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Grade 18.00 out of 20.00 (90%)

Question 1

Correct

Mark 2.00 out of 2.00

A logistic regression model is used to predict customer churn (cancel service) based on monthly bill amount. The coefficient for the bill amount is -0.25. What does this negative value indicate?

- A. Customers with higher bills are more likely to churn
- B. The model cannot predict churn accurately.
- C. There is no relationship between bill amount and churn.
- D. Customers with higher bills are less likely to churn ✓

The correct answer is: Customers with higher bills are less likely to churn

Question 2

Incorrect

Mark 0.00 out of 2.00

A logistic regression model for loan approval has a coefficient of -0.12 for income. How does this value affect the probability of loan approval?

- A. The coefficient is positive, indicating income has no effect.
- B. A higher income increases the probability of loan approval.
- C. A higher income (positive value) leads to a lower probability.
- D. The coefficient alone doesn't provide enough information about the impact. ✗

The correct answer is: A higher income (positive value) leads to a lower probability.

Question 3

Correct

Mark 2.00 out of 2.00

Suppose, we are using Logistic regression model for n-class classification problem. In this case, we can use One-vs-rest method. Choose which of the following option is true regarding this?

- A. We need to fit n-1 models to classify into n classes
- B. We need to fit n model in n-class classification problem ✓
- C. We need to fit only 1 model to classify into n classes
- D. None of these

The correct answer is: We need to fit n model in n-class classification problem

Question 4

Correct

Mark 2.00 out of 2.00

The hypothesis is given by $h(x) = t + sx$. What are t and s?

- A. Value of $h(x)$ when x is 0, intercept along y-axis
- B. Intercept along the y-axis, the rate at which $h(x)$ changes with respect to x ✓
- C. The rate at which $h(x)$ changes with respect to x , intercept along the y-axis
- D. Value of $h(x)$ when x is 0, the rate at which $h(x)$ changes with respect to x

The correct answer is: Intercept along the y-axis, the rate at which $h(x)$ changes with respect to x

Question 5

Correct

Mark 2.00 out of 2.00

Logistic regression is most suitable for predicting:

- A. Continuous numerical values
- B. All types of variables, regardless of distribution
- C. The strength of the relationship between variables
- D. Discrete categorical outcomes ✓

The correct answer is: Discrete categorical outcomes

Question 6

Correct

Mark 2.00 out of 2.00

A hydrologist creates a model to predict the volume flow for a stream at a bridge crossing with a predictor variable of daily rainfall in inches.

$$\hat{y} = 1.6 + 29x$$

The y-intercept of 1.6 can be interpreted this way: On a day with no rainfall, there will be 1.6 gal. of water/min. flowing in the stream at that bridge crossing. The slope tells us that if it rained one inch that day the flow in the stream would increase by an additional 29 gal./min. If it rained 2 inches that day, the flow would increase by an additional 58 gal./min.

What would be the average stream flow if it rained 0.45 inches that day?

- A. 13.65 gal./min
- B. 14.65 gal./min. ✓
- C. 14.90 gal./min
- D. 14.65 gal./hr.

The correct answer is: 14.65 gal./min.

Question 7

Correct

Mark 2.00 out of 2.00

When interpreting logistic regression coefficients, a value closer to 0 indicates:

- A. A strong positive influence on the predicted probability.
- B. A weaker influence on the predicted probability. ✓
- C. The variable is not statistically significant.
- D. A negative relationship with the independent variable.

The correct answer is: A weaker influence on the predicted probability.

Question 8

Correct

Mark 2.00 out of 2.00

A regression analysis is inappropriate when

- A. the pattern of data points forms a reasonably straight line.
- B. there is heteroscedasticity in the scatter plot ✓
- C. you have two variables that are measured on an interval or ratio scale.
- D. you want to make predictions for one variable based on information about another variable.

The correct answer is: there is heteroscedasticity in the scatter plot

Question 9

Correct

Mark 2.00 out of 2.00

In a simple linear regression model (One independent variable), If we change the input variable by 1 unit. How much output variable will change?

- A. None of these
- B. By its Slope ✓
- C. No change
- D. A By 1

The correct answer is: By its Slope

Question 10

Correct

Mark 2.00 out of 2.00

If the values of two variables move in the opposite direction, _____.

- A. The correlation is said to be non-linear
- B. The correlation is said to be positive
- C. The correlation is said to be negative ✓
- D. The correlation is said to be linear

The correct answer is: The correlation is said to be negative

