Examrace

Statistics MCQs – Hypothesis Testing for One Population Part 1

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1. A Type I error occurs when we:

a. reject a false null hypothesis

b. reject a true null hypothesis

c. do not reject a false null hypothesis

d. do not reject a true null hypothesis

e. fail to make a decision regarding whether to reject a hypothesis or not

Answer: B

2. In a criminal trial, a Type I error is made when:

a. a guilty defendant is acquitted (set free)

b. an innocent person is convicted (sent to jail)

c. a guilty defendant is convicted

d. an innocent person is acquitted

e. no decision is made about whether to acquit or convict the defendant

Answer: B

3. A Type II error occurs when we:

a. reject a false null hypothesis

b. reject a true null hypothesis

c. do not reject a false null hypothesis

d. do not reject a true null hypothesis

e. fail to make a decision regarding whether to reject a hypothesis or not

Answer: C

4. If a hypothesis is rejected at the 0.025 level of significance, it:

a. must be rejected at any level

b. must be rejected at the 0.01 level

c. must not be rejected at the 0.01 level

d. must not be rejected at any other level

e. may or may not be rejected at the 0.01 level

Answer: E

5. In a criminal trial, a Type II error is made when:

a. a guilty defendant is acquitted (set free)

b. an innocent person is convicted (sent to jail)

c. a guilty defendant is convicted

d. an innocent person is acquitted

e. no decision is made about whether to acquit or convict the defendant

Answer: A

6. In a two-tail test for the population mean, if the null hypothesis is rejected when the alternative is true, then:

a. a Type I error is committed

b. a Type II error is committed

c. a correct decision is made

d. a one-tail test should be used instead of a two-tail test

e. it is unclear whether a correct or incorrect decision has been made

Answer: C

7. In a one-tail test for the population mean, if the null hypothesis is not rejected when the alternative hypothesis is true, then:

a. a Type I error is committed

b. a Type II error is committed

c. a correct decision is made

d. a two-tail test should be used instead of a one-tail test

e. it is unclear whether a correct or incorrect decision has been made

Answer: B

8. In a one-tail test for the population mean, if the null hypothesis is rejected when the alternative hypothesis is not true, then:

a. a Type I error is committed

b. a Type II error is committed

c. a correct decision is made

d. a two-tail test should be used instead of a one-tail test

e. it is unclear whether a correct or incorrect decision has been made

Answer: A

9. If we reject the null hypothesis, we conclude that:

a. there is enough statistical evidence to infer that the alternative hypothesis is true

b. there is not enough statistical evidence to infer that the alternative hypothesis is true

c. there is enough statistical evidence to infer that the null hypothesis is true

d. the test is statistically insignificant at whatever level of significance the test was conducted at

e. further tests need to be carried out to determine for sure whether the null hypothesis should be rejected or not

Answer: A

10. If we do not reject the null hypothesis, we conclude that:

a. there is enough statistical evidence to infer that the alternative hypothesis is true

b. there is not enough statistical evidence to infer that the alternative hypothesis is true

c. there is enough statistical evidence to infer that the null hypothesis is true

d. the test is statistically insignificant at whatever level of significance the test was conducted at

e. further tests need to be carried out to determine for sure whether the null hypothesis should be rejected or not

Answer: B

11. The p-value of a test is the:

a. smallest significance level at which the null hypothesis cannot be rejected

b. largest significance level at which the null hypothesis cannot be rejected

c. smallest significance level at which the null hypothesis can be rejected

d. largest significance level at which the null hypothesis can be rejected

e. probability that no errors have been made in rejecting or not rejecting the null hypothesis

Answer: C

12. In order to determine the p-value of a hypothesis test, which of the following is not needed?

a. whether the test is one-tail or two-tail

b. the value of the test statistic

c. the form of the null and alternate hypotheses

d. the level of significance

e. all of the above are needed to determine the p-value

Answer: D

13. Which of the following p-values will lead us to reject the null hypothesis if the significance level of the test if 5 % ?

a. 0.15

b. 0.10

c. 0.06

d. 0.20

e. 0.025

Answer: E

14. Suppose that we reject a null hypothesis at the 5 % level of significance. For which of the following levels of significance do we also reject the null hypothesis?

a. 6 %

b. 2.5 %

c. 4 %

d. 3 %

e. 2 %

Answer: A

15. Which of the following statements about hypothesis testing is true?

a. If the p-value is greater than the significance level, we fail to reject H_o.

b. A Type II error is rejecting the null when it is actually true.

c. If the alternative hypothesis is that the population mean is greater than a specified value, then the test is a two-tailed test.

d. The significance level equals one minus the probability of a Type I error.

e. None of the above statements are true.

Answer: A

16. The purpose of hypothesis testing is to:

a. test how far the mean of a sample is from zero

b. determine whether a statistical result is significant

c. determine the appropriate value of the significance level

d. derive the standard error of the data

e. determine the appropriate value of the null hypothesis

Answer: B

17. In hypothesis testing, what level of significance would be most appropriate to choose if you knew that making a Type I error would be more costly than making a Type II error?

a. 0.005

b. 0.025

c. 0.050

d. 0.100

e. 0.028

Answer: A

18. The p-value obtained from a classical hypothesis test is:

a. the probability that the null hypothesis is true given the data

b. the probability that the null hypothesis is false given the data

c. the probability of observing the data or more extreme values if the null hypothesis is true

d. the probability of observing the data or more extreme values if the alternative hypothesis is true

e. the probability that the observed data were obtained due to chance

Answer: C

19. To test a hypothesis involving proportions, both np and n (1-p) should

a. Be at least 30

b. Be greater than 5

c. Lie in the range from 0 to 1

d. Be greater than 50

e. There are no specific conditions surrounding the values of n and p

Answer: B

20. What assumption is being made when we use the t-distribution to perform a hypothesis test?

a. That the underlying distribution has more then one modal class

b. That the underlying population has a constant variance

c. That the underlying population has a non-symmetrical distribution

d. That the underlying population follows an approximately Normal distribution

e. None of the above

Answer: D