

Advanced Concepts in Artificial Intelligence

Artificial Intelligence · Practice Test · 12 Questions

1. Which influential 1950 paper by Alan Turing introduced the 'Imitation Game' as a test for machine intelligence?

- A) Computing Machinery and Intelligence
- B) The Analytical Engine
- C) A Mathematical Theory of Communication
- D) On Computable Numbers

2. In neural network architecture, what is the primary purpose of an activation function such as ReLU or Sigmoid?

- A) To reduce the number of parameters
- B) To introduce non-linearity into the model
- C) To normalize input data
- D) To increase processing speed

3. What is the 'vanishing gradient problem' typically associated with in deep learning?

- A) Overfitting training data
- B) Memory leakage in GPUs
- C) Training very deep neural networks
- D) Data bias in datasets

4. In the context of reinforcement learning, what does the term 'Exploration-Exploitation Tradeoff' refer to?

- A) Balancing hardware costs and software efficiency
- B) Choosing between known rewards and discovering new strategies
- C) Switching between training and testing phases
- D) Optimizing data compression vs latency

5. Which algorithm is the foundational method used to calculate the gradient of the loss function with respect to weights in a neural network?

- A) Backpropagation
- B) Principal Component Analysis
- C) K-Nearest Neighbors
- D) Random Forest

6. What was the first major AI program to defeat a reigning world chess champion in a match under tournament conditions?

- A) AlphaZero
- B) Deep Blue
- C) Stockfish
- D) Fritz

7. In Natural Language Processing, what does the 'Transformer' architecture rely on to weigh the importance of different words in a sequence?

- A) Recurrent feedback loops
- B) Self-attention mechanisms
- C) Fixed length sliding windows
- D) Stemming and lemmatization

8. What is the 'curse of dimensionality' in machine learning?

- A) The tendency of models to be slower as they get older
- B) The difficulty of analyzing data in high-dimensional spaces
- C) The limited availability of training data
- D) The inability of computers to read binary

9. Which mathematical field provides the foundational framework for neural networks and data transformation in AI?

- A) Linear Algebra
- B) Number Theory
- C) Euclidean Geometry
- D) Quantum Physics

10. What is the objective of 'Stochastic Gradient Descent' (SGD)?

- A) To maximize the loss function
- B) To find the global minimum of the loss function
- C) To increase the complexity of the model
- D) To prevent the need for labeled data

11. In AI ethics and development, what is 'Data Poisoning'?

- A) Intentionally introducing malicious data to compromise a model
- B) The accidental deletion of training sets
- C) The use of copyrighted images in training
- D) A type of cyberattack on server cooling systems

12. Which company released the initial research paper 'Attention Is All You Need', which proposed the Transformer architecture?

- A) OpenAI
- B) DeepMind
- C) Google
- D) Microsoft