1. Who coined the term “Artificial Intelligence”?

A) Alan Turing

B) John McCarthy

C) Marvin Minsky

D) Herbert Simon

Answer: B) John McCarthy

Explanation: John McCarthy introduced the term *Artificial Intelligence* in 1956 during the Dartmouth Conference.

---

2. The Turing Test evaluates a machine’s ability to ___.

A) Learn from data

B) Exhibit human-like conversation

C) Solve optimization problems

D) Recognize images

Answer: B) Exhibit human-like conversation

Explanation: Proposed by Alan Turing, the test checks if a machine’s replies can fool a human interrogator.

---

3. In the PEAS framework, the letter P stands for ___.

A) Perception

B) Performance measure

C) Planning
D) Policy
Answer: B) Performance measure
Explanation: PEAS = Performance measure, Environment, Actuators, Sensors – used to specify an AI agent's task.

---

4. Which of the following is *not* an AI environment property?
A) Observable vs Partially observable
B) Deterministic vs Stochastic
C) Static vs Dynamic
D) Linear vs Nonlinear
Answer: D) Linear vs Nonlinear
Explanation: Linearity is a mathematical concept, not a property used to classify AI environments.

---

5. A reflex agent selects actions based on ___.
A) Future states
B) Condition–action rules from current percepts
C) Utility values
D) Search trees
Answer: B) Condition–action rules from current percepts

Explanation: Reflex agents act immediately using rules without reasoning about future states.

---

6. A rational agent is one that ___.
A) Always achieves success
B) Chooses actions to maximize expected performance
C) Uses symbolic logic only
D) Mimics human emotion
Answer: B) Chooses actions to maximize expected performance
Explanation: Rationality means selecting actions expected to produce the best outcome given available information.

---

7. Which search strategy expands the shallowest node first?
A) Depth-first search
B) Best-first search
C) Breadth-first search
D) Hill-climbing
Answer: C) Breadth-first search
Explanation: BFS explores all nodes at a given depth before moving deeper.

---

8. An admissible heuristic ___.
A) Overestimates the true cost
B) Never overestimates the true cost to goal
C) Underestimates randomly
D) Is domain-specific only
Answer: B) Never overestimates the true cost to goal
Explanation: Admissible heuristics guarantee optimality for A* search because they are optimistic.

---

*9. The A algorithm is optimal if the heuristic is ___.**
A) Greedy
B) Admissible and consistent
C) Random
D) Non-monotonic
Answer: B) Admissible and consistent
Explanation: These conditions ensure A* finds the lowest-cost path without re-expanding nodes.

---

10. The MRV (Minimum Remaining Values) heuristic is used in ___.

A) Search trees

B) Neural networks

C) Constraint Satisfaction Problems

D) Decision trees

Answer: C) Constraint Satisfaction Problems

Explanation: MRV chooses the variable with fewest legal values to reduce branching early.

---

11. Fuzzy logic allows truth values ___.

A) Only 0 and 1

B) Between 0 and 1

C) Greater than 1

D) Negative

Answer: B) Between 0 and 1

Explanation: Fuzzy logic represents partial truths rather than crisp true/false values.

---

12. Which algorithm is complete and optimal for equal step costs?

A) Depth-first search

B) Breadth-first search
C) Greedy search
D) Hill-climbing
Answer: B) Breadth-first search
Explanation: BFS finds the shallowest goal node first when each step has equal cost.

---

13. Knowledge representation deals with ___.
A) Learning weights
B) How information is stored and used for reasoning
C) Data compression
D) Graphics rendering
Answer: B) How information is stored and used for reasoning
Explanation: Knowledge representation defines structures (logic, frames, semantic nets) to support AI reasoning.

---

14. Which inference rule is complete for propositional logic?
A) Modus Ponens
B) Resolution
C) Backward chaining
D) Forward chaining
Answer: B) Resolution

Explanation: Resolution can derive any logical consequence from a set of clauses in propositional logic.

---

15. Naïve Bayes classifier assumes that features are ___.
A) Dependent
B) Independent given the class
C) Correlated by weight
D) Always binary
Answer: B) Independent given the class
Explanation: Conditional independence simplifies Bayes rule for efficient probability estimation.

---

16. Overfitting occurs when a model ___.
A) Fits training data too well and fails on new data
B) Performs poorly on training data
C) Is too simple
D) Uses regularization
Answer: A) Fits training data too well and fails on new data
Explanation: Overfitting means the model captures noise instead of general patterns.

---

17. Which technique helps reduce overfitting?

A) Increasing epochs indefinitely

B) Regularization or Dropout

C) Ignoring validation data

D) Adding noise to labels

Answer: B) Regularization or Dropout

Explanation: These methods limit model complexity and improve generalization.

---

18. The bias–variance trade-off balances ___.

A) Training and testing speed

B) Underfitting and overfitting

C) Accuracy and precision

D) Data and features

Answer: B) Underfitting and overfitting

Explanation: High bias → underfit; high variance → overfit; good models balance both.

---

19. k-Nearest Neighbors (k-NN) relies on ___.

A) Training parameters

B) Distance metric between samples
C) Hidden layers
D) Label probabilities only
Answer: B) Distance metric between samples
Explanation: k-NN classifies based on majority labels among closest neighbors in feature space.

---

20. The kernel trick is used in which algorithm?
A) Naïve Bayes
B) Support Vector Machines
C) Decision Trees
D) k-Means
Answer: B) Support Vector Machines
Explanation: The kernel trick implicitly maps data to higher dimensions for non-linear classification.

---

Perfect  Continuing Topic 1 – General AI Concepts (Q21 – Q100) in the same readable format:

---

21. Principal Component Analysis (PCA) is mainly used for ___.
A) Classification
B) Clustering
C) Dimensionality reduction
D) Reinforcement learning
Answer: C) Dimensionality reduction
Explanation: PCA reduces data to a smaller number of orthogonal components capturing the greatest variance.

---

22. k-Means algorithm minimizes ___.
A) Entropy
B) Within-cluster squared distances
C) Cross-entropy loss
D) Information gain
Answer: B) Within-cluster squared distances
Explanation: k-Means updates cluster centroids to reduce the total intra-cluster variance.

---

23. The EM algorithm alternates between ___.

A) Expectation and Maximization steps
B) Exploration and exploitation
C) Training and validation
D) Expansion and pruning
Answer: A) Expectation and Maximization steps
Explanation: EM estimates hidden variables (E-step) and updates parameters (M-step) iteratively.

---

24. In a Hidden Markov Model, the Forward algorithm computes ___.
A) Most likely sequence of states
B) Probability of an observation sequence
C) Maximum likelihood parameters
D) Transition matrix
Answer: B) Probability of an observation sequence
Explanation: The forward procedure sums probabilities over all possible hidden state paths.

---

25. Q-Learning is a form of ___.
A) Supervised learning
B) Reinforcement learning
C) Unsupervised learning
D) Semi-supervised learning

Answer: B) Reinforcement learning
Explanation: Q-Learning learns optimal action values through reward feedback without requiring a model.

---

26. The Bellman equation expresses ___.
A) Relationship between policy and reward
B) Recursive definition of state values
C) Gradient update in neural nets
D) Statistical independence
Answer: B) Recursive definition of state values
Explanation: Value = Immediate reward + discount × expected future value.

---

27. ReLU activation helps to reduce ___.
A) Exploding gradient
B) Vanishing gradient
C) Dropout rate
D) Overfitting directly
Answer: B) Vanishing gradient
Explanation: ReLU keeps positive gradients constant, avoiding vanishing seen in sigmoids.

---

28. Backpropagation is used to ___.

A) Propagate inputs

B) Compute weight gradients efficiently

C) Store patterns

D) Normalize data

Answer: B) Compute weight gradients efficiently

Explanation: It applies the chain rule to update network weights during training.

---

29. CNNs exploit ___.

A) Temporal recurrence

B) Local spatial correlations

C) Symbolic reasoning

D) Random noise

Answer: B) Local spatial correlations

Explanation: Convolutions capture nearby pixel dependencies using shared weights.

---

30. Pooling in CNNs provides ___.

A) Temporal memory

B) Translation invariance and down-sampling

C) Higher resolution

D) Weight normalization

Answer: B) Translation invariance and down-sampling

Explanation: Pooling reduces spatial size and highlights most relevant activations.

---

31. LSTM networks are designed to ___.

A) Classify images

B) Handle long-term dependencies in sequences

C) Cluster features

D) Reduce dimensions

Answer: B) Handle long-term dependencies in sequences

Explanation: LSTMs use gates to maintain and forget information across time steps.

---

32. Attention mechanisms allow a model to ___.

A) Ignore irrelevant data

B) Focus on relevant input parts adaptively

C) Compress entire sequence

D) Eliminate recurrence

Answer: B) Focus on relevant input parts adaptively

Explanation: Attention weights emphasize important features for prediction.

---

33. Transformers replace recurrence with ___.
A) Convolutions
B) Self-attention
C) Pooling layers
D) Residual connections only
Answer: B) Self-attention
Explanation: Transformers capture relationships between all tokens simultaneously via attention.

---

34. Word2Vec learns embeddings by ___.
A) Matrix factorization
B) Predicting context words or target words
C) Random initialization
D) Clustering
Answer: B) Predicting context words or target words
Explanation: Skip-Gram and CBOW train networks to predict surrounding words in a sentence.

---

35. TF–IDF down-weights words that are ___.

A) Rare in a document
B) Common across many documents
C) Highly informative
D) Stop-listed
Answer: B) Common across many documents
Explanation: TF–IDF emphasizes words that are frequent in one document but rare overall.

---

36. BERT is a ___.
A) Decoder-only autoregressive model
B) Bidirectional masked language model
C) Recurrent sequence model
D) Vision transformer
Answer: B) Bidirectional masked language model
Explanation: BERT learns deep bidirectional context by predicting masked tokens.

---

37. GPT models are trained with ___.
A) Next-token prediction
B) Masked token prediction
C) Contrastive loss
D) Autoencoder objective
Answer: A) Next-token prediction

Explanation: GPT uses an autoregressive objective to predict the next word sequentially.

---

38. A decision tree split aims to ___.
A) Reduce dimensionality
B) Increase node purity
C) Increase entropy
D) Reduce bias
Answer: B) Increase node purity
Explanation: Splits minimize impurity metrics like Gini index or entropy.

---

39. Random Forest combines ___.
A) Neural layers
B) Multiple decision trees on bootstrapped samples
C) Linear regressors
D) Clustering centroids
Answer: B) Multiple decision trees on bootstrapped samples
Explanation: Random Forest averages many diverse trees to reduce variance.

---

40. Boosting builds models ___.
A) Independently in parallel
B) Sequentially, correcting previous errors
C) Randomly
D) Using gradient descent only
Answer: B) Sequentially, correcting previous errors
Explanation: Boosting (e.g., AdaBoost, XGBoost) trains each weak learner to fix prior mistakes.

---

41. Dropout prevents ___.
A) Gradient vanishing
B) Overfitting by randomly disabling neurons
C) Training slowdown
D) Underfitting
Answer: B) Overfitting by randomly disabling neurons
Explanation: It forces the network not to rely on specific units during training.

---

42. The Softmax function outputs ___.

A) Feature maps
B) Normalized probabilities
C) Binary decisions
D) Loss values
Answer: B) Normalized probabilities
Explanation: Softmax converts logits into class probabilities that sum to 1.

---

43. Cross-entropy loss is used for ___.
A) Regression tasks
B) Classification tasks
C) Clustering
D) PCA
Answer: B) Classification tasks
Explanation: It measures divergence between predicted probabilities and true one-hot labels.

---

44. Precision is defined as ___.
A) TP / (TP + FN)
B) TP / (TP + FP)
C) TN / (TN + FP)
D) TP / (TP + TN)
Answer: B) TP / (TP + FP)

Explanation: Precision measures correctness of positive predictions.

---

45. Recall (Sensitivity) is ___.
A) TP / (TP + FP)
B) TP / (TP + FN)
C) TN / (TN + FP)
D) FP / (FP + TN)
Answer: B) TP / (TP + FN)
Explanation: Recall quantifies how many actual positives were correctly identified.

---

46. ROC–AUC evaluates ___.
A) Regression fit
B) Trade-off between true-positive and false-positive rates
C) Data imbalance
D) Overfitting
Answer: B) Trade-off between TPR and FPR
Explanation: The area under the ROC curve measures overall classifier discrimination.

---

47. In supervised learning, labeled data contain ___.

A) Inputs only

B) Inputs and known outputs

C) Outputs only

D) Random noise

Answer: B) Inputs and known outputs

Explanation: Models learn mappings from examples of input–output pairs.

---

48. Unsupervised learning uses ___.

A) Labeled data

B) Unlabeled data

C) Partially labeled data

D) Reward signals

Answer: B) Unlabeled data

Explanation: It discovers hidden structures (clusters, features) without predefined labels.

---

49. Semi-supervised learning uses ___.

A) Only labeled data

B) Only unlabeled data
C) Both labeled and unlabeled data
D) Synthetic data only
Answer: C) Both labeled and unlabeled data
Explanation: It leverages small labeled sets and large unlabeled sets for better generalization.

---

50. Reinforcement learning differs because it ___.
A) Learns from labeled examples
B) Uses rewards and punishments
C) Is unsupervised
D) Is rule-based
Answer: B) Uses rewards and punishments
Explanation: Agents learn optimal actions through trial-and-error interactions with an environment.

---

51. The agent’s goal in reinforcement learning is to maximize ___.
A) Immediate reward only
B) Cumulative discounted reward
C) Prediction accuracy
D) Entropy

Answer: B) Cumulative discounted reward

Explanation: Agents aim for long-term benefit, balancing short- and long-term returns.

---

52. The value function estimates ___.

A) State transition probabilities

B) Expected return from a state

C) Reward variance

D) Learning rate

Answer: B) Expected return from a state

Explanation: It measures how good a state is in terms of expected future rewards.

---

53. Policy gradient methods optimize ___.

A) Action-value table

B) Parameters of the policy directly

C) Q-values indirectly

D) Reward function

Answer: B) Parameters of the policy directly

Explanation: They adjust policy parameters using gradients of expected reward.

---

54. Game-playing AI like AlphaGo combines ___.
A) Search and deep learning
B) Symbolic reasoning only
C) Pure reinforcement rules
D) Statistical sampling only
Answer: A) Search and deep learning
Explanation: AlphaGo used deep neural nets with Monte Carlo Tree Search.

---

55. The first AI winter occurred due to ___.
A) Funding cuts after unmet expectations
B) Lack of neural networks
C) Quantum computing rise
D) Hardware explosion
Answer: A) Funding cuts after unmet expectations
Explanation: Early symbolic AI failed to deliver promised results, causing reduced research funding.

---

56. Expert systems are built on ___.

A) Neural network weights
B) If–then rule bases
C) Reinforcement agents
D) Decision forests
Answer: B) If–then rule bases
Explanation: They emulate human experts using rules and inference engines.

---

57. The inference engine in an expert system ___.
A) Stores facts
B) Applies rules to derive conclusions
C) Collects user data
D) Displays outputs
Answer: B) Applies rules to derive conclusions
Explanation: It matches conditions in the knowledge base to infer new facts.

---

58. A knowledge base contains ___.
A) User preferences
B) Facts and rules
C) Graph edges
D) Sensor data
Answer: B) Facts and rules

Explanation: It’s the core repository of domain knowledge used for reasoning.

---

59. Forward chaining starts from ___.
A) Goals and moves backward
B) Known facts and moves forward
C) Heuristic guesses
D) Random sampling
Answer: B) Known facts and moves forward
Explanation: It applies rules to known data to derive new information.

---

60. Backward chaining starts from ___.
A) Facts
B) Hypotheses or goals
C) Sensors
D) Rules only
Answer: B) Hypotheses or goals
Explanation: It works backward to check if facts support a desired conclusion.

---

Excellent  — here's the continuation of Topic 1 – General AI Concepts (Q61–Q100) in the same clear "copy-paste" text format:

---

61. Knowledge representation can use which method?
A) Frames and semantic networks
B) Convolutional filters
C) Recurrent loops
D) Gradient descent
Answer: A) Frames and semantic networks
Explanation: Frames and semantic networks organize concepts and their relations for reasoning.

---

62. Ontologies in AI describe ___.
A) Low-level data features
B) The formal relationships between concepts
C) Visual objects
D) Neural connections
Answer: B) The formal relationships between concepts

Explanation: Ontologies define shared vocabularies and class hierarchies for knowledge exchange.

---

63. A production rule in expert systems has the form ___.
A) Input → Output
B) IF condition THEN action
C) Data → Model
D) Cause → Effect only
Answer: B) IF condition THEN action
Explanation: Production rules encode reasoning steps used by the inference engine.

---

64. A utility function in AI expresses ___.
A) Execution time
B) The desirability of states or outcomes
C) Memory usage
D) Probability of failure
Answer: B) The desirability of states or outcomes
Explanation: Utility quantifies preferences, enabling rational decision-making under uncertainty.

---

65. In game trees, the Minimax algorithm assumes ___.

A) Random opponents

B) Optimal play by both sides

C) Greedy player only

D) Infinite depth always

Answer: B) Optimal play by both sides

Explanation: Minimax computes moves that minimize the possible loss for a worst-case opponent.

---

66. Alpha–Beta pruning improves Minimax by ___.

A) Changing the evaluation function

B) Eliminating branches that cannot affect the final decision

C) Doubling tree depth

D) Averaging utilities

Answer: B) Eliminating branches that cannot affect the final decision

Explanation: It skips evaluation of moves that are provably irrelevant, improving efficiency.

---

67. A heuristic function provides ___.

A) Exact cost from start to goal
B) An estimate of cost to reach goal
C) Random guidance
D) Total path length
Answer: B) An estimate of cost to reach goal
Explanation: Heuristics guide informed search algorithms like A* toward promising paths.

---

68. Admissible heuristics guarantee ___.
A) Fastest runtime
B) Optimal solutions
C) Minimum branching factor
D) Minimal memory
Answer: B) Optimal solutions
Explanation: Because admissible heuristics never overestimate, they ensure A* finds the best path.

---

69. Constraint satisfaction problems (CSPs) can be solved by ___.
A) Backtracking with heuristics
B) Reinforcement learning
C) Decision trees
D) Gradient descent

Answer: A) Backtracking with heuristics
Explanation: CSP solvers use variable-ordering and consistency checks to prune invalid choices.

---

70. Arc consistency ensures that ___.
A) Every variable has at least one consistent value
B) Graph is connected
C) Search tree is complete
D) Path cost is minimal
Answer: A) Every variable has at least one consistent value
Explanation: Arc consistency removes inconsistent domain values in binary constraints.

---

71. Which data structure is used in BFS?
A) Stack
B) Queue
C) Priority queue
D) Tree
Answer: B) Queue
Explanation: BFS expands nodes in FIFO order for level-wise exploration.

---

72. Which data structure is used in DFS?

A) Queue

B) Stack

C) Heap

D) List

Answer: B) Stack

Explanation: DFS explores by pushing and popping nodes from a stack (LIFO order).

---

73. Greedy best-first search expands nodes based on ___.

A) Depth level

B) Path cost only

C) Heuristic estimate h(n)

D) Random choice

Answer: C) Heuristic estimate h(n)

Explanation: It selects nodes appearing closest to the goal according to the heuristic.

---

74. Uniform-cost search expands nodes by ___.

A) Smallest path cost g(n)

B) Highest heuristic

C) Random order

D) Breadth-level

Answer: A) Smallest path cost g(n)

Explanation: UCS guarantees optimality when step costs are positive.

---

75. The evaluation function f(n)=g(n)+h(n) is used in ___.

A) A* search

B) Hill climbing

C) Beam search

D) Genetic algorithms

Answer: A) A* search

Explanation: A* combines actual cost (g) and heuristic estimate (h) to rank nodes.

---

76. Hill-climbing search may get stuck in ___.

A) Global optima

B) Local maxima or plateaus

C) Infinite loops

D) Heuristic updates

Answer: B) Local maxima or plateaus

Explanation: It only moves to better neighbors, so it can stop at suboptimal points.

---

77. Simulated annealing avoids local maxima by ___.

A) Adding random noise to weights

B) Accepting worse moves with decreasing probability

C) Increasing temperature continuously

D) Restarting search each time

Answer: B) Accepting worse moves with decreasing probability

Explanation: The “temperature” controls exploration, reducing over time.

---

78. Beam search differs from BFS because it ___.

A) Expands all nodes

B) Keeps only a fixed number of best candidates

C) Works without heuristics

D) Always finds optimal solution

Answer: B) Keeps only a fixed number of best candidates

Explanation: Beam width limits memory and computation using heuristic scores.

---

79. Genetic algorithms use ___.

A) Backtracking

B) Mutation, crossover, and selection

C) Neural activations

D) Logical inference

Answer: B) Mutation, crossover, and selection

Explanation: They simulate evolution to find optimal or near-optimal solutions.

---

80. Fitness function in genetic algorithms measures ___.

A) Randomness

B) Solution quality

C) Diversity

D) Reproduction count

Answer: B) Solution quality

Explanation: It determines how well each candidate meets problem objectives.

---

81. In fuzzy logic, a membership function defines ___.

A) Exact truth values

B) Degree of belonging of an element to a set

C) Probability of outcome

D) Weight initialization

Answer: B) Degree of belonging of an element to a set

Explanation: It maps input values to membership grades between 0 and 1.

---

82. Defuzzification converts ___.

A) Crisp values to fuzzy

B) Fuzzy results back to crisp outputs

C) Probabilities to weights

D) Boolean logic

Answer: B) Fuzzy results back to crisp outputs

Explanation: It produces actionable numeric values from fuzzy inference.

---

83. A knowledge graph consists of ___.

A) Images and pixels

B) Entities and relationships

C) Programs and files

D) Layers and nodes

Answer: B) Entities and relationships

Explanation: Knowledge graphs link data via nodes (entities) and edges (relations).

---

84. RDF and OWL are standards for ___.

A) Deep learning

B) Knowledge representation on the Semantic Web
C) Image processing
D) Data compression
Answer: B) Knowledge representation on the Semantic Web
Explanation: RDF and OWL define structured, machine-understandable data formats.

---

85. Machine perception refers to ___.
A) High-level reasoning
B) Sensing and interpreting environment information
C) Logical deduction
D) Text translation
Answer: B) Sensing and interpreting environment information
Explanation: It covers computer vision, speech, and other sensory modalities.

---

86. Natural Language Processing (NLP) involves ___.
A) Image enhancement
B) Understanding and generating human language
C) Reinforcement signals
D) Logical resolution
Answer: B) Understanding and generating human language
Explanation: NLP enables AI to process text and speech meaningfully.

---

87. Tokenization in NLP means ___.

A) Assigning parts of speech

B) Splitting text into words or subwords

C) Translating languages

D) Counting frequencies

Answer: B) Splitting text into words or subwords

Explanation: Tokenization prepares raw text for further linguistic analysis.

---

88. Named Entity Recognition (NER) identifies ___.

A) Sentiment polarity

B) People, places, organizations in text

C) Part-of-speech tags

D) Coreference chains

Answer: B) People, places, organizations in text

Explanation: NER locates and classifies proper nouns into predefined categories.

---

89. Sentiment analysis aims to ___.

A) Detect emotions or opinions in text

B) Parse syntax trees

C) Generate embeddings

D) Recognize entities

Answer: A) Detect emotions or opinions in text

Explanation: It classifies text as positive, negative, or neutral.

---

90. Word embeddings capture ___.

A) Syntactic grammar only

B) Semantic similarity between words

C) Random distributions

D) Logical rules

Answer: B) Semantic similarity between words

Explanation: Similar words have closer vector representations in embedding space.

---

91. Speech recognition converts ___.

A) Text to speech

B) Speech to text

C) Text to numbers

D) Images to text

Answer: B) Speech to text

Explanation: ASR (Automatic Speech Recognition) transcribes spoken input into text.

---

92. Computer vision tasks include ___.
A) Image classification and object detection
B) Text summarization
C) Data encryption
D) Audio synthesis
Answer: A) Image classification and object detection
Explanation: Vision models interpret visual data for recognition or segmentation.

---

93. Object detection outputs ___.
A) Single labels
B) Bounding boxes with class labels
C) Sentiment scores
D) Hidden states
Answer: B) Bounding boxes with class labels
Explanation: Detection identifies what and where objects appear in an image.

---

94. Semantic segmentation assigns ___.
A) One label per image

B) A class label to each pixel

C) A color histogram

D) An embedding vector

Answer: B) A class label to each pixel

Explanation: It provides dense per-pixel classification for visual understanding.

---

95. Reinforcement learning problems are modeled as ___.

A) Markov Decision Processes (MDP)

B) Hidden Markov Models

C) Linear systems

D) Regression tasks

Answer: A) Markov Decision Processes (MDP)

Explanation: MDPs define states, actions, rewards, and transitions for agent learning.

---

96. The exploration–exploitation dilemma concerns ___.

A) Choosing between learning new actions and using known good ones

B) Overfitting

C) Regularization

D) Random sampling only

Answer: A) Choosing between learning new actions and using known good ones

Explanation: Balancing discovery of new strategies and maximizing reward is key in RL.

---

97. The discount factor γ in RL determines ___.
A) Learning rate
B) Importance of future rewards
C) Reward variance
D) Exploration rate
Answer: B) Importance of future rewards
Explanation: Lower γ emphasizes immediate rewards; higher γ values long-term returns.

---

98. Ethics in AI mainly focus on ___.
A) Computation speed
B) Fairness, transparency, and accountability
C) Optimization accuracy
D) Dataset size
Answer: B) Fairness, transparency, and accountability
Explanation: Ethical AI seeks to avoid bias and ensure responsible deployment.

---

99. Explainable AI (XAI) aims to ___.
A) Hide model decisions

B) Make AI decisions understandable to humans
C) Increase model depth
D) Replace humans entirely
Answer: B) Make AI decisions understandable to humans
Explanation: XAI techniques reveal reasoning behind predictions for trust and compliance.

---

100. The ultimate goal of Artificial Intelligence is ___.
A) Automating mathematical operations
B) Creating systems that exhibit intelligent behavior
C) Building faster computers
D) Eliminating all human jobs
Answer: B) Creating systems that exhibit intelligent behavior
Explanation: AI seeks to design machines that can perceive, reason, learn, and act autonomously.

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