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Marks   22.00/25.00
Grade   **8.80** out of 10.00 (**88%**)

Question **1**

Correct

Mark 1.00 out of 1.00

Choose correct statements

- a. The P-value is the smallest level of significance at which the null hypothesis would be rejected. ✔

- b. Critical values are contained inside the critical region of the test

- c. The significance level of the test is also called its β-error

Your answer is correct.

The correct answer is:
The P-value is the smallest level of significance at which the null hypothesis would be rejected.

Question **2**

Correct

Mark 1.00 out of 1.00

You are given a confidence interval for the population mean of 26 to 42. The sample mean used the construct this confidence interval was

- a. 26
- b. 1.96
- c. Cannot be determined with the given information
- d. 34 ✔

Your answer is correct.

The correct answer is:
34

Of 1000 randomly selected cases of lung cancer, 731 resulted in death within 10 years. Calculate a 95% CI on the death rate from lung cancer.

Let $z_{0.025}=1.96$; $z_{0.05}=1.65$.

- a. (0.307; 0.751)
- b. None of the others.
- c. (0.703; 0.758) ✔
- d. (0.707; 0.754)

The correct answer is: (0.703; 0.758)

The life in hours of a 400 - watt light is known to be normally distributed with standard deviation of 25 hours.
A random sample of 20 lights has a mean life of 1014 hours. Construct a 95% two - sided confidence interval on the mean life.
Let $z_{0.025} = 1.96$

- a. (1003, 1005)
- b. None of others.
- c. (1003, 1050)
- d. (1003, 1025) ✔

The correct answer is: (1003, 1025)

Question 5

Correct

Mark 1.00 out of 1.00

A sample of five price/earnings ratios for companies in the Services sector follows.
15 11 14 17 12
A confidence interval for the population mean is requested. Assuming that the sample comes from a normal population, the appropriate distribution used in constructing this confidence interval is the

- ○ a. t ✔
- ○ b. z
- ○ c. None of the choices are correct

Your answer is correct.

The correct answer is:
t

A random sample of 40 students has a mean annual earnings of 3120. Assume the population standard deviation is 677. Construct the confidence interval for the population mean. Use a 95% confidence level.

Let $z_{0.05} = 1.645$, $z_{0.025} = 1.96$,

$t_{0.05, 39} = 2.023$, $t_{0.025, 39} = 2.331$

- a. (210, 110)
- b. (2910, 3330) ✔
- c. (1987, 2346)
- d. None of the other choices is correct

- e. (4812, 5342)

Your answer is correct.

The correct answer is:
(2910, 3330)

A sample of five price/earnings ratios for companies in the Services sector follows.
15 11 14 17 12
A confidence interval for the population mean is requested. For the researcher's purpose, this interval is too wide. To make the interval more precise, the researcher should

   a.   decrease the sample size

   b.   increase the sample size   ✔

Your answer is correct.

The correct answer is:
increase the sample size

Question **8**

Correct

Mark 1.00 out of 1.00

Construct a 98% confidence interval for the population mean. Assume the population has a normal distribution. A study of 14 bowlers showed that their average score was 192 with a standard deviation of 8. Let $t_{0.01,13}=2.65$.

- a. None of the other choices is correct
- b. (186.3, 197.7) ✔
- c. (115.4, 158.8)
- d. (222.3, 256.1)
- e. (328.3, 386.9)

Your answer is correct.

The correct answer is:
(186.3, 197.7)

Construct a 90% confidence interval for the population mean. Assume the population has a normal distribution. A sample of 15 randomly selected students has a grade point average of 2.86 with a standard deviation of 0.78. Let $t\_0.05,14 = 1.76$, $z\_0.05 = 1.645$

- a. (2.37, 3.56)
- b. None of the other choices is correct
- c. (2.28, 3.66)
- d. (2.51, 3.21) ✔
- e. (2.41, 3.42)

Your answer is correct.

The correct answer is:
(2.51, 3.21)

Of 1000 randomly selected cases of lung cancer, 731 resulted in death within 10 years. Calculate a 95% confidence interval on the death rate from lung cancer. Let $z\_0.025=1.96$, $z\_0.05=1.65$

- a. (0.307; 0.751)
- b. (0.703; 0.758) ✔
- c. (0.707; 0.754)
- d. None of the others

Your answer is correct.

The correct answer is:
(0.703; 0.758)

A sample of size 36 is taken from a population with standard deviation 12. The sample mean is found to be 116. In order to construct a confidence interval, one must assume that the population was normally distributed.

○ a. True

✖

○ b. False

Your answer is incorrect.

The correct answer is:
False

Question **12**

Correct

Mark 1.00 out of 1.00

A private opinion poll is conducted for a politician to determine what proportion of the population favours decriminalising marijuana possession. How large a sample is needed in order to be 99% confident that the sample proportion will not differ from the true proportion by more than 6%? Let $z_{0.005} = 2.575$.

- a. 921
- b. 461 ✔
- c. None of the other choices is correct
- d. 11
- e. 378

Your answer is correct.

The correct answer is:
461

Question **13**

Incorrect

Mark 0.00 out of 1.00

It is desired to estimate the average total compensation of CEOs in the Service industry. Data were randomly collected from 35 CEOs and the 94% confidence interval was calculated to be (3451260, 7536180). Which of the following interpretations is correct?

- a. We are 94% confident that the mean of the sampled CEOs falls in the interval 3451260 to 7536180
- b. 94% of the sampled total compensation values fell between 3451260 and 7536180
- c. We are 94% confident that the average total compensation of all CEOs in the Service industry falls in the interval 3451260 to 7536180
- d. In the population of Service industry CEOs, 94% of them will have total compensations that fall in the interval 3451260 to 7536180 ✖

Your answer is incorrect.

The correct answer is:
We are 94% confident that the average total compensation of all CEOs in the Service industry falls in the interval 3451260 to 7536180

Question 14

Correct

Mark 1.00 out of 1.00

A sample of five price/earnings ratios for companies in the Services sector follows.
15 11 14 17 12
A confidence interval for the population mean is requested. In order to construct the confidence interval one must assume

   ⊙ a.   No assumptions are needed

   ⊙ b.   None of choices are correct

   ⊙ c.   that the population standard deviation is known

   ⊙ d.   that the sample came from a normal distribution   ✔

Your answer is correct.

The correct answer is:
that the sample came from a normal distribution

An Izod impact test was performed on 20 specimens of PVC pipe. The sample mean is 1.25 and the sample standard deviation is 0.25. Find a 99% lower confidence bound on Izod impact strength. Let $t_{0.01,19} = 2.539$; $t_{0.01,20} = 2.528$; $t_{0.005,19} = 2.861$; $t_{0.005,20} = 2.845$.

- a. None of the other choices is correct ✖
- b. 1.1086
- c. 1.123
- d. 1.0910
- e. 1.0901

Your answer is incorrect.

The correct answer is:
1.1086

Question **16**

Correct

Mark 1.00 out of 1.00

A sample of five price/earnings ratios for companies in the Services sector follows.
15 11 14 17 12
A confidence interval for the population mean is requested. Assuming that the sample comes from a normal population, the appropriate degrees of freedom used for this confidence interval is

- ○ a. 5
- ◉ b. 4 ✔
- ○ c. None of the choices are correct
- ○ d. 3
- ○ e. 2

Your answer is correct.

The correct answer is:
4

Question 17

Correct

Mark 1.00 out of 1.00

Suppose a 95% confidence interval for population mean turns out to be (1000, 2100). To make more useful inferences from the data, it is desired to reduce the width of the confidence interval. Which of the following will result in a reduced interval width?

- ○ a. Decrease the confidence level
- ● b. Both increase the sample size and decrease the confidence level ✔
- ○ c. Both increase the confidence level and decrease the sample size
- ○ d. Increase the sample size

Your answer is correct.

The correct answer is:
Both increase the sample size and decrease the confidence level

The diameter of holes for a cable harness is known to have a normal distribution with standard deviation 0.01 inch. A random sample of size 16 yield an average diameter of 1.5045 inch. Find a 99% two - side confidence interval on the mean hole diameter. Let $z_{0.005}=2.58$; $z_{0.01}=2.33$.

○ a. (1.4971; 1.5119)

◉ b. (1.49805; 1.51095)   ✔

○ c. None of the other choices is correct

○ d. (1.4971; 1.5127)

○ e. (1.4963; 1.5119)

The correct answer is: (1.49805; 1.51095)

Question **19**

Correct

Mark 1.00 out of 1.00

As degrees of freedom increase, the t-distribution approaches the

- ◉ a. standard normal distribution ✔
- ○ b. None of the above
- ○ c. binomial distribution
- ○ d. exponential distribution

Your answer is correct.

The correct answer is:
standard normal distribution

Many people think that a national lobby's successful fight against gun control legislation is reflecting the will of a minority of Americans. A random sample of 4000 citizens yielded 2250 who are in favour of gun control legislation. Estimate the true proportion of all Americans who are in favour of gun control legislation using a 90% confidence interval. Let $z_{0.05} = 1.65$; $z_{0.1} = 1.28$.

a. None of the other choices is correct

b. (0.5496, 0.5754) ✔

c. (0.1577, 0.9673)

d. (0.4246, 0.4504)

e. (0.0327, 0.8423)

Your answer is correct.

The correct answer is:
(0.5496, 0.5754)

Correct

Mark 1.00 out of 1.00

A manufacturer of electronic calculators takes a random sample of 1200 calculators and finds that there are 8 defective units. Construct a 95% confidence interval on the population proportion. Let $z_{0.025}$ =1.96.

- a. [0.204, 0.208]

- b. [0.0021, 0.274]

- c. None of others

- d. [0.0021, 0.0113] ✔

Your answer is correct.

The correct answer is:

[0.0021, 0.0113]

An article describles the effect of delamination on the natural frequency of beams made from composite laminates. Five such delaminated beams were subjected to loads, and the resulting frequencies were as follows (in hertz): 230.66; 233.05; 232.58; 229.48; 232.58. Calculate a 90% two - sided confidence interval on mean natural frequency. Let $t_{0.05;4}$=2.132; $t_{0.05;5}$=2.015; $t_{0.1;4}$=1.533; $t_{0.1;5}$=1.476.

- a. None of the other choices is correct ✔
- b. (230.29; 234.05)
- c. (230.64; 230.65)
- d. (230.63; 233.7)
- e. (230.62; 230.72)

The correct answer is: None of the other choices is correct

Question **23**

Correct

Mark 1.00 out of 1.00

A laboratory tested 70 chicken eggs and found that the mean amount of cholesterol was 190 milligrams. Assume that the standard deviation is 15.1 milligrams. Construct a 95% lower confidence bound for the true mean cholesterol content of all such eggs. Let $z\_0.025=1.96$, $z\_0.05=1.645$.

- a. None of the other choices is correct
- b. 187.03 ✔
- c. 184.79
- d. 185.28
- e. 186.46

Your answer is correct.

The correct answer is:
187.03

A group of 40 bowlers showed that their average score was 192 with a population standard deviation of 8. Assume that bowler's scores are normally distributed. Find the 95% confidence interval of the mean score of all bowlers. Let $z_{0.05}=1.65$, $z_{0.025}=1.96$, $t_{0.05,39}=1.68$, $t_{0.025,39}=2.02$.

- a. None of the other choices is correct
- b. (189.5, 194.5) ✔
- c. (186.5, 197.5)
- d. (188.5, 195.6)
- e. (187.3, 196.1)

Your answer is correct.

The correct answer is:
(189.5, 194.5)

An Izod impact test was performed on 20 specimens of PVC pipe. The sample mean is $\bar{x}$ = 1.25 and the sample standard deviation is s= 0.25. Find a 99% lower confidence bound on Izod impact strength $t_{0.01,19}$ = 2.539, $t_{0.01,20}$ =2.528, $t_{0.005,19}$ =2.861, $z_{0.01}$ =2.33, $z_{0.005}$ =2.58

- a. $1.1087 \leq \mu$

- b. $1.1058 \leq \mu$

- c. $1.0901 \leq \mu$

- d. $1.1081 \leq \mu$ ✔

- e. $1.1197 \leq \mu$

Your answer is correct.

The correct answer is:
$1.1081 \leq \mu$