Started on	Wednesday, 4 June 2025, 3:25 PM
State	Finished
Completed on	Wednesday, 4 June 2025, 3:39 PM
Time taken	13 mins 43 secs
Marks	20.00/30.00
Grade	**66.67** out of 100.00

Question 1

Complete

Mark 0.00 out of 1.00

Which technique is used to prevent exploding gradients in RNNs?

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

Question 2

Complete

Mark 0.00 out of 1.00

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

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

Question 3

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 4

Complete

Mark 1.00 out of 1.00

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

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

Question 5

Complete

Mark 1.00 out of 1.00

Which of the following problems is undecidable?

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

Question 6

Complete

Mark 1.00 out of 1.00

What is backpropagation used for in neural networks?

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

Question 7

Complete

Mark 1.00 out of 1.00

Which data structure allows insertion and deletion from both ends?

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

Question 8

Complete

Mark 1.00 out of 1.00

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

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

Question 9

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

Question 10

Complete

Mark 1.00 out of 1.00

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

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

Question 11

Complete

Mark 0.00 out of 1.00

Which of the following is a non-parametric model?

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

Question 12

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 13

Complete

Mark 1.00 out of 1.00

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

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

Question 14

Complete

Mark 1.00 out of 1.00

Which scheduling algorithm may lead to starvation in OS?

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

Question 15

Complete

Mark 0.00 out of 1.00

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

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

Question 16

Complete

Mark 0.00 out of 1.00

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

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

Question 17

Complete

Mark 1.00 out of 1.00

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

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

Question 18

Complete

Mark 0.00 out of 1.00

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

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

Question 19

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. Determines step size during optimization
- d. Regularizes feature importance

Question 20

Complete

Mark 1.00 out of 1.00

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

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

Question 21

Complete

Mark 1.00 out of 1.00

Which component is not part of a Turing Machine?

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

Question 22

Complete

Mark 1.00 out of 1.00

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

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

Question 23

Complete

Mark 0.00 out of 1.00

What is the primary objective of feature scaling in ML?

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

Question 24

Complete

Mark 0.00 out of 1.00

Which activation function can cause the vanishing gradient problem?

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

Question 25

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

Question 26

Complete

Mark 1.00 out of 1.00

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

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

Question 27

Complete

Mark 1.00 out of 1.00

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

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

Question 28

Complete

Mark 1.00 out of 1.00

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

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

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

Question 30

Complete

Mark 0.00 out of 1.00

What does the Bellman Equation define in Reinforcement Learning?

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