Probability and Statistics - MAS291

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Time taken	9 secs
Marks	1.00/16.00
Grade	**0.63** out of 10.00 (**6%**)

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Question 1

Complete

Mark 0.00 out of 1.00

Flag question

The standard IQ test has a mean of 106 and a standard deviation of 12. We want to be 90% certain that we are within 4 IQ points of the true mean. Determine the required sample size.

Select one:

- a. 6
- b. 34
- c. 25
- d. 130

$$E = z0.05 * \frac{\delta}{\sqrt{n}}$$

$$n = 1.644^2 * \frac{12^2}{4^2} = 24.5613$$

The correct answer is: 25

Question 2

Complete

Mark 1.00 out of 1.00

Flag question

Suppose that an internal report submitted to the managers at a bank in Boston showed that with 95% confidence, the proportion of the bank's customers who also have accounts at one or more other banks is between 0.40 and 0.46. Given this information, what sample size was used to arrive at this estimate?

Select one:

- a. Can't be determined without more i
- b. Approximately 1,066
- c. Approximately 344
- d. Approximately 700

$$E = \frac{\mathbf{upper} - \mathbf{lower}}{2} = 0.03$$

$$\mathbf{P\,m\tilde{u}} = \frac{\mathbf{lower} + \mathbf{upper}}{2} = \mathbf{0.43}$$

$$n = 1.96^2 * \frac{0.43 * 0.57}{0.03^2} = 1046..$$

The correct answer is: Approximately 1,066

Question 3

Not answered

Marked out of 1.00

Flag question

A group of 55 bowlers showed that their average score was 190 with a population standard deviation of 8. Find the 99% confidence interval of the mean score of all bowlers.

Select one:

- a. (187.2, 192.8)
- b. (189.5, 194.5)
- c. (188.5, 195.6)
- d. (186.5, 197.5)

For mean

$$\mathbf{X\ ngang} \pm \mathbf{E} = z0.005 * \frac{\delta}{\sqrt{n}}$$

$$190 \pm \frac{-2.575^{\square} * 8}{\sqrt{55}}$$

The correct answer is: (187.2, 192.8)

Question 4

Not answered

Marked out of 1.00

Flag question

A local bank needs information concerning the checking account balances of its customers. A random sample of 18 accounts was checked. The mean balance was $600.70 with a standard deviation of $196.20. Find a 98% confidence interval for the true mean. Assume that the account balances are normally distributed.

Select one:

- a. ($438.23, $726.41)
- b. ($487.31, $563.80)
- c. ($481.85, $719.55)
- d. ($513.17, $860.33)

The correct answer is: ($481.85, $719.55)

Question 5

The waiting times (in minutes) of customers at the TienPhong Bank, where

Not answered
Marked out of 1.00
Flag question

customers enter a single waiting line that feeds three teller windows, are normally distributed. A random sample of 6 has mean of 7.07 and standard deviation of 0.53. Construct a 94% upper confidence bound for the population standard deviation. Let $\chi^2_{0.06,5} = 10.596$ and $\chi^2_{0.94,5} = 1.250$.

Select one:

- a. 2.35
- b. 1.06
- c. None of the other choices is correct
- d. 1.35

$$Lower\ confident = X(\infty, n-1)$$
$$Upper\ confident = X(1-\infty, n-1)$$
$$\sqrt{\frac{(6-1)*0.53^2}{1.25}} \leq \delta$$

The correct answer is: 1.06

Question 6

Not answered
Marked out of 1.00
Flag question

The fraction of defective integrated circuits produced in a photolithography process is being studied. A random sample of 200 circuits is tested, revealing 8 defectives. Find a 95% two-sided confidence interval on the fraction of defective circuits produced by this particular tool.

Select one:

- a. (0.013, 0.085)
- b. (0.003, 0.085)
- c. (0.003, 0.067)
- d. (0.013, 0.067)

The correct answer is: (0.013, 0.067)

Question 7

Not answered
Marked out of 1.00
Flag question

A psychologist claims that more than 16 percent of the population suffers from professional problems due to extreme shyness. Use p, the true percentage of the population that suffers from extreme shyness. Express the null hypothesis H_0 and the alternative hypothesis H_1 in symbolic form.

Select one:

- a. H_0: p = 16%
  H_1: p < 16%
- b. H_0: p < 16%
  H_1: p ≥ 16%
- c. H_0: p = 6.3%
  H_1: p > 6.3%
- d. H_0: p =16%
  H_1: p >16%

Claim chứa dấu = → Trùng Ho
Claim không chứa dấu = → Trùng H1

More than 16% ∽ p > 16%
=> Claim không chứa dấu = → Trùng H1
=> H1: p > 16% và Ho = 16%(Ho luôn chứa dấu =)

The correct answer is: H_0: p =16%
H_1: p >16%

Question 8

Not answered
Marked out of 1.00
Flag question

You wish to test the claim that μ > 6 at a level of significance of α = 0.05. Let sample statistics be n = 60, s = 1.4 $\overline{x} = 6.3$. Compute the value of the test statistic. Round your answer to two decimal places.

Select one:

- a. 3.11
- b. 1.77
- c. 2.31
- d. None of the other choices is true
- e. 1.66

The correct answer is: 1.66

Question 9

Not answered
Marked out of 1.00
Flag question

Determine whether the hypothesis test involves a sampling distribution of means that is a normal distribution, Student t distribution, or neither.

Claim: μ = 78. Sample data: n = 24, $\overline{x} = 101$, s = 15.3. The sample data appear to come from a population that is normally distributed and σ is unknown.

Select one:

- a. Normal

b. Neither

c. Student t

The correct answer is: Student t

Question 10

Not answered

Marked out of 1.00

Flag question

The quality control manager for a filling operation in a bottling plant is concerned with the variability in the volume of milk dispensed into gallon jugs. The filling process results in jugs whose volumes are normally distributed with a mean of 1.02 gallons. The process standard deviation should be less than 0.004 gallons. A sample of 35 jugs was selected and the sample standard deviation was determined to be 0.0036 gallons. What is the value of test statistic for the test H1: < 0.004

Select one:

a. 21.5

b. 30.6

c. 27.54

d. 15.8

The correct answer is: 27.54

Question 11

Not answered

Marked out of 1.00

Flag question

A telephone company claims that 25% of its customers have at least two telephone lines. The company selects a random sample of 500 customers and finds that 108 have two or more telephone lines. At α = 0.05, compute the value of the test statistic to test the company's claim.

Select one:

a. 1.76

b. 2.33

c. 1.05

d. -1.76

e. -2.33

The correct answer is: -1.76

Question 12

Not answered

Marked out of 1.00

Flag question

Given the supply of a commodity, x, and the price of a commodity, y, would you expect a positive correlation, a negative correlation, or no correlation?

Select one:

a. negative correlation

b. no correlation

c. positive correlation

The correct answer is: negative correlation

Question 13

Not answered

Marked out of 1.00

Flag question

For several customers at the local bookstore, the scatter diagram compares the weight of their books 👍 and the number of pages in them(x) is shown below.

State whether there is no correlation, a positive correlation, or a negative correlation between the x and y variables.

Select one:

a. No correlation

b. Negative correlation

c. Positive correlation

The correct answer is: Positive correlation

Question 14

Not answered

Marked out of 1.00

Flag question

For a sample of 10 observations, you have the following information: $\Sigma x_i = 102$, $\Sigma y_i = 236$, $\Sigma x_i y_i = 3{,}946$; $\Sigma (x_i)^2 = 1{,}804$; $\Sigma (y_i)^2 = 10{,}424$. What is the sample correlation coefficient between *X* and *Y*?

Select one:

- a. -0.234
- b. 0.234
- c. 0.512
- d. -0.512

The correct answer is: -0.234

Question 15

Not answered

Marked out of 1.00

Flag question

Given the equation of a regression line is $\hat{y}$ = 4x - 6, what is the best predicted value for y given x = 9? Assume that the variables x and y have a significant correlation.

Select one:

- a. 30
- b. 56
- c. 46
- d. 34

The correct answer is: 30

Question 16

Not answered

Marked out of 1.00

Flag question

The data below are the ages and systolic blood pressures (measured in millimeters of mercury) of 3 randomly selected adults.

Age, x	**42**	**45**	**49**
Pressure, y	**118**	**122**	**125**

Calculate the test statistic to test the claim ϱ = 0. Round answers to three decimal places.

Select one:

- a. 2.331
- b. 1.452
- c. 4.873
- d. 5.913

The correct answer is: 5.913

Finish review

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