CS7641 ML Practice Quiz

Module SL 10: Bayesian Inference

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Question 1

What is the primary purpose of Bayesian Networks in machine learning?
A. To simplify complex calculations by using linear algorithms.
B. To represent and manipulate probabilistic quantities over complex spaces.
C. To directly calculate joint distributions without any form of representation.
D. To provide a deterministic approach to machine learning problems.
E. To eliminate the need for conditional probabilities in computations.

Question 2

In Bayesian Inference, what does a joint distribution represent?
A. The correlation between different variables in a dataset.
B. The probability of various combinations of events occurring.
C. A deterministic relationship between variables.
D. The frequency of singular events in isolation.
E. The probability of an event occurring in the absence of other events.

Question 3

How does conditional independence affect the representation of variables in Bayesian Networks?
A. It indicates that the value of one variable completely depends on another variable.
B. It shows that variables are independent of each other regardless of other variables.
C. It means the probability distribution of a variable X is independent of variable Y, given variable Z.
D. It removes the need to consider any dependencies between variables.
E. It suggests that variables are always dependent, and their relationships are deterministic.

Question 4

What is the significance of Naive Bayes in Bayesian Inference?

A. It assumes that all variables are dependent on each other.

B. It relies on the assumption of conditional independence between attributes given the label for efficient classification.

C. Naive Bayes eliminates the need for probabilities in computations.

D. It is a method that only works with numerical data.

E. It focuses on complex computations rather than practicality.

Question 5

Why is sampling from a joint distribution important in Bayesian Inference?

A. It allows for the generation of values consistent with a given distribution and supports approximate inference.

B. Sampling is used primarily to simplify complex graphical representations.

C. It ensures the accuracy of the Bayesian network by verifying all possible combinations of variables.

D. Sampling is only used for visualizing data, not for computational purposes.

E. It is a process used to determine the exact probabilities of all variables without using Bayes' rule.

Answer Key

1. B
2. B
3. C
4. B
5. A