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Time taken	9 mins 37 secs
Marks	20.00/20.00
Grade	**100.00** out of 100.00

Question 1
Complete
Mark 1.00 out of 1.00

Which split gives the highest Information Gain?

- a. Parent entropy = 1, child entropy = 0.7
- b. Parent entropy = 1, child entropy = 0.4
- c. Parent entropy = 1, child entropy = 0.9
- d. Parent entropy = 1, child entropy = 0.95

Question 2
Complete
Mark 1.00 out of 1.00

Which impurity measure is used in the CART algorithm?

- a. Chi-square
- b. Entropy
- c. Information Gain
- d. Gini Index

Question 3
Complete
Mark 1.00 out of 1.00

Which attribute is selected as the root node in ID3 algorithm?

- a. Attribute with minimum Gini Index
- b. Attribute with maximum Information Gain
- c. Attribute with maximum variance
- d. Attribute with minimum entropy

Question 4
Complete
Mark 1.00 out of 1.00

A dataset has entropy 0.8. After a split, one child has entropy 0 and the other has entropy 0.8 with equal sizes. What is the Information Gain?

- a. 0.0
- b. 0.4
- c. 0.2
- d. 0.8

Question 5
Complete
Mark 1.00 out of 1.00

Information Gain is calculated as:

- a. Child entropy − Parent entropy
- b. Child entropy ÷ Parent entropy
- c. Parent entropy + Child entropy
- d. Parent entropy − Child entropy

Question 6
Complete
Mark 1.00 out of 1.00

Which of the following is a disadvantage of Decision Trees?

- a. Can overfit the data
- b. Works with categorical data
- c. Easy to interpret
- d. Requires feature scaling

Question 7
Complete
Mark 1.00 out of 1.00

If a dataset has entropy 0.97 and splitting on attribute A reduces it to 0.50, while attribute B reduces it to 0.30, which attribute is chosen?

- a. Attribute B
- b. Both are equal
- c. Attribute A
- d. None

Question 8
Complete
Mark 1.00 out of 1.00

Information Gain is maximum when:

- a. Parent and child entropy are equal
- b. Reduction in entropy is maximum
- c. Child entropy is high
- d. Parent entropy is low

Question 9
Complete
Mark 1.00 out of 1.00

The entropy of a dataset is 1. After splitting on an attribute, the weighted entropy becomes 0.6. What is the Information Gain?

- a. 1.6
- b. 0.6
- c. 0.2
- d. 0.4

Question 10
Complete
Mark 1.00 out of 1.00

A dataset contains 10 positive and 10 negative samples. What is the entropy of the dataset?

- [x] a. 1
- [ ] b. 0
- [ ] c. 2
- [ ] d. 0.5

Question 11
Complete
Mark 1.00 out of 1.00

A dataset has 6 positive and 2 negative samples. What is the entropy (approx.)?

- [ ] a. 0.25
- [ ] b. 0.50
- [x] c. 0.81
- [ ] d. 1.00

Question 12
Complete
Mark 1.00 out of 1.00

A dataset has 75% of class Yes and 25% of class No. The entropy of the dataset is closest to:

- [x] a. 0.81
- [ ] b. 0.00
- [ ] c. 0.94
- [ ] d. 0.50

Question 13
Complete
Mark 1.00 out of 1.00

What happens if Information Gain is zero for an attribute?

- [ ] a. It is the best split
- [ ] b. It increases accuracy
- [x] c. It does not reduce entropy
- [ ] d. It creates more branches

Question 14
Complete
Mark 1.00 out of 1.00

Which node represents the final output in a Decision Tree?

- [ ] a. Decision node
- [ ] b. Internal node
- [x] c. Leaf node
- [ ] d. Root node

Question 15
Complete
Mark 1.00 out of 1.00

When is entropy equal to zero?

- [x] a. When all samples belong to one class
- [ ] b. When classes are evenly distributed
- [ ] c. When data is completely random
- [ ] d. When there are multiple classes

Question 16
Complete
Mark 1.00 out of 1.00

What type of learning is a Decision Tree?

- [ ] a. Unsupervised learning
- [ ] b. Reinforcement learning
- [ ] c. Semi-supervised learning
- [x] d. Supervised learning

Question 17
Complete
Mark 1.00 out of 1.00

Which measure is used to calculate Information Gain?

- [ ] a. Standard deviation
- [ ] b. Variance
- [ ] c. Gini Index
- [x] d. Entropy

Question 18
Complete
Mark 1.00 out of 1.00

A Decision Tree that predicts continuous values is called:

- [x] a. Regression Tree
- [ ] b. Binary Tree
- [ ] c. Classification Tree
- [ ] d. Pruned Tree

Question 19
Complete
Mark 1.00 out of 1.00

If the parent entropy is 0.94 and the weighted child entropy is 0.94, the Information Gain is:

- [ ] a. 0.94
- [ ] b. -0.94
- [ ] c. 1
- [x] d. 0

Question 20

Complete

Mark 1.00 out of 1.00

If all instances in a node belong to the same class, the entropy of that node is:

- a. 0.5
- b. 1
- c. 0
- d. -1