AI Course

Chapter 4. Quiz

For instructors (with answers)

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1. What is not correct as an interpretation of the fit model in the following statistical analysis?

1. In statistical analysis, the one-sided test indicates that the null hypothesis for the parameter is H\_0 ∶ θ= θ\_0 and the alternative hypothesis can be defined as H\_1 ∶ θ< θ\_0 or H\_1 ∶ θ> θ\_0.
2. Type I error is the level of significance and it is an error that occurs when the true null hypothesis is rejected although the null hypothesis is true.
3. If the significance probability p is greater than the significance level α (p > α), the null hypothesis is rejected and the alternative hypothesis is adopted
4. In order to test the significance of the regression equation, a significance test should be performed on the slope of the regression equation, so the hypothesis is H\_0 ∶ β\_1= 0, H\_1 ∶ β\_1≠ 0 (where β\_1 is the slope of the regression equation).

Answer. 3

Explanation for Answer:

If the significance probability p is less than the significance level α (p<a), the null hypothesis is rejected and the alternative hypothesis is adopted.

2. Assume I get married and have three children, and the random variable X is the number of sons. What is the probability, mean, and variance of having two sons in this case? (In this case, the probability of having a son and daughter is assumed to be the same.)

Answer.

Represent X ~ B(3, ) and the probability of having two sons are f(2) =

E(x) = 3 =

V(x) = 3 =

3. When a random variable X follows which of the following is correct as a standardized expression?

1. (x – ) /
2. (x – ) /
3. (x – )

Answer. 2

4. If a sample of 100 people was selected to find out whether satisfaction with two subjects differed according to gender, which statistic would be the most appropriate in this case?

1. t
2. Z
3. F

Answer. 2

Explanation for Answer

For categorical variables, the analysis technique used to test the correlation between two variables is cross-over analysis, where the statistic is .

5. Among the students taking the class of Information and Statistics, 30 students were randomly selected. When investigating the average of their grades, the mean was 80 and the variance was 9. Find a 95% confidence interval for the average of their grades.

Answer.

The confidence interval of the sample mean for the population mean can be said to follow a normal distribution because the sample size is large in this case and the formula (, ,) can be substituted because a standard deviation value is given.

That is, (, ,)and