

Name: _____ **Date:** _____

Conquer the Matrix: High Stakes 11th Grade AI Architecture Quiz

Analyze neural pathways and machine learning logistics across 10 challenging prompts to prove your mastery of modern computational intelligence.

1. In the context of Supervised Learning, which term best describes the 'ground truth' labels used to train a model to recognize specific patterns, such as identifying credit card fraud?

- A. Unstructured Metadata
- B. Target Variables
- C. Heuristic Bias
- D. Hyperparameters

2. True or False: In a Recurrent Neural Network (RNN), the model possesses a 'memory' feature that allows previous outputs to be used as inputs, making it ideal for sequential data like time-series forecasting.

- A. True
- B. False

3. When an AI model performs exceptionally well on training data but fails to generalize to new, unseen data, it is experiencing a phenomenon known as _____.

- A. Underfitting
- B. Backpropagation
- C. Overfitting
- D. Gradient Descent

4. Which specific architectural innovation allowed Transformer models to process entire sequences of text simultaneously rather than word-by-word?

- A. Genetic Algorithms
- B. Self-Attention Mechanisms
- C. Linear Regression
- D. K-Means Clustering

5. True or False: Reinforcement Learning relies primarily on pre-labeled datasets containing the correct answers for every possible scenario the agent might encounter.

- A. True
- B. False

6. In the hierarchy of AI, a system designed to perform a singular, specific task—such as AlphaGo playing a board game—is classified as _____ AI.

- A. General
- B. Narrow

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- C. Strong
- D. Sentient

7. Which of the following describes the role of 'Weights' within an artificial neural network layer?

- A. They determine the physical size of the computer server.
- B. They adjust the importance of input signals during the learning process.
- C. They act as the user interface for the AI application.
- D. They delete unnecessary data after the model has finished running.

8. The use of AI to analyze satellite imagery to predict crop yields for global food security is an example of _____, an application focusing on pattern recognition in visual data.

- A. Natural Language Processing
- B. Computer Vision
- C. Expert Systems
- D. Robotic Process Automation

9. True or False: The 'Turing Test' is a benchmark used to determine if a machine can simulate human-like conversation effectively enough to fool a human evaluator.

- A. True
- B. False

10. When an AI researcher refers to 'Black Box' AI, they are highlighting a specific challenge related to:

- A. The high cost of electricity to run GPU clusters.
- B. The difficulty in explaining exactly how a model reached a specific conclusion.
- C. The physical casing used to protect quantum computers.
- D. A specific type of data encryption used in cybersecurity.