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|---|---|
| **Started on** | Wednesday, 4 June 2025, 11:24 AM |
| **State** | Finished |
| **Completed on** | Wednesday, 4 June 2025, 11:43 AM |
| **Time taken** | 19 mins 12 secs |
| **Marks** | 21.00/30.00 |
| **Grade** | **70.00** out of 100.00 |

**Question 1**

Complete

Mark 1.00 out of 1.00

Which data structure allows insertion and deletion from both ends?

- a. Priority Queue
- b. Stack
- c. Queue
- d. Deque

**Question 2**

Complete

Mark 0.00 out of 1.00

Which technique is used to prevent exploding gradients in RNNs?

- a. Batch normalization
- b. Dropout
- c. Weight decay
- d. Gradient clipping

**Question 3**

Complete

Mark 0.00 out of 1.00

What does PCA (Principal Component Analysis) aim to achieve?

- a. Normalize features
- b. Train decision trees
- c. Maximize variance in lower dimensions
- d. Increase dimensionality

**Question 4**

Complete

Mark 1.00 out of 1.00

Which component is not part of a Turing Machine?

- a. Head
- b. Tape
- c. Stack
- d. State register

**Question 5**

Complete

Mark 1.00 out of 1.00

Which of the following is NOT a valid kernel function in SVM?

- a. Linear Kernel
- b. Gaussian Kernel
- c. Step Kernel
- d. Polynomial Kernel

**Question 6**

Complete

Mark 0.00 out of 1.00

What is a major limitation of convolutional neural networks (CNNs)?

- a. Overfitting on small datasets
- b. Lack of parallelism
- c. Inability to capture spatial hierarchies
- d. Inefficiency in handling sequential data

**Question 7**

Complete

Mark 1.00 out of 1.00

What does the term “curse of dimensionality” refer to in ML?

- a. Data sparsity in high-dimensional spaces
- b. Limited model capacity
- c. Difficulty in training deep models
- d. Increased computation time

**Question 8**

Complete

Mark 0.00 out of 1.00

Which algorithm is used to find strongly connected components in a directed graph?

- a. Prim's Algorithm
- b. Kosaraju's Algorithm
- c. Kruskal's Algorithm
- d. Bellman-Ford Algorithm

**Question 9**

Complete

Mark 1.00 out of 1.00

What is the role of the 'learning rate' in gradient descent?

- a. Controls model complexity
- b. Determines output layer depth
- c. Regularizes feature importance
- d. Determines step size during optimization

**Question 10**

Complete

Mark 1.00 out of 1.00

What is the primary objective of feature scaling in ML?

- a. Eliminate irrelevant features
- b. Reduce memory usage
- c. Improve model interpretability
- d. Ensure features contribute equally during training

**Question 11**

Complete

Mark 0.00 out of 1.00

What is the primary use of the ELBO (Evidence Lower Bound) in VAEs?

- a. Regularize output probabilities
- b. Estimate weight gradients
- c. Maximize mutual information
- d. Optimize a generative model

**Question 12**

Complete

Mark 1.00 out of 1.00

What is the best-case time complexity for inserting in a heap?

- a. O(1)
- b. O(n log n)
- c. O(log n)
- d. O👎

**Question 13**

Complete

Mark 0.00 out of 1.00

In a relational database, which normal form eliminates transitive dependencies?

- a. 1NF
- b. 3NF
- c. 2NF
- d. BCNF

**Question 14**

Complete

Mark 1.00 out of 1.00

What is the primary function of the attention mechanism in Transformers?

- a. Reduce gradient vanishing
- b. Pooling feature maps
- c. Increase depth of networks
- d. Capture long-range dependencies

**Question 15**

Complete

Mark 1.00 out of 1.00

In the context of Operating Systems, what is a "race condition"?

- a. When processes terminate unexpectedly
- b. When multiple processes attempt to modify the same data concurrently
- c. When the CPU switches tasks too quickly
- d. When a process is stuck in an infinite loop

**Question 16**

Complete

Mark 1.00 out of 1.00

What does the Big-O notation O(n log n) represent in divide and conquer algorithms?

- a. Average-case performance
- b. Linear performance
- c. Logarithmic performance
- d. Sub-linear performance

**Question 17**

Complete

Mark 1.00 out of 1.00

What is backpropagation used for in neural networks?

- a. Initializing weights
- b. Computing loss
- c. Updating weights via gradients
- d. Performing forward pass

**Question 18**

Complete

Mark 1.00 out of 1.00

What is the purpose of a softmax layer in a neural network?

- a. Convert logits into probabilities
- b. Prevent overfitting
- c. Normalize gradients
- d. Introduce sparsity

**Question 19**

Complete

Mark 1.00 out of 1.00

What is the main advantage of using dropout in neural networks?

- a. Prevent overfitting
- b. Faster training
- c. Better weight initialization
- d. Easier gradient computation

**Question 20**

Complete

Mark 1.00 out of 1.00

Which AI concept is best associated with “exploration vs exploitation”?

- a. Supervised Learning
- b. Unsupervised Learning
- c. Reinforcement Learning
- d. Self-supervised Learning

**Question 21**

Complete

Mark 1.00 out of 1.00

Which type of neural network is primarily used for sequence modeling?

- a. Autoencoder
- b. GAN
- c. CNN
- d. RNN

**Question 22**

Complete

Mark 1.00 out of 1.00

Which of the following loss functions is most commonly used in classification problems?

- a. Hinge Loss
- b. Cross-Entropy
- c. L1 Loss
- d. Mean Squared Error

**Question 23**

Complete

Mark 1.00 out of 1.00

What is the time complexity of searching for an element in a balanced Binary Search Tree (BST)?

- a. O(1)
- b. O(n log n)
- c. O(log n)
- d. O( n )

**Question 24**

Complete

Mark 1.00 out of 1.00

Which of the following sorting algorithms has the best worst-case time complexity?

- a. Merge Sort
- b. Insertion Sort
- c. Heap Sort
- d. Quick Sort

**Question 25**

Complete

Mark 1.00 out of 1.00

What does the Bellman Equation define in Reinforcement Learning?

- a. The reward function
- b. The value of a state under a policy
- c. The optimal policy
- d. The action set

**Question 26**

Complete

Mark 1.00 out of 1.00

Which activation function can cause the vanishing gradient problem?

- a. Sigmoid
- b. ReLU
- c. Softmax
- d. Tanh

**Question 27**

Complete

Mark 0.00 out of 1.00

Which scheduling algorithm may lead to starvation in OS?

- a. Shortest Job First
- b. Priority Scheduling
- c. First-Come-First-Serve
- d. Round Robin

**Question 28**

Complete

Mark 1.00 out of 1.00

Which of the following is a non-parametric model?

- a. K-Nearest Neighbors
- b. Naive Bayes
- c. Linear Regression
- d. Logistic Regression

**Question 29**

Complete

Mark 0.00 out of 1.00

In graph theory, what is the minimum number of colors needed for a graph with chromatic number k?

- a. Depends on graph size
- b. $\log_2(k)$
- c. k
- d. $k^2$

**Question 30**

Complete

Mark 0.00 out of 1.00

Which of the following problems is undecidable?

- a. Sorting a list
- b. Finding the shortest path
- c. Graph Coloring
- d. Halting Problem