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Grade	9.00 out of 10.00 (90%)

Question 1

Incorrect

Mark 0.00 out of 1.00

In a decision tree, what is typically represented by a node?

- ☐ a. A decision rule
- ☒ b. A feature or attribute ✖
- ☐ c. A probability distribution
- ☐ d. A class label or target variable

The correct answer is: A decision rule

Question 2

Correct

Mark 1.00 out of 1.00

What is pruning in the context of decision trees?

- ☐ a. The process of selecting the best split at each node
- ☐ b. The process of adding more branches to the tree
- ☐ c. The process of growing the tree until it reaches maximum depth
- ☒ d. The process of removing unnecessary branches from the tree ✔

The correct answer is: The process of removing unnecessary branches from the tree



Question 3

Correct

Mark 1.00 out of 1.00

What is the complexity of predicting a target value for a new instance using a decision tree with n nodes and d depth?

- ☐ a. $O(1)$
- ☐ b. $O(n)$
- ☐ c. $O(\log n)$
- ☒ d. $O(d)$ ✓

The correct answer is: $O(d)$

Question 4

Correct

Mark 1.00 out of 1.00

Which of the following techniques can help prevent overfitting in decision trees?

- ☐ a. Increasing the maximum depth of the tree
- ☐ b. Increasing the impurity threshold for splitting nodes
- ☐ c. Decreasing the minimum samples required to split a node
- ☒ d. Decreasing the number of features used for splitting ✓

The correct answer is: Decreasing the number of features used for splitting

Question 5

Correct

Mark 1.00 out of 1.00

Which of the following algorithms is commonly used to build decision trees?

- ☐ a. Support Vector Machine
- ☒ b. ID3 ✓
- ☐ c. K-Means Clustering
- ☐ d. K-Nearest Neighbors

The correct answer is: ID3



Question 6

Correct

Mark 1.00 out of 1.00

What is the objective of a decision tree algorithm during the training phase?

- ☐ a. To maximize the entropy of the tree
- ☒ b. To minimize the impurity of nodes ✓
- ☐ c. To minimize the number of nodes in the tree
- ☐ d. To maximize the number of decision nodes in the tree

The correct answer is: To minimize the impurity of nodes

Question 7

Correct

Mark 1.00 out of 1.00

In a decision tree, what is the purpose of the root node?

- ☒ a. It splits the dataset into subsets based on a feature ✓
- ☐ b. It is the node with the highest entropy
- ☐ c. It is the node with the highest information gain
- ☐ d. It contains the final decision of the tree

The correct answer is: It splits the dataset into subsets based on a feature

Question 8

Correct

Mark 1.00 out of 1.00

What is the maximum number of splits that can be made in a decision tree with 10 leaf nodes?

- ☒ a. 9 ✓
- ☐ b. 11
- ☐ c. 20
- ☐ d. 10

The correct answer is: 9



Question 9

Correct

Mark 1.00 out of 1.00

Which of the following statements about decision trees is FALSE?

- ☐ a. Decision trees can handle both numerical and categorical data
- ☒ b. Decision trees can guarantee optimal solution ✓
- ☐ c. Decision trees are robust to outliers
- ☐ d. Decision trees are interpretable and easy to visualize

The correct answer is: Decision trees can guarantee optimal solution

Question 10

Correct

Mark 1.00 out of 1.00

Which algorithm is commonly used for splitting nodes in decision trees to handle regression tasks?

- ☒ a. Mean squared error ✓
- ☐ b. Entropy
- ☐ c. Information gain
- ☐ d. Gini impurity

The correct answer is: Mean squared error

