PRINTABLE VERSION

Quiz 10

You scored 100 out of 100

Question 1

Your answer is CORRECT.

Rejecting a true null hypothesis is classified as

a) ○ Type II error

b) ◉ Type I error

c) ○ Power

Question 2

Your answer is CORRECT.

It is believed that the average amount of money spent per U.S. household per week on food is about $98, with standard deviation $10. A random sample of 100 households in a certain affluent community yields a mean weekly food budget of $100. We want to test the hypothesis that the mean weekly food budget for all households in this community is higher than the national average. Are the results significant at the 5% level?

a) ○ No, we should fail to reject H_o.

b) ◉ Yes, we should reject H_o.

Question 3

Your answer is CORRECT.

Let x represent the hemoglobin count (HC) in grams per 100 milliliters of whole blood. The distribution for HC is approximately normal with $\mu = 14$ for healthy adult women. Suppose that a female patient has taken 12 laboratory blood samples in the last year. The HC data sent to her doctor is listed below. We would like to know if the data indicates this patient has significantly high HC compared to the population.
$$17,\ 21,\ 15,\ 19,\ 15,\ 15,\ 14,\ 14,\ 20,\ 16,\ 16,\ 21$$
State the null and alternate hypothesis.

a) ○ $H_o: \mu = 14$, $H_a: \mu \neq 14$

b) ○ $H_o: \mu = 14$, $H_a: \mu < 14$

c) ○ $H_o: \mu = 16.92$, $H_a: \mu > 16.92$

d) ◉ $H_o: \mu = 14$, $H_a: \mu > 14$

e) ○ H_o: $\mu = 16.92$, H_a: $\mu < 16.92$

Question 4

Your answer is CORRECT.

Suppose a significance test results in p-value = 0.020. If $\alpha = 0.05$ what is the decision of this test?

a) ○ Do not reject the null hypothesis.

b) ○ Accept the null hypothesis.

c) ◉ Reject the null hypothesis.

d) ○ Reject the alternative hypothesis.

e) ○ None of the above

Question 5

Your answer is CORRECT.

In a test of significance, assuming the null hypothesis is true, the probability of observing the test statistic extreme or more extreme than the observed test statistic (in the way of the alternative hypothesis) is

a) ○ the probability the null hypothesis is true.

b) ◉ the p-value.

c) ○ the probability the null hypothesis is false.

d) ○ the level of significance α.

e) ○ None of the above

Question 6

Your answer is CORRECT.

The average monthly rent for one-bedroom apartments in Chattanooga has been $1000. Because of the downturn in the real estate market, it is believed that there has been a decrease in the average rental. The correct hypotheses to be tested are

a) ◉ $H_0 : \mu = 1000, \ H_a : \mu < 1000$

b) ○ $H_0 : \bar{x} = 1000, \ H_a : \bar{x} < 1000$

c) ○ $H_0 : \mu = 1000, \ H_a : \mu \neq 1000$

d) ○ $H_0 : \bar{x} = 1000, \ H_a : \bar{x} \neq 1000$

e) ○ None of the above

Question 7

Your answer is CORRECT.

Which of the following questions does a test of significance answer?

a) ○ Is the sample or experiment properly designed?

b) ◉ Is the observed effect due to chance?

c) ○ Is the observed value correct?

d) ○ Is the observed effect important?

e) ○ None of the above

Question 8

Your answer is CORRECT.

A simple random sample of 100 8th graders at a large suburban middle school indicated that 84% of them are involved with some type of after school activity. Find the 98% confidence interval that estimates the proportion of them that are involved in an after school activity.

a) ◉ (0.755, 0.925)

b) ○ (0.755, 0.725)

c) ○ (0.805, 0.810)

d) ○ (0.675, 0.925)

e) ○ (0.655, 0.875)

f) ○ None of the above

Question 9

Your answer is CORRECT.

Based on information from a large insurance company, 68% of all damage liability claims are made by single people under the age of 25. A random sample of 54 claims showed that 41 were made by single people under the age of 25. Does this indicate that the insurance claims of single people under the age of 25 is higher than the national percent reported by the large insurance company? Give the test statistic and your conclusion.

a) ○ $z = 0.749$; fail to reject H_o at the 5% significance level

b) ○ $z = 1.249$; reject H_o at the 5% significance level

c) ○ $z = -0.749$; reject H_o at the 5% significance level

d) ○ $z = -1.249$; fail to reject H_o at the 5% significance level

e) ◉ $z = 1.249$; fail to reject H_o at the 5% significance level

Question 10

Your answer is CORRECT.

An experimenter flips a coin 100 times and gets 45 heads. Test the claim that the coin is fair against the two-sided claim that it is not fair at the level α=.01.

a) ○ $H_o: p = .5$, $H_a: p \neq .5$; $z = -1.01$; Fail to reject H_o at the 1% significance level.

b) ○ $H_o: p = .5$, $H_a: p < .5$; $z = -1.00$; Reject H_o at the 1% significance level.

c) ○ $H_o: p = .5$, $H_a: p \neq .5$; $z = -1.00$; Reject H_o at the 1% significance level.

d) ◉ $H_o: p = .5$, $H_a: p \neq .5$; $z = -1.00$; Fail to reject H_o at the 1% significance level.

e) ○ $H_o: p = .5$, $H_a: p < .5$; $z = -1.01$; Fail to reject H_o at the 1% significance level.

Question 11

Your answer is CORRECT.

A bag of M&Ms was randomly selected from the grocery store shelf, and the color counts were:

Brown	25	Red	24	Yellow	19
Orange	15	Green	15	Blue	15

Find the 98% confidence interval for the proportion of yellow M&Ms in that bag.

a) ◉ [0.086, 0.250]

b) ○ [0.086, 0.050]

c) ○ [0.136, 0.141]

d) ○ [0.006, 0.250]

e) ○ [−0.014, 0.200]

f) ○ None of the above

Question 12

Your answer is CORRECT.

An experimenter flips a coin 100 times and gets 47 heads. Find the 97.8% confidence interval for the probability of flipping a head with this coin.

a) ○ [0.256, 0.534]

b) ○ [0.276, 0.584]

c) ⦿ [0.356, 0.584]

d) ○ [0.356, 0.384]

e) ○ [0.406, 0.411]

f) ○ None of the above

Question 13

Your answer is CORRECT.

Suppose that prior to conducting a coin-flipping experiment, we suspect that the coin is fair. How many times would we have to flip the coin in order to obtain a 85% confidence interval of **width** of at most .14 for the probability of flipping a head? (note that the z-score was rounded to three decimal places in the calculation)

a) ○ 55

b) ⦿ 106

c) ○ 109

d) ○ 103

e) ○ 52

f) ○ None of the above

Question 14

Your answer is CORRECT.

The average height of students at UH from an SRS of 19 students gave a standard deviation of 2.8 feet. Construct a 95% confidence interval for the standard deviation of the height of students at UH. Assume

normality for the data.

a) ○ (5.116, 8.141)

b) ◉ (2.116, 4.141)

c) ○ (1.116, 5.141)

d) ○ (7.116, 8.141)

e) ○ (1.616, 9.141)

f) ○ None of the above