**INT426 (Gen AI)**

**Section: CA-2 Set 7 Roll No:**

**Max Marks: 30 Duration: 40 mins**

Choose the correct answer and write in the cell given below, negative marking of 0.5 each question.

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Q1** |  | **Q6** |  | **Q11** |  | **Q16** |  | **Q21** |  | **Q26** |  |
| **Q2** |  | **Q7** |  | **Q12** |  | **Q17** |  | **Q22** |  | **Q27** |  |
| **Q3** |  | **Q8** |  | **Q13** |  | **Q18** |  | **Q23** |  | **Q28** |  |
| **Q4** |  | **Q9** |  | **Q14** |  | **Q1** |  | **Q24** |  | **Q29** |  |
| **Q5** |  | **Q10** |  | **Q15** |  | **Q20** |  | **Q25** |  | **Q30** |  |

**1. In the context of computational transformation, explain how the ACHIEVE framework aligns with the principles of quantum computing.**

a) By exploiting quantum parallelism for prompt optimization

b) Utilizing quantum entanglement to enhance prompt diversity

c) Implementing quantum annealing for cognitive verifier pattern analysis

d) Integrating quantum algorithms for audience persona pattern refinement

**2. How can the principles of large language models be extended to facilitate cross-modal interactions, considering the challenges of integrating textual and visual prompts in a cohesive manner?**

a) Implementing multimodal attention mechanisms for seamless integration

b) Leveraging reinforcement learning to bridge the semantic gap between text and images

c) Employing holographic embeddings for cross-modal prompt coherence

d) Utilizing graph neural networks for dynamic interaction patterns

**3. Explore the ethical implications of utilizing the cognitive verifier pattern in AI systems. How can biases be mitigated and ethical considerations integrated into the pattern to ensure fair and unbiased cognitive load assessment?**

a) Implementing adversarial training to identify and mitigate biases

b) Integrating ethical AI committees for cognitive load pattern validation

c) Utilizing explainable AI techniques to transparently showcase bias mitigation

d) Embedding real-time bias correction algorithms into the cognitive verifier pattern

**4. Propose a novel approach to the audience persona pattern that incorporates neuro-linguistic programming (NLP) techniques to dynamically adapt prompts based on users' subconscious responses.**

a) Integrating sentiment analysis for real-time subconscious emotion detection

b) Utilizing EEG data to inform prompt adaptation through NLP models

c) Employing reinforcement learning to adjust prompts based on neurofeedback

d) Developing a neurolinguistic algorithm for personalized audience personas

**5. Discuss the potential synergy between the flipped interaction pattern and blockchain technology. How can decentralized ledgers enhance user engagement through flipped interactions while ensuring data security and transparency?**

a) Implementing smart contracts to govern flipped interaction protocols

b) Utilizing blockchain for secure storage of flipped interaction logs

c) Developing decentralized AI models for flipped interaction decision-making

d) Integrating proof-of-engagement consensus mechanisms into flipped interactions

**6. Contrast the Game Play Pattern with traditional gamification strategies, highlighting how the former goes beyond superficial game elements to deeply integrate gaming principles into user interactions.**

a) Incorporating narrative-driven gameplay within user prompts

b) Implementing procedural content generation for dynamic game-like experiences

c) Utilizing game theory to optimize AI decision-making within prompts

d) Integrating augmented reality elements for an immersive gaming experience

**7. Analyze the potential implications of the Template Pattern in the context of natural language generation. How can advanced transformer architectures be leveraged to create dynamic templates that adapt to user preferences and context?**

a) Integrating transformer-based conditional template generation models

b) Utilizing GPT-4 for template adaptation through unsupervised learning

c) Implementing reinforcement learning to optimize template structures

d) Developing hierarchical templates using attention mechanisms

**8. Considering the principles of Menu Action Patterns, propose a mechanism for real-time adaptive menus that dynamically adjust based on user behavior and preferences.**

a) Implementing Bayesian models for probabilistic menu item predictions

b) Utilizing reinforcement learning to optimize menu item ranking

c) Developing neural network architectures for menu personalization

d) Integrating context-aware algorithms for menu adaptation

**9. Explore the integration of quantum computing principles in the context of the Check List Pattern. How can quantum superposition and entanglement be harnessed to optimize checklist generation for complex problem-solving scenarios?**

a) Developing quantum-inspired checklist optimization algorithms

b) Utilizing quantum annealing for rapid checklist adaptation

c) Implementing quantum parallelism for simultaneous checklist exploration

d) Integrating quantum circuits for checklist decision-making

**10. Reflect on the ethical considerations associated with the Tail Generation Pattern. How can AI systems ensure responsible content generation and avoid potential issues such as misinformation or inappropriate outputs?**

a) Implementing content validation through decentralized AI governance

b) Utilizing explainable AI to transparently showcase content generation decisions

c) Embedding ethical AI committees for real-time tail generation oversight

d) Developing AI models for context-aware tail generation

**11. Propose an alternate approach to the Meta Language Creation Pattern that leverages reinforcement learning techniques to adapt language structures based on evolving user preferences and linguistic trends.**

a) Implementing a meta-learning framework for language evolution

b) Utilizing GANs for dynamic meta-language generation

c) Developing RL-driven language models with continuous adaptation

d) Integrating unsupervised learning for unsupervised language refinement

**12. Discuss the potential of combining the Expansion patterns with generative adversarial networks (GANs) to create diverse and realistic prompts. How can GANs enhance the variability and quality of expanded prompts in AI applications?**

a) Implementing GAN-based prompt augmentation for diverse expansions

b) Utilizing GANs for prompt quality assessment and refinement

c) Developing a GAN-based prompt recommendation system

d) Integrating GANs for real-time expansion pattern adaptation

**13. Explore the implications of using artificial neural networks in the context of the Recipe Pattern. How can neural architectures enhance the creation of step-by-step instructions and procedural content generation?**

a) Developing neural networks for context-aware recipe adaptation

b) Utilizing attention mechanisms for ingredient relevance in recipes

c) Implementing reinforcement learning for recipe optimization

d) Integrating convolutional neural networks for recipe image recognition

**14. Evaluate the potential of AI-driven Alternate Approaches Pattern in optimizing decision-making processes. How can AI systems dynamically explore and adapt alternate approaches to problem-solving based on evolving scenarios?**

a) Implementing Bayesian models for probabilistic approach selection

b) Utilizing reinforcement learning to optimize alternate approach exploration

c) Developing meta-learning algorithms for continuous approach adaptation

d) Integrating AI committees for real-time alternate approach validation

**15. Assess the potential of the Semantic Filter Pattern in the era of explainable AI. How can AI systems transparently filter information based on semantic meaning while providing comprehensible justifications for the filtering decisions?**

a) Implementing interpretable deep learning models for semantic filtering

b) Utilizing natural language processing techniques for filter explanations

c) Developing an ethical AI committee for semantic filter oversight

d) Integrating reinforcement learning to optimize semantic filter decision-making