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State	Finished
Completed on	Friday, 3 March 2023, 9:36 PM
Time taken	34 mins 15 secs
Marks	9.75/15.00
Grade	**6.50** out of 10.00 (**65**%)

Question **1**

Complete

Mark 1.00 out of 1.00

The human body temperature is normally distributed with the mean of 99 (degree F) and a standard deviation of 0.5 (degree F). A random sample of 99 is selected, describe the sampling distribution for the sample mean.

a. Normal with a mean of 1 and a standard deviation of 0.005

b. None of the other choices is correct

c. Normal with a mean of 99 and a standard deviation of 0.005

d. Normal with a mean of 99 and a standard deviation of 0.05

e. Normal with a mean of 1 and a standard deviation of 0.05

The correct answer is:
Normal with a mean of 99 and a standard deviation of 0.05

Question 2

Complete

Mark 0.00 out of 1.00

Let X be a random variable with density function

$$f(x)=\begin{cases}\frac{x^2}{3} & if \quad -1<x<2,\\ 0 & elsewhere\end{cases}$$

Find the expected value of $Y=4X+3$.

- a. 7
- b. None of the other choices is correct
- c. 8
- d. 10
- e. 9

The correct answer is:
8

Question 3

Complete

Mark 0.00 out of 1.00

Let X be a continuous uniform distribution over the interval [2.4; 5.2]. Find the mean and standard deviation of X.

- a. 3.8 and 0.653
- b. 0.38 and 0.653
- c. None of the others.
- d. 3.8 and 0.808

The correct answer is: 3.8 and 0.808

Question **4**

Complete

Mark 1.00 out of 1.00

At a computer manufacturing company, the actual size of computer chips is normally distributed with a mean of 1 centimeter and a standard deviation of 0.1 centimeter. A random sample of 12 computer chips is taken. What is the probability that the sample mean will be below 0.95 centimeters?
Let $P(Z < -1.73) = 0.04$, $P(Z < -0.34) = 0.36$ and $P(Z < 0) = 0.5$.

- a. 0.04
- b. 0.36
- c. 0.64
- d. None of the other choices is correct
- e. 0.96

The correct answer is:
0.04

Question 5

Complete

Mark 1.00 out of 1.00

If z is the standard normal random variable, what is p(z > -1.787)?

- a. 0.8230
- b. 0.9630
- c. 0.7730
- d. 0.8530

The correct answer is:
0.9630

Question **6**

Complete

Mark 1.00 out of 1.00

If x is a normally-distributed random variable with a mean of 78 and a standard deviation of 12, what is p(67 < x < 81)?

- a. 0.4190
- b. 0.4790
- c. 0.3890
- d. 0.4590

The correct answer is:
0.4190

Question 7

Complete

Mark 1.00 out of 1.00

The _____ for a particular class is equal to the class frequency divided by the total number of observations.

a. None of the other choices is correct
b. class relative frequency
c. stem-and-leaf display
d. class percentage
e. bar graph

The correct answer is:
class relative frequency

Question 8

Complete

Mark 0.00 out of 1.00

An engineering professional body estimates that 70% of the students taking undergraduate engineering courses are in favour of studying of statistics as part of their studies. If this estimate is correct, use the normal formula for Binomial distributions to approximate the probability that more than 700 undergraduate engineers out of a random sample of 1000 will be in favour of studying statistics. Let $P(Z < 0.035) = 0.514$; $P(Z < 0) = 0.5$.

- a. 0.643
- b. 0.514
- c. 0.5
- d. None of the other choices is correct
- e. 0.486

The correct answer is:
0.486

Question 9

Complete

Mark 0.25 out of 1.00

Data on oxide thickness of semiconductors are as follows: 425, 431, 416, 419, 421, 436, 418, 410, 431, 433, 423, 426, 410, 435, 436, 428, 411, 426, 409, 437, 422, 428, 413, 416.

Which the following statement is TRUE?

- a. Standard deviation for the population is 9.08 Angstroms.
- b. The standard error of the mean is 1.85 Angstroms.
- c. Our estimate for the median is 424 Angstroms.
- d. The mean oxide thickness is 423.33 Angstroms.

The correct answers are: The mean oxide thickness is 423.33 Angstroms., Standard deviation for the population is 9.08 Angstroms., The standard error of the mean is 1.85 Angstroms., Our estimate for the median is 424 Angstroms.

Question **10**

Complete

Mark 0.50 out of 1.00

The nine measurements that follow are furnace temperatures recorded on successive batches in a semiconductor manufacturing process: 953, 950, 948, 955, 951, 949, 957, 954, 955. Which the two following statements are FALSE?

- [x] a. Sample Standard Deviation: 3.09
- [ ] b. Sample Variance: 9.53
- [x] c. Sample Mean: 953
- [ ] d. Median: 952.44

The correct answers are:

Median: 952.44,

Sample Mean: 953

Question **11**

Complete

Mark 1.00 out of 1.00

A population has a mean of m=100 and a standard deviation of s=15. If we draw a simple random sample of size n=36, what is the probability that the sample mean $\bar{x}$ will be greater than 98? That is, what is $P(\bar{x} > 98)$?

a. 0.7475075

b. 0.7030986

c. 0.7881446

d. 0.8246761

The correct answer is:
0.7881446

Question 12

Complete

Mark 0.00 out of 1.00

The monthly electrical utility bills of all customers for the Far East Power and Light Company are known to be distributed as a normal distribution with a mean equal to $87 a month and a standard deviation of $36. If a statistical sample of n = 100 customers is selected at random, what is the probability that the mean bill for those sampled will exceed $75? Let P(Z < -3.33) = 0, P(Z < 0.33) = 0.63 and P(Z < -0.44) = 0.33.

a. None of these

b. About 1.00

c. Approximately 0.63

d. 0.33

The correct answer is:

About 1.00

Question 13

Complete

Mark 1.00 out of 1.00

Apple would like to estimate the web browsing battery life (in hours) of the Iphone 6. Four users are randomly selected and the battery life are: 4 4 3 5. Using this sample, what is the point estimate for the variance of the battery life?

- a. None of the other choice is correct
- b. 2.5
- c. 4
- d. 2
- e. 1.4

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

Question **14**

Complete

Mark 1.00 out of 1.00

Suppose a study of houses that have sold recently in your community showed the following frequency distribution for the number of bedrooms:

Bedrooms	Frequency
1	1
2	18
3	140
4	57
5	11

Based on this information, determine the mode for the data.

- a. 57
- b. 140
- c. 4
- d. 3

3

The correct answer is:
3

Question **15**

Complete

Mark 1.00 out of 1.00

Compute the sample standard deviation of the heights (in inches) of three men with heights of 64.9, 65, 65.5

- a. 4.174
- b. 1.911
- c. 0.321
- d. None of the other choices is correct
- e. 3.652

The correct answer is:
0.321