Solutions to Quiz 5 (version A & B)

1. In hypothesis-testing analysis, a type I error occurs only if **[2 points]**
   A. the null hypothesis is rejected when it is true
   B. the null hypothesis is rejected when it is false
   C. the null hypothesis is not rejected when it is false
   D. the null hypothesis is not rejected when it is true
   ANSWER**:** A
2. In hypothesis-testing analysis, a type II error occurs only if **[2 points]**
   A. the null hypothesis is rejected when it is true
   B. the null hypothesis is rejected when it is false
   C. the null hypothesis is not rejected when it is false
   D. the null hypothesis is not rejected when it is true
   ANSWER**:** C
3. A statistical hypothesis is **[2 points]**
   A. a statement about the parameters of one or more populations.
   B. a statement about the test statistic or test statistics.
   C. a statement about the sample mean.
   D. a statement about the sample median.
   Answer: A
4. A statistical hypothesis is **[2 points]**
   A. a statement about the test statistic or test statistics.
   B. a statement about the sample variance.
   C. a statement about the parameters of one or more populations.
   D. a statement about the sample median.
   Answer: C
5. Hypothesis-testing procedures rely on the information **[2 points]**
   A. in a maximal likelihood estimator from the population of interest.
   B. in a random sample from the population of interest.
   C. in a parameter from the population of interest.
   D. in a point estimator from the population of interest.
   Answer: B
6. Hypothesis-testing procedures rely on the information **[2 points]**
   A. in a point estimator from the population of interest.
   B. in a maximal likelihood estimator from the population of interest.
   C. in a random sample from the population of interest.
   D. in a parameter from the population of interest.
   Answer: C
7. Suppose [l,u] is a 100(1-α)% confidence interval for the parameter θ. At the same time, we consider the test of size α with the hypothesis $H_0: \theta = \theta_0$ and $H_1: \theta \neq \theta_0$. Which one of the following is true? **[2 points]**

A. We will reject the H_0if and only if θ_0 is not in the 100(1-α)% confidence interval [l,u].
B. We will reject the H_0 if and only if θ_0 is in the 100(1-α)% confidence interval [l,u].
C. We can not make any decision, because there is no enough information.

Answer: A

8. Suppose [l,u] is a 100(1-α)% confidence interval for the parameter θ. At the same time, we consider the test of size α with the hypothesis H_0: $\theta = \theta_0$ and H_1: $\theta \neq \theta_0$. Which one of the following is true? **[2 points]**

A. We can not make any decision, because there is no enough information.
B. We will reject the H_0if and only if θ_0 is not in the 100(1-α)% confidence interval [l,u].
C. We will reject the H_0 if and only if θ_0 is in the 100(1-α)% confidence interval [l,u].

Answer: B

[2 points for submission. 2 points for each question. Total is 10.]