: In the context of generative AI, what does "latent space" refer to?\*\*

a) The space between data points

b) The hidden representation space of the model

c) The space of input features

d) The output space of the generator

\*\*Answer: b) The hidden representation space of the model\*\*

3. \*\*Question: What distinguishes generative models from discriminative models?\*\*

a) Generative models focus on feature discrimination

b) Generative models generate new data, while discriminative models classify existing data

c) Discriminative models are only used for unsupervised learning

d) Discriminative models have a higher capacity for complexity

\*\*Answer: b) Generative models generate new data, while discriminative models classify existing data\*\*

4. \*\*Question: How do Generative Adversarial Networks (GANs) work in generating realistic data?\*\*

a) By optimizing discriminative accuracy

b) By training a generator and a discriminator in adversarial competition

c) By minimizing the likelihood of generated data

d) By maximizing the likelihood of observed data

\*\*Answer: b) By training a generator and a discriminator in adversarial competition\*\*

\*\*Bloom Level L3 (Application): Reinforcement Learning Feedback Loop\*\*

5. \*\*Question: Explain how reinforcement learning is applied to improve generative models in a feedback loop.\*\*

a) By adjusting model parameters based on supervised learning

b) By penalizing the generator for generating diverse samples

c) By using reward signals to guide the model towards generating desired outputs

d) By ignoring feedback to maintain model stability

\*\*Answer: c) By using reward signals to guide the model towards generating desired outputs\*\*

6. \*\*Question: How can reinforcement learning be integrated into the training process of a generative model to enhance its performance?\*\*

a) By solely relying on unsupervised learning

b) By introducing a critic to provide feedback on generated samples

c) By avoiding the use of feedback loops

d) By using a fixed set of hyperparameters

\*\*Answer: b) By introducing a critic to provide feedback on generated samples\*\*

7. \*\*Question: Discuss one real-world application where the reinforcement learning feedback loop is crucial for improving generative models.\*\*

a) Image classification

b) Text summarization

c) Game playing

d) Data clustering

\*\*Answer: c) Game playing\*\*

8. \*\*Question: How does the exploration-exploitation trade-off play a role in reinforcement learning for generative models?\*\*

a) By solely focusing on exploration to generate diverse samples

b) By striking a balance between exploring new possibilities and exploiting known strategies

c) By avoiding exploration to maintain stability

d) By prioritizing exploitation to achieve model convergence

\*\*Answer: b) By striking a balance between exploring new possibilities and exploiting known strategies\*\*

\*\*Bloom Level L5 (Synthesis): Application of Prompt Engineering\*\*

9. \*\*Question: Design a prompt that encourages a generative model to produce creative and diverse outputs in the domain of image generation. Explain your rationale.\*\*

a) "Generate an image that perfectly matches the training data."

b) "Explore novel and unique patterns in image creation."

c) "Produce an image that closely resembles a specific reference image."

d) "Minimize the variation in generated images."

\*\*Answer: b) "Explore novel and unique patterns in image creation."\*\*

10. \*\*Question: Develop a prompt engineering strategy to mitigate bias in generative text models. Consider both the input prompt and the desired outcomes.\*\*

a) "Use prompts that reinforce existing biases for stability."

b) "Craft prompts that explicitly instruct the model to avoid biased language."

c) "Ignore prompt engineering as it does not influence bias in generative models."

d) "Select prompts randomly to reduce bias."

\*\*Answer: b) "Craft prompts that explicitly instruct the model to avoid biased language."\*\*

11. \*\*Question: Discuss the ethical considerations involved in prompt engineering for generative models, emphasizing responsible AI practices.\*\*

a) "Ethics are irrelevant in prompt engineering."

b) "Ensure prompts align with societal values and avoid promoting harm."

c) "Prioritize prompt engineering for model performance without ethical considerations."

d) "Ethical considerations only apply to discriminative models."

\*\*Answer: b) "Ensure prompts align with societal values and avoid promoting harm."\*\*

Certainly! Here are four multiple-choice questions (MCQs) categorized as Bloom's Level 1, focusing on basic recall and understanding of the concepts related to Generative AI and Prompt Engineering:

\*\*Bloom Level L1 (Knowledge/Recall):\*\*

12. \*\*Question: What is the primary objective of reinforcement learning in the context of generative models?\*\*

a) To generate new data samples

b) To classify existing data

c) To optimize model parameters

d) To use reward signals for learning

\*\*Answer: d) To use reward signals for learning\*\*

13. \*\*Question: Define what a prompt is in the context of generative AI.\*\*

a) It is a set of rules for model training.

b) It is the data used to test the model's accuracy.

c) It is the input provided to the model to guide its output generation.

d) It is the output generated by the model.

\*\*Answer: c) It is the input provided to the model to guide its output generation.\*\*

14. \*\*Question: What distinguishes generative models from discriminative models in machine learning?\*\*

a) Generative models generate new data, while discriminative models classify existing data.

b) Generative models focus on feature discrimination, while discriminative models generate new data.

c) Generative models classify existing data, while discriminative models generate new data.

d) There is no distinction between generative and discriminative models.

\*\*Answer: a) Generative models generate new data, while discriminative models classify existing data.\*\*

15. \*\*Question: How do Generative Adversarial Networks (GANs) work in the context of generative AI?\*\*

a) They optimize discriminative accuracy.

b) They generate new data samples.

c) They maximize the likelihood of observed data.

d) They train a generator and a discriminator in adversarial competition.

\*\*Answer: d) They train a generator and a discriminator in adversarial competition.\*\*