| | |
|---|---|
| **Started on** | Wednesday, 4 June 2025, 3:25 PM |
| **State** | Finished |
| **Completed on** | Wednesday, 4 June 2025, 3:39 PM |
| **Time taken** | 14 mins 32 secs |
| **Marks** | 24.00/30.00 |
| **Grade** | **80.00** out of 100.00 |

**Question 1**

Complete

Mark 1.00 out of 1.00

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

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

**Question 2**

Complete

Mark 1.00 out of 1.00

Which scheduling algorithm may lead to starvation in OS?

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

**Question 3**

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. Sub-linear performance
- c. Linear performance
- d. Logarithmic performance

**Question 4**

Complete

Mark 0.00 out of 1.00

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

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

**Question 5**

Complete

Mark 0.00 out of 1.00

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

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

**Question 6**

Complete

Mark 0.00 out of 1.00

Which technique is used to prevent exploding gradients in RNNs?

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

**Question 7**

Complete

Mark 1.00 out of 1.00

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

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

**Question 8**

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. Normalize gradients
- c. Introduce sparsity
- d. Prevent overfitting

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

**Question 10**

Complete

Mark 0.00 out of 1.00

Which component is not part of a Turing Machine?

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

**Question 11**

Complete

Mark 1.00 out of 1.00

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

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

**Question 12**

Complete

Mark 1.00 out of 1.00

What is backpropagation used for in neural networks?

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

**Question 13**

Complete

Mark 1.00 out of 1.00

Which data structure allows insertion and deletion from both ends?

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

**Question 14**

Complete

Mark 1.00 out of 1.00

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

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

**Question 15**

Complete

Mark 1.00 out of 1.00

What does the Bellman Equation define in Reinforcement Learning?

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

**Question 16**

Complete

Mark 1.00 out of 1.00

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

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

**Question 17**

Complete

Mark 1.00 out of 1.00

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

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

**Question 18**

Complete

Mark 1.00 out of 1.00

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

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

**Question 19**

Complete

Mark 0.00 out of 1.00

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

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

**Question 20**

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

**Question 21**

Complete

Mark 1.00 out of 1.00

Which activation function can cause the vanishing gradient problem?

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

**Question 22**

Complete

Mark 0.00 out of 1.00

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

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

**Question 23**

Complete

Mark 1.00 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 24**

Complete

Mark 1.00 out of 1.00

Which of the following is a non-parametric model?

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

**Question 25**

Complete

Mark 1.00 out of 1.00

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

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

**Question 26**

Complete

Mark 1.00 out of 1.00

What is the primary objective of feature scaling in ML?

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

**Question 27**

Complete

Mark 1.00 out of 1.00

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

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

**Question 28**

Complete

Mark 1.00 out of 1.00

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

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

**Question 29**

Complete

Mark 1.00 out of 1.00

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

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

**Question 30**

Complete

Mark 1.00 out of 1.00

Which of the following problems is undecidable?

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