Exam

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1. b)
    1. First, a direct comparison is made between the generated answer and established ground truth or information from reliable sources. This ensures that the response aligns with verified data and is consistent with established facts.
    2. Coherence and consistency metrics are also utilized to assess the internal integrity of the generated answer, ensuring that the information provided is logically sound and free from internal contradictions

```
def evaluate_truthfulness(generated_answer, ground_truth):
    # Compare generated answer with ground truth
    if generated_answer == ground_truth:
        return "Truthful"
    else:
        return "Not Truthful"
```

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c)

Drawbacks of RAG:

1. Risk of retrieving outdated or incorrect information.
2. Dependence on the quality and relevance of the indexed data.
3. Limited ability to verify the accuracy of the generated content

Mitigation Plan:

1. Regularly update the index to avoid outdated information.
2. Implement a relevance scoring system for retrieved data.
3. Include a user feedback loop to improve the model's understanding.

2)

a) The LLM (Large Language Model) agent operates as a core computational engine that extends beyond traditional text generation. It encompasses various capabilities, including conducting conversations, completing tasks, reasoning, and demonstrating a degree of autonomous behavior. The underlying architecture typically relies on deep neural networks, often based on transformer architectures like GPT (Generative Pre-trained Transformer). These models are pre-trained on vast amounts of diverse textual data, allowing them to learn patterns, context, and linguistic nuances.

b.) The reAct prompting technique plays a pivotal role in enhancing the capabilities of LLMs. It combines reasoning and acting within language models, contributing to understanding, decision-making, and task completion. This approach involves providing specific prompts or cues that guide the LLM to perform certain actions or exhibit particular behaviors. These prompts are carefully designed to elicit the desired responses, steering the model toward tasks that require reasoning and decision-making.

The reAct prompting technique essentially involves crafting prompts that encourage the LLM to not only generate textual output but to also perform actions or exhibit behavior indicative of reasoning. It acts as a mechanism to guide the model towards more sophisticated language-based tasks, allowing it to showcase its reasoning capabilities in addition to generating coherent and contextually relevant text. This technique is crucial in extending the scope of LLMs beyond mere text generation to more interactive and dynamic applications.