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<b>Marks</b>	23.00/25.00
<b>Grade</b>	9.20 out of 10.00 (92%)

Question 1

Correct

Mark 1.00 out of 1.00

Trang Tien is a producer of ice cream and would like to test the hypothesis that the average consumes more than 17 ounces of ice cream per month. A random sample of 15 Vietnamese people was found to consume an average of 18.2 ounces of ice cream last month. The standard deviation for this sample was 3.9 ounces. What is the test statistic for this hypothesis test?

- ☐ a. 2.49
- ☐ b. 3.01
- ☐ c. 1.83
- ☒ d. 1.19
- ☐ e. None of the other choices is true



Your answer is correct.

The correct answer is:  
1.19

Question 2

Incorrect

Mark 0.00 out of 1.00

Which of the following statements about the P value do you believe to be true?

- ☐ a. The P value is the probability of obtaining the observed results or results which are more extreme if the null hypothesis is true
- ☐ b. The P value is the probability that the alternative hypothesis is true
- ☐ c. The P value is the probability that the null hypothesis is true
- ☒ d. The P value is the probability of obtaining the observed or more extreme results if the alternative hypothesis is true
- ☐ e. The P value is always less than 0.05



Your answer is incorrect.

a) The null hypothesis is either true or false.

b) The alternative hypothesis is either true or false.

c) The P value is the probability of obtaining the observed or more extreme results if the null hypothesis is true.

e) The cut-off of 0.05 is usually used to indicate significance, but the P-value can take any value between 0 and 1.

The correct answer is:

The P value is the probability of obtaining the observed results or results which are more extreme if the null hypothesis is true

Question **3**

Correct

Mark 1.00 out of 1.00

Medicare would like to test the hypothesis that the average monthly rate for one-bedroom assisted-living facility is equal to \$3,300. A random sample of 12 assisted living facilities had an average rate of \$3,690 per month and a standard of \$530. It is believed that the monthly rate for one bedroom assisted-living facility is normally distributed. Use the significance level of 0.05 for this hypothesis test, what is the value of the test statistic?

- ☐ a. 2.21
- ☐ b. -2.16
- ☐ c. None of the other choices is true
- ☐ d. -1.37
- ☒ e. 2.55



Your answer is correct.

The correct answer is:  
2.55

Question 4

Correct

Mark 1.00 out of 1.00

An airline claims that only 6% of all lost luggage is never found. If, in a random sample, 17 of 200 pieces of lost luggage are not found, test the null hypothesis  $p = 0.06$  against the alternative hypothesis  $p > 0.06$  at  $\alpha = 0.05$ .

Let  $z_{0,05} = 1.65$

(i)  $z_0 = 1.489$ , fail to reject  $H_0$

(ii)  $z_0 = 1.489$ , reject  $H_0$

(iii)  $z_0 = 1.836$ , fail to reject  $H_0$

(iv)  $z_0 = 1.836$ , reject  $H_0$

- ☐ a. (iii)
- ☐ b. (iv)
- ☒ c. (i)
- ☐ d. None of the other choices is correct
- ☐ e. (ii)



Your answer is correct.

The correct answer is:

(i)

Question **5**

Correct

Mark 1.00 out of 1.00

The following are methods used to test hypotheses except:

- ☐ a. traditional (computed value) method
- ☐ b. p-value method
- ☐ c. confidence interval method
- ☒ d. survey method



Your answer is correct.

The correct answer is:  
survey method

Question **6**

Correct

Mark 1.00 out of 1.00

A sample is used to obtain a 95% confidence interval for the mean of a population. The confidence interval goes from 15 to 19. If the same sample had been used to test the null hypothesis that the mean of the population is equal to 20 versus the alternative hypothesis that the mean of the population differs from 20, the null hypothesis could be rejected at a level of significance of 0.05.

- ☐ a. False
- ☒ b. True



Your answer is correct.

The correct answer is:

True

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Question 7

Correct

Mark 1.00 out of 1.00

Suppose data is obtained from 20 pairs of  $(x, y)$  and the sample correlation coefficient is 0.9. Test the hypothesis that  $H_0: \rho=0$  versus  $H_1: \rho \neq 0$  with  $\alpha=0.05$ . Let  $t_{0.025, 18} = 2.101$ .

- ☐ a. Do not reject  $H_0$
- ☒ b. Reject  $H_0$



Your answer is correct.

The correct answer is:  
Reject  $H_0$

Question 8

Correct

Mark 1.00 out of 1.00

We have created a 95% confidence interval for  $\mu$  with the result (10, 15). What decision will we make if we test  $H_0: \mu = 16$  versus  $H_1: \mu \neq 16$  at  $\alpha = 0.05$ ?

- ☐ a. We cannot tell what our decision will be from the information given
- ☐ b. Accept  $H_0$  in favour of  $H_1$
- ☐ c. Fail to reject  $H_0$  in favour of  $H_1$
- ☒ d. Reject  $H_0$  in favour of  $H_1$



Your answer is correct.

The correct answer is:  
Reject  $H_0$  in favour of  $H_1$



Question 9

Correct

Mark 1.00 out of 1.00

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An entomologist writes an article in a scientific journal which claims that fewer than 12 in tenthousand male fireflies are unable to produce light due to a genetic mutation. Express the null hypothesis  $H_0$  and the alternative hypothesis  $H_1$  in symbolic form. Use the parameter  $p$ , the true proportion of fireflies unable to produce light.

(i)  $H_0: p < 0.0012, H_1: p \geq 0.0012$

(ii)  $H_0: p = 0.0012, H_1: p > 0.0012$

(iii)  $H_0: p > 0.0012, H_1: p \leq 0.0012$

(iv)  $H_0: p = 0.0012, H_1: p < 0.0012$

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☒ a. (IV)

☐ b. (I)

☐ c. (III)

☐ d. (II)



Your answer is correct.

The correct answer is:

(IV)

Question **10**

Correct

Mark 1.00 out of 1.00

Suppose the mean weight of King Penguins found in an Antarctic colony last year was 15.4 kg. In a sample of 35 penguins same time this year in the same colony, the mean penguin weight is 14.6 kg. Assume the sample standard deviation is 2.5 kg. At a significance level of 0.05, can we reject the null hypothesis that the mean penguin weight does not differ from last year?

Let  $t_{0.025, 34} = 2.032$

(i)  $t_0 = -1.8931$ , reject  $H_0$

(ii)  $t_0 = -1.8931$ , fail to reject  $H_0$

(iii)  $t_0 = 1.8931$ , reject  $H_0$

(iv)  $t_0 = 1.8931$ , fail to reject  $H_0$

☐ a. (iv)

☒ b. (ii)

☐ c. (iii)

☐



✓ d. (i)

Your answer is correct.

The correct answer is:  
(ii)

Question 11

Correct

Mark 1.00 out of 1.00

A soft drink company has a filling machine that can be set at different levels to produce different average fill amounts. The company sets the machine to provide a mean fill of 12 ounces. The standard deviation on the machine is known to be 0.20 ounces. Assuming that the hypothesis test is to be performed using a random sample of  $n = 100$  cans, which of the following would be the correct formulation of the null and alternative?

(i)  $H_0 : \mu \neq 12$  ounces  
 $H_1 : \mu = 12$  ounces

(ii)  $H_0 : \mu = 12$  ounces  
 $H_1 : \mu \neq 12$  ounces

(iii)  $H_0 : \bar{x} \leq 12$  ounces  
 $H_1 : \bar{x} > 12$  ounces

- ☐ a. None of the other choices is correct
- ☒ b. (ii)
- ☐ c. (iii)
- ☐ d. (i)



Your answer is correct.

The correct answer is:  
(ii)

Question **12**

Correct

Mark 1.00 out of 1.00

Which of these is a correct null hypothesis?

- ☐ a.  $H_0: \bar{x} = 12$
- ☐ b.  $H_0: \mu > 12$
- ☒ c.  $H_0: \mu = 12$



Your answer is correct.

The correct answer is:

$H_0: \mu = 12$

Question **13**

Incorrect

Mark 0.00 out of 1.00

Which hypothesis is generally formulated to look for evidence to support a claim called a research hypothesis?

- ☒ a. null hypothesis
- ☐ b. statistical hypothesis
- ☐ c. alternative hypothesis



Your answer is incorrect.

The correct answer is:  
alternative hypothesis

Question **14**

Correct

Mark 1.00 out of 1.00

In a factory manufacturing computer chips, when testing the product shipped, we choose random 600 ICs and there are 15 ICs unsatisfactory. Call  $p$  the rate of IC do not meet demand in the plant. Test  $H_0: p = 0.03$  against  $H_1: p \neq 0.03$  using  $\alpha = 0.05$ . Let  $z_{0.025} = 1.96$ ;  $z_{0.05} = 1.65$ .

- ☐ a. Reject  $H_0$
- ☒ b. Do not reject  $H_0$



Your answer is correct.

The correct answer is:  
Do not reject  $H_0$

Question **15**

Correct

Mark 1.00 out of 1.00

A random sample of 310 circuits generated 15 defectives. Use the data to test  $H_0 : p=0.05$  versus  $H_1 : p \neq 0.05$ . Let  $z_{0.025} = 1.96$ ; use  $\alpha = 0.05$ .

- ☐ a. Reject null hypothesis and conclude the true fraction of defective integrated circuits is significantly less than 0.05, at  $\alpha=0.05$ .
- ☒ b. Do not reject null hypothesis and conclude the true fraction of defective integrated circuits is not significantly less than 0.05, at  $\alpha=0.05$



Your answer is correct.

The correct answer is:

Do not reject null hypothesis and conclude the true fraction of defective integrated circuits is not significantly less than 0.05, at  $\alpha=0.05$



Question **16**

Correct

Mark 1.00 out of 1.00

The national weather service says that the mean daily high temperature for October in a large Midwestern city is 56°F. A local weather service wants to test the claim of 56°F because it believes it is lower. A sample of mean daily high temperatures for October over the past 31 years yields  $\bar{x}=54^\circ\text{F}$  and  $s=5.6^\circ\text{F}$ . Test the claim at  $\alpha=0.01$  significance level.  $z_{0.005}=2.58$ ,  $z_{0.01}=2.33$

- ☐ a. I can say with 99 % confidence that the true mean temp is less than 56 F
- ☒ b. I can not say with 99 % confidence that the true mean temp is less than 56 F



Your answer is correct.

The correct answer is:

I can not say with 99 % confidence that the true mean temp is less than 56 F

Question **17**

Correct

Mark 1.00 out of 1.00

Given  $H_0 : p = 0.85$  and  $\alpha = 0.10$ , which level of confidence should you use to test the claim?

- ☒ a. 90%
- ☐ b. 99%
- ☐ c. 80%
- ☐ d. 95%
- ☐ e. None of the other choices is correct



Your answer is correct.

The correct answer is:

90%

Question **18**

Correct

Mark 1.00 out of 1.00

Suppose you want to test the claim that  $\mu \neq 31.5$ , with known  $\sigma$ . If the sample size is  $n = 81$  and the level of significance  $\alpha = 0.1$ , when should you reject  $H_0$ ?

Let  $z_{0.005} = 2.575$ ,  $z_{0.01} = 2.33$ ,  $z_{0.025} = 1.96$  and  $z_{0.05} = 1.645$ .

- ☐ a. Reject  $H_0$  if the test statistic is greater than 2.33 or less than -2.33
- ☐ b. Reject  $H_0$  if the test statistic is greater than 1.96 or less than -1.96
- ☒ c. Reject  $H_0$  if the test statistic is greater than 1.645 or less than -1.645.
- ☐ d. Reject  $H_0$  if the test statistic is greater than 2.575 or less than -2.575
- ☐ e. None of the other choices is correct



Your answer is correct.

The correct answer is:

Reject  $H_0$  if the test statistic is greater than 1.645 or less than -1.645.

Question **19**

Correct

Mark 1.00 out of 1.00

The null and alternative hypotheses are written about

- ☐ a. a sample statistic
- ☐ b. sample data
- ☒ c. a population parameter



Your answer is correct.

The correct answer is:  
a population parameter

Question **20**

Correct

Mark 1.00 out of 1.00

Which hypothesis should be written as an inequality?

- ☐ a. the null hypothesis
- ☒ b. the alternative hypothesis
- ☐ c. either the alternative or the null hypothesis



Your answer is correct.

The correct answer is:  
the alternative hypothesis

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Question **21**

Correct

Mark 1.00 out of 1.00

Find the critical value for a two – tailed test  $H_1: \mu \neq 10$ ,  $\alpha = 0.01$ ,  $n = 30$ . Assume that the data are normally distributed. Let  $z_{0.05} = 1.645$ ;  $z_{0.025} = 1.96$ ;  $z_{0.01} = 2.33$ ;  $t_{0.005, 29} = 2.756$ .

- ☐ a. 2.33; -2.33
- ☒ b. 2.756; -2.756
- ☐ c. 1.96; -1.96
- ☐ d. None of the other choices is correct
- ☐ e. 1.645; -1.645



Your answer is correct.


The correct answer is:  
2.756; -2.756

Question **22**

Correct

Mark 1.00 out of 1.00

Which of the following statements do you believe to be true?

- ☒ a. If the P value for a hypothesis test is 0.20, we can accept the null hypothesis 
- ☐ b. In a study of comparing the weights of men and women the alternative hypothesis would be defined as: "The weight of men is greater than women"
- ☐ c. The P value is the probability that the null hypothesis is true
- ☐ d. In a study of comparing the amount of alcohol consumed by men and women the null hypothesis would be defined as: "There is a difference in drinking rates of men and women"

Your answer is correct.

The correct answer is:

If the P value for a hypothesis test is 0.20, we can accept the null hypothesis

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Question **23**

Correct

Mark 1.00 out of 1.00

A major videocassette rental chain is considering opening a new store in an area that currently does not have any such stores. The chain will open if there is evidence that more than 25% households in the area are equipped with videocassette recorders (VCRs). It conducts a telephone poll of 300 randomly selected households in the area and finds that 96 have VCRs. The value of the test statistic in this problem is approximately equal to

- ☐ a. None of the other choices is correct
- ☐ b. 1.30
- ☒ c. 2.80
- ☐ d. 1.94
- ☐ e. 2.60



Your answer is correct.

The correct answer is:  
2.80



Question **24**

Correct

Mark 1.00 out of 1.00

What hypothesis states equality or no difference, or no relationship/effect?

- ☐ a. alternative hypothesis
- ☐ b. statistical hypothesis
- ☒ c. null hypothesis



Your answer is correct.

The correct answer is:  
null hypothesis

Question **25**

Correct

Mark 1.00 out of 1.00

Assume that IQ scores for a certain population are approximately  $N(\mu, 100)$ . To test the hypothesis  $H_0: \mu = 110$  against  $H_1: \mu > 110$ , we take a random sample of size  $n = 16$  from this population and observe  $\bar{x} = 113.5$ .  
Do we accept or reject  $H_0$  at the 5% level?

Let  $z_{0.05} = 1.645$

- ☐ a. Reject  $H_0$
- ☒ b. Fail to reject  $H_0$



Your answer is correct.

The correct answer is:  
Fail to reject  $H_0$

