

# Artificial Intelligence

## Multiple-Choice Quiz

Q1: What is Artificial Intelligence?

- A) Programming computers to perform repetitive tasks
- B) The ability of a machine to mimic human intelligence
- C) A type of computer virus
- D) Only the use of robots in industry

Q2: Which of these is NOT a type of AI?

- A) Narrow AI
- B) General AI
- C) Super AI
- D) Limited AI

Q3: Who is considered the "father of AI"?

- A) Alan Turing
- B) John McCarthy
- C) Marvin Minsky
- D) Herbert Simon

Q4: Which test evaluates a machine's ability to exhibit intelligent behavior?

- A) Voight-Kampff Test
- B) Turing Test
- C) CAPTCHA
- D) Watson Test

Q5: What does "machine learning" refer to?

- A) Programming machines manually
- B) Machines improving performance without explicit programming
- C) Robots learning physical movements
- D) Machines reading books

Q6: Which is a branch of AI?

- A) Classical mechanics
- B) Robotics
- C) Organic chemistry

D) Civil engineering

Q7: Main goal of AI research?

- A) Replace humans entirely
- B) Create machines that solve tasks intelligently
- C) Make computers faster
- D) Build humanoid robots

Q8: Example of narrow AI?

- A) Self-driving cars
- B) Humanoid general AI
- C) HAL 9000
- D) All-purpose future AI assistants

Q9: Difference between AI and ML?

- A) AI is broader; ML is a subset
- B) ML is broader; AI is a subset
- C) They are the same
- D) AI uses rules, ML uses data

Q10: Core component of AI systems?

- A) Data
- B) Algorithms
- C) Hardware
- D) All of the above

Q11: Which type of ML involves labeled data?

- A) Supervised learning
- B) Unsupervised learning
- C) Reinforcement learning
- D) Semi-supervised learning

Q12: Which ML method finds patterns without labels?

- A) Supervised learning
- B) Unsupervised learning
- C) Reinforcement learning
- D) Deep learning

Q13: Example of supervised learning?

- A) Customer segmentation
- B) Spam email detection
- C) Market basket analysis
- D) Predicting stock clusters

Q14: Which is an unsupervised learning algorithm?

- A) Linear regression
- B) K-means clustering
- C) Logistic regression
- D) Decision tree

Q15: Reinforcement learning involves?

- A) Learning from labeled data
- B) Learning by trial and error using rewards
- C) Clustering unlabeled data
- D) Manual programming

Q16: Overfitting in ML means?

- A) Model performs well on new data
- B) Model performs poorly on training data
- C) Model performs well on training data but poorly on new data
- D) Model has too few parameters

Q17: Bias in ML models can result from?

- A) Skewed training data
- B) Faulty algorithms
- C) Both A and B
- D) Only hardware issues

Q18: What is a common evaluation metric for classification?

- A) Mean Squared Error
- B) Accuracy
- C) Clustering coefficient
- D) Gradient descent

Q19: Gradient descent is used for?

- A) Optimizing model parameters
- B) Clustering data
- C) Labeling data

D) Reducing hardware usage

Q20: What is feature engineering?

- A) Creating new algorithms
- B) Transforming raw data into input features
- C) Building AI hardware
- D) Testing AI ethics

Q21: What is deep learning primarily based on?

- A) Decision trees
- B) Neural networks with multiple layers
- C) Regression models
- D) Support vector machines

Q22: What is an artificial neuron inspired by?

- A) Computer processor
- B) Biological neuron
- C) Memory chip
- D) Logic gate

Q23: Which activation function outputs values between 0 and 1?

- A) ReLU
- B) Sigmoid
- C) Tanh
- D) Softmax

Q24: ReLU stands for?

- A) Randomized Linear Unit
- B) Rectified Linear Unit
- C) Recursive Linear Unit
- D) Regularized Linear Utility

Q25: Convolutional Neural Networks (CNNs) are mainly used for?

- A) Text generation
- B) Image processing
- C) Time series forecasting
- D) Reinforcement learning

Q26: Which deep learning model is widely used for sequence data?

- A) CNN
- B) RNN
- C) SVM
- D) KNN

Q27: What is overfitting in deep learning?

- A) Model learns too slowly
- B) Model learns the training data too well and fails on new data
- C) Model has too few layers
- D) Model underperforms on training data

Q28: Dropout in deep learning helps to?

- A) Reduce underfitting
- B) Reduce overfitting
- C) Increase training speed
- D) Increase model size

Q29: Which optimizer is commonly used in deep learning?

- A) Adam
- B) K-means
- C) Logistic regression
- D) PCA

Q30: Autoencoders are used for?

- A) Image classification
- B) Data compression and reconstruction
- C) Clustering
- D) Text translation

Q31: NLP stands for?

- A) Neural Learning Process
- B) Natural Language Processing
- C) Non-linear Programming
- D) Network Learning Protocol

Q32: Tokenization in NLP means?

- A) Encrypting text
- B) Breaking text into smaller units like words or sentences
- C) Removing stop words

D) Predicting next words

Q33: Stop words are?

- A) Frequently used words with little semantic value
- B) Rare words in a language
- C) Words that end sentences
- D) Keywords for search engines

Q34: Word embeddings are used to?

- A) Represent words as vectors in a continuous space
- B) Count word frequencies
- C) Summarize text
- D) Detect language

Q35: Which NLP model is transformer-based?

- A) RNN
- B) LSTM
- C) GPT
- D) CNN

Q36: Named Entity Recognition (NER) identifies?

- A) Parts of speech
- B) Specific entities like names, dates, or locations
- C) Sentiment of text
- D) Synonyms

Q37: Sentiment analysis determines?

- A) The topic of text
- B) The emotional tone of text
- C) The author of text
- D) The grammar of text

Q38: Bag-of-Words (BoW) model represents text as?

- A) A sequence of characters
- B) A vector of word counts
- C) A parse tree
- D) A set of embeddings

Q39: Which task involves converting speech to text?

- A) Text-to-Speech
- B) Speech Recognition
- C) Machine Translation
- D) Language Modeling

Q40: Transformers rely on which mechanism?

- A) Convolution
- B) Recurrence
- C) Attention
- D) Clustering

Q41: Computer vision enables machines to?

- A) Understand human language
- B) Interpret and process images and videos
- C) Make robots walk
- D) Perform reinforcement learning

Q42: Convolutional layers in CNNs are used for?

- A) Reducing overfitting
- B) Detecting features like edges and patterns
- C) Sorting images
- D) Labeling data

Q43: Image classification predicts?

- A) The position of objects
- B) The label/category of an image
- C) Image size
- D) Video frames

Q44: Object detection differs from image classification because?

- A) It works only on videos
- B) It identifies and locates multiple objects in an image
- C) It uses NLP
- D) It only works with black-and-white images

Q45: Which is a common computer vision dataset?

- A) MNIST
- B) CIFAR-10
- C) ImageNet

D) All of the above

Q46: Image segmentation divides an image into?

- A) Features and labels
- B) Meaningful regions or segments
- C) Pixels only
- D) Layers

Q47: What does OCR do?

- A) Recognizes text in images
- B) Generates images
- C) Enhances contrast
- D) Detects motion

Q48: Which technique reduces the size of images while keeping essential features?

- A) Pooling
- B) Dropout
- C) Backpropagation
- D) Tokenization

Q49: Facial recognition identifies?

- A) Emotions
- B) Specific individuals based on facial features
- C) Objects in an image
- D) Background colors

Q50: GANs (Generative Adversarial Networks) are used for?

- A) Classifying images
- B) Generating new images
- C) Reducing image size
- D) Detecting edges

Q51: Robotics combines AI with?

- A) Hardware and sensors
- B) NLP only
- C) Quantum computing
- D) Databases

Q52: Actuators in robots are used for?

- A) Sensing the environment
- B) Moving parts of the robot
- C) Processing data
- D) Storing energy

Q53: Which sensor detects obstacles in robotics?

- A) Camera
- B) LIDAR
- C) Microphone
- D) Accelerometer

Q54: Autonomous robots can operate without?

- A) Instructions
- B) Human intervention
- C) Sensors
- D) Energy

Q55: Robot localization determines?

- A) Where a robot is in its environment
- B) Robot speed
- C) Object labels
- D) Algorithm accuracy

Q56: SLAM in robotics stands for?

- A) Simultaneous Localization and Mapping
- B) Sensor Learning and Mapping
- C) Spatial Logic AI Model
- D) Simple Learning Algorithm for Machines

Q57: Humanoid robots are designed to?

- A) Work underwater
- B) Mimic human appearance and movement
- C) Fly
- D) Operate only in factories

Q58: Swarm robotics focuses on?

- A) Single powerful robot
- B) Coordinated behavior of multiple simple robots

- C) Flying drones only
- D) Industrial automation

Q59: End effectors in robots are?

- A) Cameras
- B) Parts that interact with objects, like grippers
- C) Sensors
- D) Wheels

Q60: Robot path planning involves?

- A) Finding optimal route from start to goal while avoiding obstacles
- B) Writing AI algorithms
- C) Sensing the environment
- D) Data collection

Q61: AI ethics primarily deals with?

- A) Programming errors
- B) Moral and societal implications of AI
- C) Hardware efficiency
- D) Cloud computing

Q62: Bias in AI can result in?

- A) Fair outcomes
- B) Discrimination and inequality
- C) Faster computation
- D) Accurate predictions only

Q63: Which principle ensures AI decisions are understandable by humans?

- A) Explainability
- B) Optimization
- C) Automation
- D) Encryption

Q64: Privacy concerns in AI relate to?

- A) Data storage costs
- B) How personal data is collected, stored, and used
- C) Algorithm efficiency
- D) Model size

Q65: Autonomous weapons raise ethical issues because?

- A) They are expensive
- B) Machines make life-or-death decisions without human oversight
- C) They require too much computing power
- D) They are slow

Q66: Fairness in AI refers to?

- A) Equal computation
- B) Ensuring decisions do not discriminate against individuals/groups
- C) Data balancing
- D) Algorithm speed

Q67: Accountability in AI means?

- A) Systems explain their logic automatically
- B) Humans are responsible for AI decisions
- C) AI is fully autonomous
- D) AI is open-source

Q68: Deepfakes raise ethical concerns because?

- A) They are hard to create
- B) They can spread misinformation or fake media
- C) They are slow to generate
- D) They require large datasets

Q69: AI regulations aim to?

- A) Limit AI research
- B) Ensure safe, fair, and transparent deployment
- C) Slow down development
- D) Replace human workers

Q70: Which international guideline promotes trustworthy AI?

- A) GDPR
- B) UNESCO AI Ethics Recommendations
- C) IEEE Standards
- D) Both B and C

Q71: Reinforcement Learning is based on?

- A) Labeled datasets

- B) Rewards and punishments
- C) Image classification
- D) Clustering

Q72: In RL, an agent interacts with?

- A) A dataset
- B) An environment
- C) A robot only
- D) A database

Q73: What is a policy in RL?

- A) A reward function
- B) A strategy mapping states to actions
- C) A dataset
- D) A neural network only

Q74: Q-learning is an example of?

- A) Supervised learning
- B) Model-free RL
- C) Unsupervised learning
- D) CNN

Q75: The exploration-exploitation tradeoff means?

- A) Choosing between different neural networks
- B) Choosing between exploring new actions or exploiting known rewards
- C) Using data augmentation
- D) Clustering vs classification

Q76: Reward shaping is?

- A) Modifying the reward function to improve learning
- B) Changing network architecture
- C) Feature engineering
- D) Clustering rewards

Q77: Temporal Difference (TD) learning combines?

- A) Supervised and unsupervised learning
- B) Monte Carlo and dynamic programming ideas
- C) CNN and RNN

D) NLP and CV

Q78: In RL, the discount factor  $\gamma$  determines?

- A) Learning rate
- B) Importance of future rewards
- C) Neural network size
- D) Exploration probability

Q79: Actor-Critic methods have?

- A) Only a value function
- B) Separate policy (actor) and value (critic) networks
- C) Only Q-values
- D) Only a reward function

Q80: Which is an application of RL?

- A) Game AI (like AlphaGo)
- B) Image classification
- C) Named entity recognition
- D) OCR

Q81: AI in healthcare can be used for?

- A) Diagnosing diseases
- B) Predicting patient outcomes
- C) Drug discovery
- D) All of the above

Q82: AI in finance helps with?

- A) Fraud detection
- B) Algorithmic trading
- C) Credit scoring
- D) All of the above

Q83: Autonomous vehicles use AI for?

- A) Path planning
- B) Obstacle detection
- C) Traffic prediction
- D) All of the above

Q84: AI in agriculture assists with?

- A) Crop monitoring
- B) Pest detection
- C) Yield prediction
- D) All of the above

Q85: Chatbots use AI for?

- A) Generating human-like conversations
- B) Predicting stock prices
- C) Autonomous driving
- D) Image segmentation

Q86: AI in cybersecurity detects?

- A) Malicious activity
- B) Spam emails
- C) Network intrusions
- D) All of the above

Q87: Recommendation systems in AI are used by?

- A) E-commerce platforms
- B) Streaming services
- C) Social media
- D) All of the above

Q88: AI in manufacturing improves?

- A) Predictive maintenance
- B) Quality control
- C) Process optimization
- D) All of the above

Q89: Voice assistants like Siri or Alexa rely on?

- A) NLP and speech recognition
- B) CNNs only
- C) GANs only
- D) Robotics

Q90: AI in education can provide?

- A) Personalized learning paths
- B) Automated grading
- C) Student performance prediction

D) All of the above

Q91: Explainable AI (XAI) aims to?

- A) Hide model decisions
- B) Make AI decisions transparent and interpretable
- C) Increase model size
- D) Automate AI coding

Q92: Edge AI runs?

- A) In the cloud only
- B) Directly on local devices
- C) On quantum computers only
- D) Only for autonomous vehicles

Q93: Federated learning allows?

- A) Training models without sharing raw data
- B) Centralized data storage
- C) Faster GPUs
- D) Image generation

Q94: AI and quantum computing together aim to?

- A) Replace classical AI
- B) Solve problems faster than classical computers
- C) Reduce dataset size
- D) Improve NLP only

Q95: Self-supervised learning relies on?

- A) Fully labeled datasets
- B) Creating pseudo-labels from data itself
- C) No data
- D) Manual feature engineering

Q96: Generative AI includes models that?

- A) Classify images
- B) Create content like text, images, or audio
- C) Detect anomalies only
- D) Perform clustering

Q97: AI for climate change helps?

- A) Predict weather events
- B) Optimize energy usage
- C) Monitor deforestation
- D) All of the above

Q98: Multimodal AI can process?

- A) Text only
- B) Images only
- C) Multiple data types (text, images, audio)
- D) Tabular data only

Q99: AI in creativity can assist in?

- A) Music composition
- B) Art generation
- C) Story writing
- D) All of the above

Q100: The future of AI focuses on?

- A) Narrow task-specific systems
- B) General intelligence and ethical deployment
- C) Only robotics
- D) Only quantum computing