INFERENCE 12

In a one-sided hypothesis test for the mean, for a random sample of size 15 the *t*-score of the sample mean is 2.615. Is this significant at the 5 percent level? At the 1 percent level?

(A) Significant at the 1 percent level but not at the 5 percent level

(B) Significant at the 5 percent level but not at the 1 percent level

(C) Significant at both the 1 percent and 5 percent levels

(D) Significant at neither the 1 percent nor 5 percent levels

(E) Cannot be determined from the given information

INFERENCE 14

Which of the following are true statements?

I. Tests of significance (hypothesis tests) are designed to measure the strength of evidence against the null hypothesis.
II. A well-planned test of significance should result in a statement either that the null hypothesis is true or that it is false.
III. The null hypothesis is one-sided and expressed using either < or > if there is interest in deviations in only one direction.

(A) I and II (B) I and III (C) II and III (D) I, II, and III

(E) None of the above gives the complete set of true responses.

INFERENCE 18

To test whether husbands or wives have greater manual agility, an SRS of 50 married couples is chosen, and all 100 people are given a 1-minute period to find and place strangely shaped pegs into matching holes. What is the conclusion at a 5 percent significance level if a two-sample hypothesis test, H_0: $\mu_1 - \mu_2 = 0$, H_a: $\mu_1 - \mu_2 \neq 0$, results in a *P*-value of .15.

(A) The observed difference between husbands and wives is significant.

(B) The observed difference is not significant.

(C) A conclusion is not possible without knowing the mean number of pegs placed by husbands and by wives.

(D) A conclusion is not possible without knowing both the mean and standard deviation of the number of pegs placed by husbands and by wives.

(E) A two-sample hypothesis test should not be used in this example.

INFERENCE 19

When leaving for school on an overcast morning, you make a judgment on the null hypothesis: The weather will remain dry. What would the results be of Type I and Type II errors?

(A) Type I error: get drenched. Type II error: needlessly carry around an umbrella.

(B) Type I error: needlessly carry around an umbrella. Type II error: get drenched.

(C) Type I error: carry an umbrella, and it rains. Type II error: carry no umbrella, but weather remains dry.

(D) Type I error: get drenched. Type II error: carry no umbrella, but weather remains dry.

(E) Type I error: get drenched. Type II error: carry an umbrella, and it rains.

INFERENCE 24

Which of the following statements are true?

I. It is helpful to examine your data before deciding whether to use a one-sided or a two-sided hypothesis test.
II. If the *P*-value is .05, the probability that the null hypothesis is correct is .05.
III. The larger the *P*-value, the more evidence there is against the null hypothesis.

(A) I only (B) II only (C) III only (D) II and III

(E) None of the above gives the complete set of true responses.

INFERENCE 34

Which of the following are true statements?

I. The probability of a Type II error does not depend on the probability of a Type I error.
II. In conducting a hypothesis test, it is possible to simultaneously make both a Type I and Type II error.
III. A Type II error will result if one incorrectly assumes the data are normally distributed.

(A) I only (B) II only (C) III only (D) I, II, and III (E) None are true.

INFERENCE 38

Which of the following are true statements?

I. The *P*-value of a test is the probability of obtaining a result as extreme as the one obtained assuming the null hypothesis is true.
II. If the *P*-value for a test is .043, the probability that the null hypothesis is true is .043.
III. When the null hypothesis is rejected, it is because it is not true.

(A) I only (B) II only (C) III only (D) I and III

(E) None of the above gives the complete set of true responses.

INFERENCE 39

Consider a hypothesis test with H_0: $\mu = 58$ and H_a: $\mu > 58$. Which of the following choices of significance level and sample size results in the greatest power of the test when $\mu = 60$?

(A) $\alpha = 0.05$, $n = 20$

(B) $\alpha = 0.01$, $n = 20$

(C) $\alpha = 0.05$, $n = 25$

(D) $\alpha = 0.01$, $n = 25$

(E) There is no way of answering without knowing the strength of the given power.