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Grade	6.25 out of 10.00 (62.5%)

Question 1

Correct

Mark 1.00 out of 1.00

In Naive Bayes classification, what is the assumption made regarding the relationship between features?

- a. They are mutually exclusive
- b. They are linearly correlated
- c. They are conditionally independent given the class ✓
- d. They are equally important

The correct answer is: They are conditionally independent given the class

Question 2

Correct

Mark 1.00 out of 1.00

What is the time complexity of A* Search with an admissible heuristic?

- a. O(b^m)
- b. O(b^(d/2))
- c. It depends on the heuristic ✓
- d. O(b^d)

The correct answer is: It depends on the heuristic

Question 3

Correct

Mark 1.00 out of 1.00

How does iterative deepening depth-first search (IDDFS) combine the advantages of BFS and DFS?

- ○ a.   It is always faster than both BFS and DFS
- ◉ b.   It has the memory efficiency of DFS and the completeness of BFS ✓
- ○ c.   It guarantees finding the optimal solution
- ○ d.   It explores nodes in a non-linear order

The correct answer is: It has the memory efficiency of DFS and the completeness of BFS

Question 4

Incorrect

Mark 0.00 out of 1.00

What is the primary disadvantage of A* Search compared to other informed search algorithms?

- ◉ a.   It is not guaranteed to find the optimal solution ✗
- ○ b.   It requires more memory
- ○ c.   It does not support heuristics estimates
- ○ d.   It is computationally expensive

The correct answer is: It is computationally expensive

Question 5

Correct

Mark 1.00 out of 1.00

Which of the following is NOT a desiered property of a good heuristic function in A* Search?

- ◉ a.   Exhaustiveness ✓
- ○ b.   Admissibility
- ○ c.   Consistency
- ○ d.   Monotonicity

The correct answer is: Exhaustiveness

Question 6

Correct

Mark 1.00 out of 1.00

In Uniform Cost Search (UCS), if there are two paths to the same node with different costs, which path will the algorithm choose?

○ a.   It depends on the implementation of the algorithm

◉ b.   The path with the lowest path cost ✓

○ c.   The path with the highest path cost

○ d.   The path with the lowest heuristic value

The correct answer is: The path with the lowest path cost

Question 7

Partially correct

Mark 0.25 out of 1.00

Which approach is commonly used to handle continuous features in Naive Bayes classification?

◉ a.   Discretization ☑

○ b.   Kernel density estimation

○ c.   Binning

○ d.   Gaussian distribution

The correct answer is: Gaussian distribution

Question 8

Correct

Mark 1.00 out of 1.00

In Naive Bayes classification, what is the purpose of the maximum likelihood estimation?

○ a.   To calculate prior probabilities

○ b.   To optimize runtime

○ c.   To estimate the probability of each class

◉ d.   To estimate the probability distribution of each feature given each class ✓

The correct answer is: To estimate the probability distribution of each feature given each class

Question 9

Incorrect

Mark 0.00 out of 1.00

What is the primary limitation of using BFS in a search problem with infinite-depth search space?

- ○ a.   It may never terminate if the solution is not found
- ○ b.   It is not optimal
- ○ c.   It is not complete
- ◉ d.   It requires exponential memory ✕

The correct answer is: It is not complete

Question 10

Incorrect

Mark 0.00 out of 1.00

In Naive Bayes classification, if a categorical feature has a large number of categories, what problem might arise?

- ◉ a.   Sparsity ✕
- ○ b.   Overfitting
- ○ c.   Underfitting
- ○ d.   None of the above

The correct answer is: None of the above