QCM Review for Exam Preparation

Q1 : Which of the following best defines Artificial Intelligence?

- ☐ The study of human intelligence
- ☐ The simulation of human intelligence in machines
- ☐ The programming of robots only
- ☐ The use of AI only in gaming applications

Q2 : Which of the following is NOT a typical application of AI?

- ☐ Speech recognition
- ☐ Image processing
- ☐ File compression
- ☐ Autonomous vehicles

Q3 : Which of the following is a characteristic of a well-defined AI problem?

- ☐ The problem must be infinite
- ☐ The goal state must be clearly defined
- ☐ There should be no possible solutions
- ☐ The problem should only involve numerical calculations

Q4 : What is the main purpose of a state space in AI problem-solving?

- ☐ To define a set of possible actions an agent can take
- ☐ To store all the solutions to a problem
- ☐ To simplify the problem by ignoring constraints

Q5 : Which of the following search strategies guarantees finding the optimal solution in an uninformed search?

- ☐ Breadth-First Search
- ☐ Depth-First Search
- ☐ Iterative Deepening Search
- ☐ Greedy Search

Q6: What is the main advantage of informed search strategies over uninformed ones?

- ☐ They use heuristic information to guide the search
- ☐ They do not require problem formulation
- ☐ They do not need a goal state
- ☐ They always find solutions faster

Q7 : What is the main weakness of Depth-First Search (DFS)?
- ☐ It requires too much memory
- ☐ It cannot be implemented recursively
- ☐ It may enter an infinite loop in some cases

Q8: Which heuristic search algorithm uses both the cost to reach a node and an estimated cost to the goal?
- ☐ Greedy Best-First Search
- ☐ A* Search

Q9 : Which of the following search strategies guarantees finding the optimal solution in an informed search?
- ☐ The Breadth-First Search
- ☐ Depth-First Search
- ☐ A* search
- ☐ Greedy Search

Q10 : What is the primary goal of the A* search algorithm?
- ☐ To find a solution in the shortest possible time
- ☐ To find the most optimal solution based on cost
- ☐ To explore all possible paths equally

Q11 : Which of the following is an advantage of Iterative Deepening Search over Depth-First Search?
- ☐ They Uses less memory
- ☐ Guarantees an optimal solution
- ☐ Always finds the shortest path
- ☐ All of the above

Q12 : Which of the following uninformed search strategies explores all children of a node before moving deeper?
- ☐ Breadth-First Search
- ☐ Depth-First Search

Q13 : Which of the following search strategies is complete but not optimal?
- ☐ The Breadth-First Search
- ☐ Depth-First Search
- ☐ Uniform Cost Search
- ☐ A* Search

Machine Learning (ML)

1. **Which of the following is NOT a type of machine learning?**
   - ☐ Supervised Learning
   - ☐ Unsupervised Learning
   - ☐ Reinforcement Learning
   - ☐ Collaborative Learning

2. **Which metric is typically used to evaluate classification models?**
   - ☐ Mean Squared Error
   - ☐ Precision and Recall
   - ☐ R-Squared
   - ☐ Euclidean Distance

3. **True or False: In supervised learning, we don't use labeled data.**

4. **What is the main goal of a regression algorithm?**

5. **Which algorithm is commonly used for classification tasks?**
   - ☐ K-Means
   - ☐ Linear Regression
   - ☐ Decision Tree

6. **True or False: Overfitting occurs when a model performs well on training data but poorly on unseen data.**

7. **Which ML task involves learning from rewards and punishments?**

8. **What is the main purpose of cross-validation?**

Deep Learning (DL)

11. **Which of these networks is used for image data?**
    - ☐ RNN
    - ☐ CNN
    - ☐ GAN
    - ☐ LSTM

12. **What is the role of activation functions in neural networks?**

13. **True or False: A deep neural network is one that has more than one hidden layer.**

14. **Which activation function is commonly used in output layers for binary classification?**

15. **Which of the following is NOT a type of gradient-based optimization?**
    - ☐ SGD
    - ☐ Adam
    - ☐ RMSProp
    - ☐ K-Means

16. **Which problem does the dropout technique help to mitigate?**

17. **What does the term 'backpropagation' refer to?**

18. **True or False: Batch size affects both model speed and performance.**

19. **Which network type is most suitable for sequence data like text or time-series?**

20. **What does ReLU stand for?**

Generative AI

21. **What does the "G" in GAN stand for?**

22. **In a GAN, the discriminator's job is to...**
    - ☐ Generate data
    - ☐ Update weights
    - ☐ Distinguish real data from fake
    - ☐ Clean input noise

23. **True or False: Generative AI can only produce text.**

24. **Which architecture powers ChatGPT?**

25. **What are the two components of a GAN?**

26. **Which technique allows large language models to generate human-like text?**

27. **True or False: Variational Autoencoders are used to generate new data points similar to a training set.**

28. **Which of these models is *not* typically used for image generation?**
   ☐ GAN
   ☐ CNN
   ☐ Diffusion Models
   ☐ RNN

29. **What is "prompt engineering" in the context of generative AI?**

30. **What is the purpose of the attention mechanism in transformers?**
   ☐ Add noise
   ☐ Reduce training time
   ☐ Focus on important words in a sequence
   ☐ Create labels