

Started on	Tuesday, 20 December 2022, 12:35 AM
State	Finished
Completed on	Tuesday, 20 December 2022, 12:36 AM
Time taken	56 secs
Marks	9.00/30.00
Grade	3.00 out of 10.00 (30%)

Question 1

Incorrect

Mark 0.00 out of 1.00

A very large population has a mean of 90.3 and a standard deviation of 11.6. From the population, a sample of 32 was selected with a sample mean of 94.0.

What is the z_value of the sample mean?

Be noticed to the formula of Z.

- ☐ a. 1.804
- ☐ b. 1.773
- ☐ c. 1.691
- ☒ d. 1.885



Your answer is incorrect.

The correct answer is:

1.804

Question 2

Incorrect

Mark 0.00 out of 1.00

The employees at a certain plant have a mean height of 67.1 inches with a standard deviation of 2.7 inches. (Their height distribution is assumed to be normal.)

From these employees a sample of 4 was selected whose mean height was only 63.8 inches. What is the z value of the sample mean?

- ☐ a. -2.65
- ☐ b. -2.56
- ☐ c. -2.444
- ☒ d. -2.6



Your answer is incorrect.

The correct answer is:
-2.444

Question **3**

Correct

Mark 1.00 out of 1.00

A statistic is computed from an entire population.

Select one:

☐ True☒ False ✓

The correct answer is 'False'.

Question **4**

Incorrect

Mark 0.00 out of 1.00

The difference between sample mean and population mean may be positive or negative.

Select one:

☐ True☒ False ✗

The correct answer is 'True'.

Question **5**

Incorrect

Mark 0.00 out of 1.00

One way of reducing the sampling error is to reduce the sample size.

Select one:

☐ True☒ False ✖

The correct answer is 'True'.

Question **6**

Incorrect

Mark 0.00 out of 1.00

If a population is normally distributed, the mean of all possible sample means will equal the population mean.

Select one:

☐ True☒ False ✖

The correct answer is 'True'.

Question 7

Correct

Mark 1.00 out of 1.00

If a population is normally distributed, the standard deviation of sample means is approximately equal to the population standard deviation.

Select one:

☐ True

☒ False ✓

If a population is normally distributed, the standard deviation of sample means is approximately equal to the population standard deviation *divided by the square root of the sample size*.

The correct answer is 'False'.

Question 8

Correct

Mark 1.00 out of 1.00

If a sample is taken from a uniformly distributed population, the sample mean will be approximately equal to the population mean.

Select one:

☐ True

☒ False ✓

The Central Limit Theorem says the sample mean will approximate the population *mean if the sample is sufficiently large*. Unless the sample size is stated the statement must be assumed false.

The correct answer is 'False'.

Question 9

Incorrect

Mark 0.00 out of 1.00

If samples of 40 items are taken from infinite, non-symmetric population, the sampling distribution will be approximately normal.

Select one:

☐ True

☒ False ✖

The Central Limit Theorem is conditioned upon sample size, not shape of distribution.

The correct answer is 'True'.

Question **10**

Correct

Mark 1.00 out of 1.00

The standard error of the mean:

- ☐ a. decreases as the sample size increases.
- ☐ b. is less than the standard deviation of the population
- ☒ c. All of the above
- ☐ d. measures the variability of the mean from sample to sample



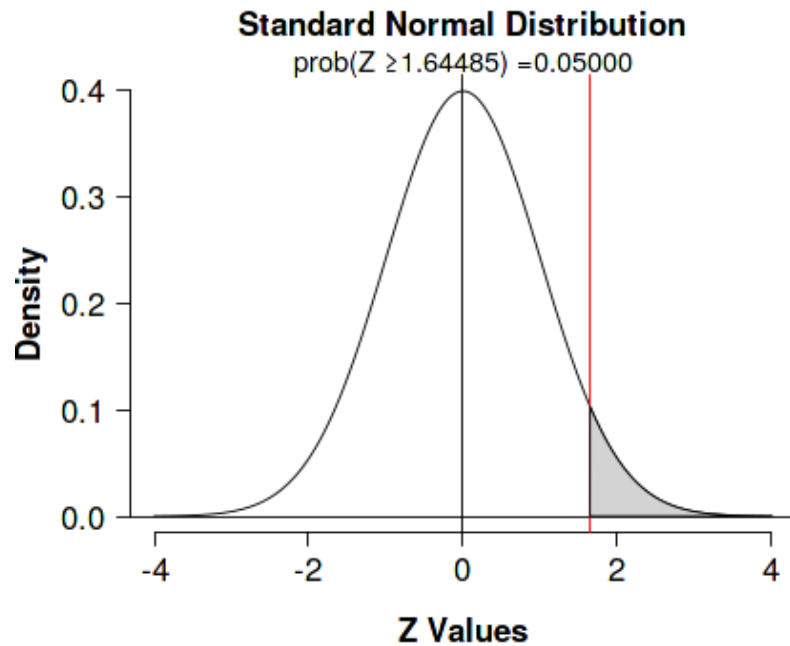
Your answer is correct.

The correct answer is:
All of the above

Question 11

Correct

Mark 1.00 out of 1.00

What is the value of $Z_{0.05}$

- ☐ a. 1.96
- ☐ b. -1.96
- ☐ c. -1.645
- ☒ d. 1.645



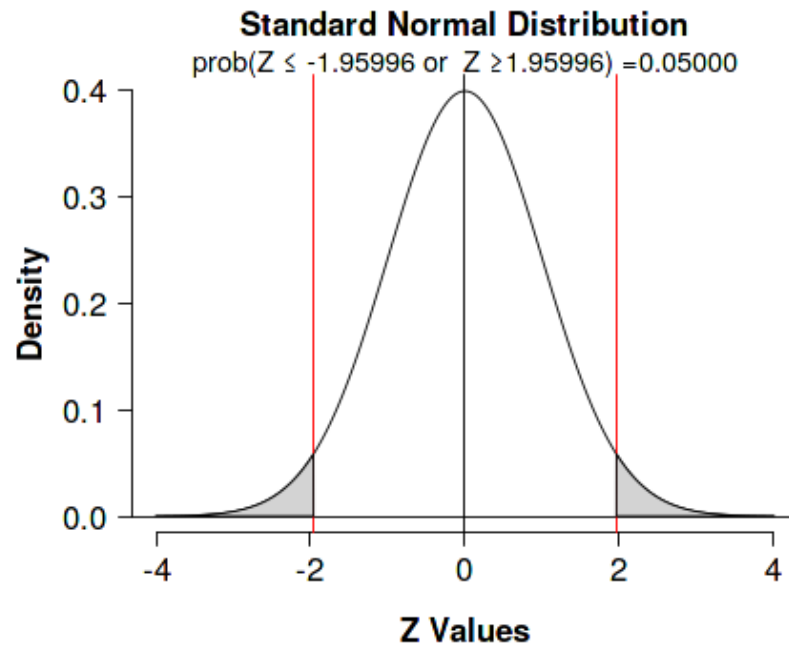
Your answer is correct.

The correct answer is:
1.645

Question 12

Incorrect

Mark 0.00 out of 1.00



Choose the correct statement?

- ☒ a. $Z_{0,05} = -1,96$
- ☐ b. $Z_{0,025} = 1,96$
- ☐ c. $Z_{0,1} = 1,96$
- ☐ d. $Z_{0,025} = -1,96$
- ☐ e. $Z_{0,05} = 1,96$

✗

Your answer is incorrect.

The correct answer is:

$$Z_{0,025} = 1,96$$

Question **13**

Incorrect

Mark 0.00 out of 1.00

Suppose that Z is a Standard Normal random variable and has the critical value $Z_{0,03}=1,88$. That means

- ☐ a. $P(Z > 1,88) = 3\%$
- ☐ b. All of them
- ☒ c. $P(0 < Z < 1,88) = 47\%$
- ☐ d. $P(Z < -1,88) = 3\%$
- ☐ e. $P(|Z| < 1,88) = 94\%$



Your answer is incorrect.

The correct answer is:

All of them

Question **14**

Incorrect

Mark 0.00 out of 1.00

If $Z \sim N(0;1)$ and $P(Z > 1,28) = 10\%$. From this information we denote:

- ☐ a. $Z_{0,2} = 2,56$
- ☐ b. None of them
- ☒ c. $Z_1 = 12,8$
- ☐ d. $Z_{0,01} = 1,28$
- ☐ e. $Z_{0,1} = 1,28$



Your answer is incorrect.

The correct answer is:

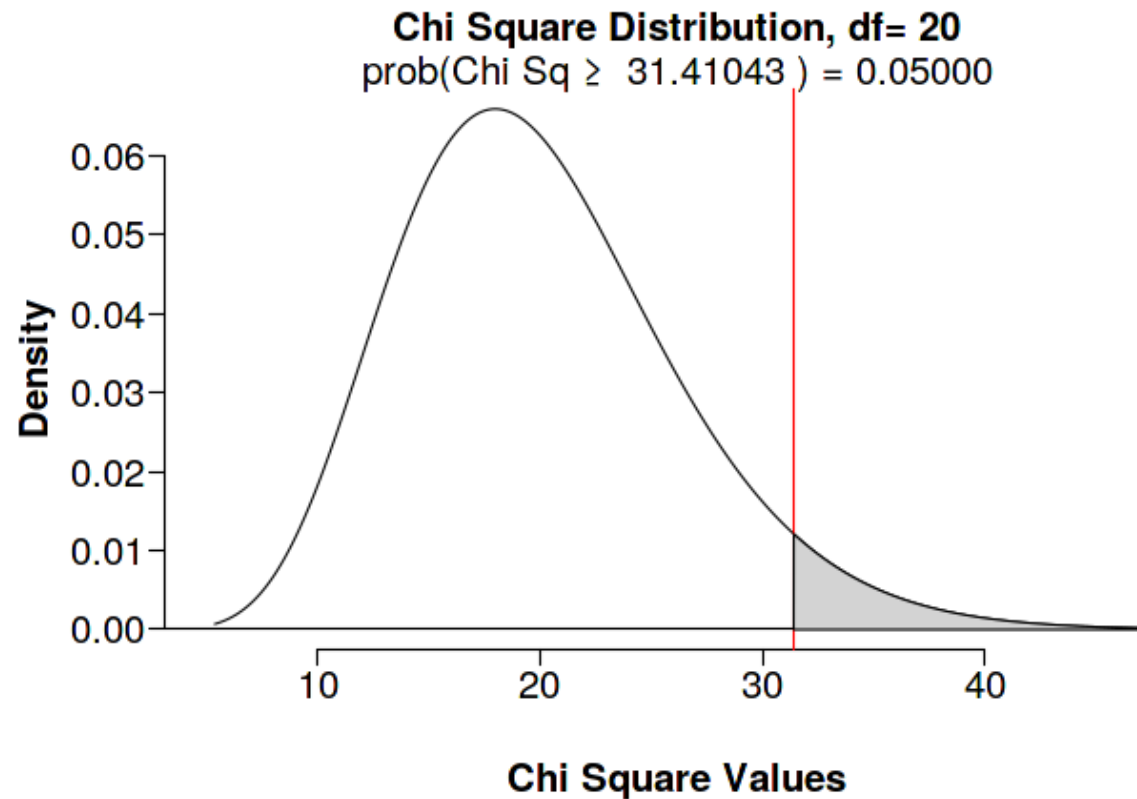
$Z_{0,1} = 1,28$

Question 15

Incorrect

Mark 0.00 out of 1.00

From the figure below.



We can denote:

- ☐ a. $\chi^2(0,95; 20)=31,41043$
- ☐ b. $\chi^2(0,05; 19)=31,41043$

- ☐ c. $\chi^2(0,05; 20)=31,41043$
- ☒ d. $\chi^2(0,95; 19)=31,41043$



Your answer is incorrect.

The correct answer is:

$\chi^2(0,05; 20)=31,41043$

Question **16**

Not answered

Marked out of 1.00

Suppose that $P(T < 7,26094) = 5\%$ where $T \sim \text{Chi}(15)$ or $T \sim \chi^2(15)$. We can understand that:

- ☐ a. $\chi^2(0.95, 15) = 7,26094$
- ☐ b. $\chi^2(0.975, 15) = 7,26094$
- ☐ c. $\chi^2(0.025, 15) = 7,26094$
- ☐ d. $\chi^2(0.05, 15) = 7,26094$

Your answer is incorrect.

The correct answer is:

$\chi^2(0.95, 15) = 7,26094$

Question 17

Incorrect

Mark 0.00 out of 1.00

Using the Appendix tables in your textbook or website apps instead, determine the following critical values below:

a) $Z_{0,025}$ b) $\chi^2(0.025, 25)$ c) $\chi^2(0.975, 25)$ d) $t(0.025, 25)$ e) $t(0.975, 25)$

- ☐ a. 1,65; 37,65; 14,6114; 1,3164 and -1,3164 respectively.
- ☐ b. 1,96; 40,6465; 13,1197; 2,0595 and -2,0595 respectively.
- ☒ c. 1,65; 40,6465; 13,1197; 1,3164 and -1,3164 respectively.
- ☐ d. None of them



Your answer is incorrect.

The correct answer is:

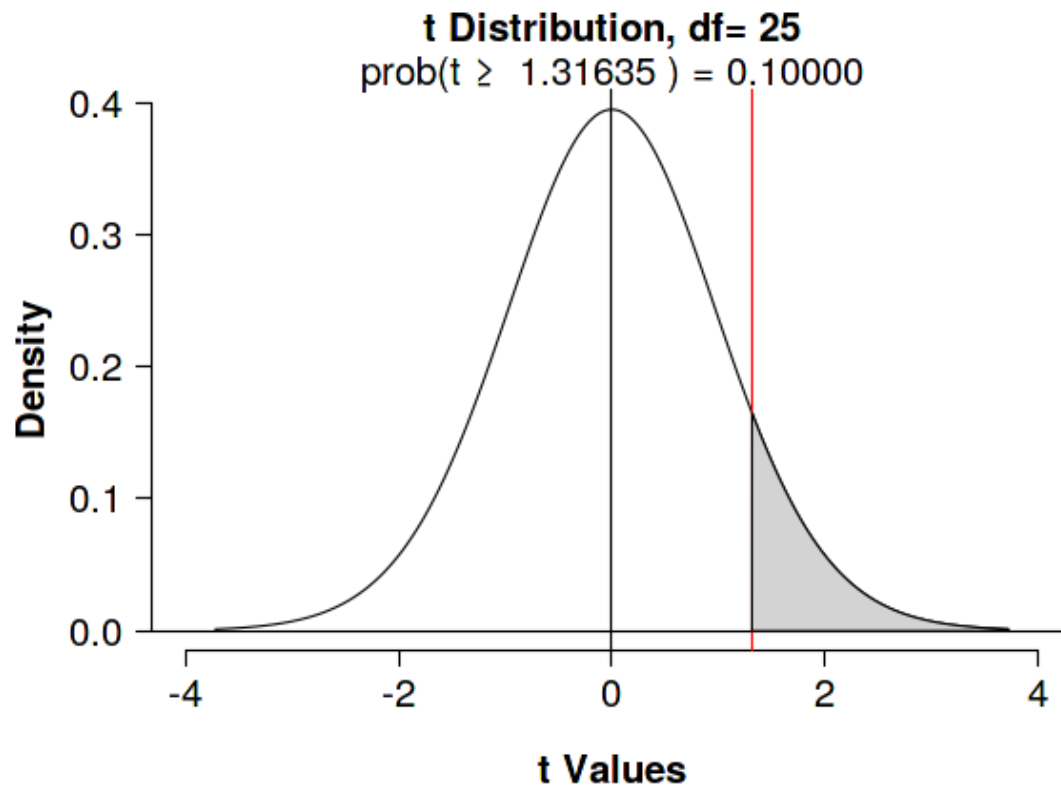
1,96; 40,6465; 13,1197; 2,0595 and -2,0595 respectively.

Question 18

Incorrect

Mark 0.00 out of 1.00

Suppose that $P(T > 1,31635) = 0,1$ where T has Student distribution with 25 degree of freedom.



Choose the correct statement?

- ☐ a. $P(T < -1,31635) = 80\%$
- ☐ b. None of them

- ☐ c. $t(0,25; 20)=1,31635$
- ☐ d. $t(0,1; 25)=1,31635$
- ☒ e. $t(0,1; 20)=1,31635$



Your answer is incorrect.

The correct answer is:
 $t(0,1; 25)=1,31635$

Question 19

Incorrect

Mark 0.00 out of 1.00

Suppose that you are given a critical value $\chi^2(0,05; 30)=43,7730$. From this, you can obtained:

- i) $P(U > 43,7730) = 5\%$ where $U \sim \chi^2(30)$
- ii) $P(U < 43,7730) = 5\%$ where $U \sim \chi^2(30)$
- iii) $P(U > 43,7730) = 95\%$ where $U \sim \chi^2(30)$
- iv) $P(U < 43,7730) = 95\%$ where $U \sim \chi^2(29)$

- ☐ a. i) and iv)
- ☐ b. iv) only
- ☐ c. None of them
- ☒ d. all of them
- ☐ e. i) only



Your answer is incorrect.

The correct answer is:

i) only

Question **20**

Correct

Mark 1.00 out of 1.00

Suppose we known that $t(0,025; 25)=2,05954$.

From this we get:

- i) $P(U > 2,05954) = 2,5\%$ where $U \sim t(25)$
- ii) $P(U < 2,05954) = 2,5\%$ where $U \sim t(25)$
- iii) $P(U < -2,05954) = 2,5\%$ where $U \sim t(25)$
- iv) $P(0 < U < 2,05954) = 47,5\%$ where $U \sim t(25)$
- v) $P(-2,05954 < U < 2,05954) = 95\%$ where $U \sim t(25)$

- ☐ a. All of them
- ☐ b. iii) and iv) only
- ☐ c. None of them
- ☒ d. Except ii) only
- ☐ e. i) and ii) false



Your answer is correct.

The correct answer is:
Except ii) only

Question **21**

Incorrect

Mark 0.00 out of 1.00

What does the central limit theorem state?

- ☐ a. if the sample size increases then the sampling distribution much approach an exponential distribution
- ☐ b. if the sample size increases sampling distribution must approach normal distribution
- ☐ c. if the sample size decreases then the sampling distribution much approach an exponential distribution
- ☒ d. if the sample size decreases then the sample distribution must approach normal distribution



Your answer is incorrect.

The correct answer is:

if the sample size increases sampling distribution must approach normal distribution

Question **22**

Incorrect

Mark 0.00 out of 1.00

The difference between the sample value expected and the estimates value of the parameter is called as?

- ☐ a. bias
- ☐ b. difference
- ☒ c. contradiction
- ☐ d. error



Your answer is incorrect.

The difference between the expected sample value and the estimated value of parameter is called as bias. A sample used to estimate a parameter is unbiased if the mean of its sampling distribution is exactly equal to the true value of the parameter being estimated.

The correct answer is:

bias

Question **23**

Correct

Mark 1.00 out of 1.00

A sample size is considered large in which of the following cases?

- ☐ a. $n \leq 30$
- ☒ b. $n \geq 30$
- ☐ c. $n \leq 50$
- ☐ d. $n \geq 50$



Your answer is correct.

Explanation: Generally a sample having 30 or more sample values is called a large sample. By the Central Limit Theorem such a sample follows a Normal Distribution.


The correct answer is:
 $n \geq 30$

Question **24**

Incorrect

Mark 0.00 out of 1.00

Which of the following statements best describes the relationship between a parameter and a statistic?

- ☐ a. A parameter is used to estimate a statistic.
- ☐ b. A statistic is used to estimate a parameter
- ☒ c. A parameter has a sampling distribution that can be used to determine what values the statistic is likely to have in repeated samples. 
- ☐ d. A parameter has a sampling distribution with the statistic as its mean.

Your answer is incorrect.

The correct answer is:

A statistic is used to estimate a parameter

Question **25**

Incorrect

Mark 0.00 out of 1.00

A sampling distribution is the probability distribution for which one of the following:

- ☐ a. A population
- ☐ b. A sample statistic
- ☒ c. A population parameter
- ☐ d. A sample



Your answer is incorrect.

The correct answer is:
A sample statistic

Question **26**

Incorrect

Mark 0.00 out of 1.00

A sampling distribution of the means of all possible samples of size 100 is formed. The parent population has a mean of 5 and a standard deviation of 1.4.

What is the value of the expected value of sample mean?

- ☐ a. 0.5
- ☐ b. 14
- ☐ c. 5
- ☒ d. 1.4



Your answer is incorrect.

The correct answer is:
5

Question **27**

Correct

Mark 1.00 out of 1.00

A consequence of the Central Limit Theorem is that for n sufficiently large ($n \geq 30$), if all samples of size n are taken, the mean of the sample means $E(\bar{x})$ is equal to the population mean μ . Since the mean of the sampling distribution is equal to the population mean, \bar{x} is referred to as?

- ☐ a. a parameter
- ☐ b. a biased estimator
- ☐ c. a random estimator
- ☒ d. an unbiased estimator



Your answer is correct.

The correct answer is:
an unbiased estimator

Question 28

Incorrect

Mark 0.00 out of 1.00

Which of the following statements is a consequence of the Central Limit Theorem?

- I. If the original population is uniformly distributed, then the sampling distribution of \bar{x} will be uniform for large samples.
- II. The sampling distribution of \bar{x} will be approximately normal for large samples.
- III. The mean of the sampling distribution of \bar{x} will be close to μ for large samples.

- ☐ a. I only
- ☐ b. II only
- ☐ c. II and III only
- ☒ d. I, II and III



Your answer is incorrect.

The correct answer is:
II and III only

Question 29

Correct

Mark 1.00 out of 1.00

Which of the following are true?

- I. The larger the sample, the smaller the spread in the sampling distribution.
- II. Provided that the population size is significantly greater than the sample size, the spread of a sampling distribution is about the same no matter what the sample size.
- III. Sampling distributions from non-normal populations are approximately normal provided n is large.

- ☐ a. III only
- ☐ b. I, II and III
- ☐ c. II only
- ☒ d. I and III only
- ☐ e. None



Your answer is correct.

The correct answer is:
I and III only

Question 30

Incorrect

Mark 0.00 out of 1.00

A population has a normal distribution with a mean of 50 and a standard deviation of 10. If a random sample of size 9 is taken from the population, then what is the probability that this sample mean will be between 48 and 54?

- ☐ a. 0.062
- ☐ b. None
- ☐ c. 0.455
- ☒ d. 0.228
- ☐ e. 0,611



Your answer is incorrect.

The correct answer is:
0,611

