**STATISTICS WORKSHEET-10**

**Q1 to Q12 have only one correct answer. Choose the correct option to answer your question.**

1. Rejection of the null hypothesis is a conclusive proof that the alternative hypothesis is

a. True

b. False

c. Neither

ANSWER:-a. True

2. Parametric test, unlike the non-parametric tests, make certain assumptions about

a. The population size

b. The underlying distribution

c. The sample size

ANSWER:- b. The underlying distribution

3. The level of significance can be viewed as the amount of risk that an analyst will accept when making a decision

a. True

b. False

ANSWER:-a. True

4. By taking a level of significance of 5% it is the same as saying

a. We are 5% confident the results have not occurred by chance

b. We are 95% confident that the results have not occurred by chance

c. We are 95% confident that the results have occurred by chance

Answer:-b. We are 95% confident that the results have not occurred by chance

5. One or two tail test will determine

a. If the two extreme values (min or max) of the sample need to be rejected

b. If the hypothesis has one or possible two conclusions

c. If the region of rejection is located in one or two tails of the distribution

ANSWER:-If the region of rejection is located in one or two tails of the distribution

6. Two types of errors associated with hypothesis testing are Type I and Type II. Type II error is committed when

a. We reject the null hypothesis whilst the alternative hypothesis is true

b. We reject a null hypothesis when it is true

c. We accept a null hypothesis when it is not true

ANSWER:-b. We reject a null hypothesis when it is true

7. A randomly selected sample of 1,000 college students was asked whether they had ever used the drug Ecstasy. Sixteen percent (16% or 0.16) of the 1,000 students surveyed said they had. Which one of the following statements about the number 0.16 is correct?

a. It is a sample proportion.

b. It is a population proportion.

c. It is a margin of error.

d. It is a randomly chosen number.

ANSWER:-a. It is a sample proportion.

8. In a random sample of 1000 students, pˆ = 0.80 (or 80%) were in favour of longer hours at the school library. The standard error of pˆ (the sample proportion) is

a. .013

b. .160

c. .640

d. .800

ANSWER:-a. .013

9. For a random sample of 9 women, the average resting pulse rate is x = 76 beats per minute, and the sample standard deviation is s = 5. The standard error of the sample mean is

a. 0.557

b. 0.745

c. 1.667

d. 2.778

ANSWER:-c. 1.667

10. Assume the cholesterol levels in a certain population have mean μ= 200 and standard deviation σ = 24. The cholesterol levels for a random sample of n = 9 individuals are measured and the sample mean x is determined. What is the z-score for a sample mean x = 180?

a. –3.75

b. –2.50

c. −0.83

d. 2.50

ANSWER:-b. –2.50

11. In a past General Social Survey, a random sample of men and women answered the question “Are you a member of any sports clubs?” Based on the sample data, 95% confidence intervals for the population proportion who would answer “yes” are .13 to .19 for women and .247 to .33 for men. Based on these results, you can reasonably conclude that

a. At least 25% of American men and American women belong to sports clubs.

b. At least 16% of American women belong to sports clubs.

c. There is a difference between the proportions of American men and American women who belong to sports clubs.

d. There is no conclusive evidence of a gender difference in the proportion belonging to sports clubs.

Answer:-d. There is no conclusive evidence of a gender difference in the proportion belonging to sports clubs.

12. Suppose a 95% confidence interval for the proportion of Americans who exercise regularly is 0.29 to 0.37. Which one of the following statements is FALSE?

a. It is reasonable to say that more than 25% of Americans exercise regularly.

b. It is reasonable to say that more than 40% of Americans exercise regularly.

c. The hypothesis that 33% of Americans exercise regularly cannot be rejected.

d. It is reasonable to say that fewer than 40% of Americans exercise regularly.

Answer:-b. It is reasonable to say that more than 40% of Americans exercise regularly.

**Q13 to Q15 are subjective answers type questions. Answers them in their own words briefly**.

1. How do you find the test statistic for two samples?

Answer:-The test statistic for two samples depends on the type of hypothesis test being performed. Here are the general steps for finding the test statistic:

1. Determine the appropriate test statistic for the hypothesis test based on the type of data and the research question being investigated. Common test statistics include the t-statistic, z-statistic, and F-statistic.
2. Calculate the relevant sample statistics for each sample, such as the sample means, sample standard deviations, and sample sizes.
3. Use the formula for the chosen test statistic to calculate the value of the test statistic. This typically involves plugging in the sample statistics and the null hypothesis value, if applicable.
4. Determine the p-value associated with the test statistic by referring to a table of critical values or using statistical software.
5. Compare the p-value to the chosen level of significance (e.g., 0.05) to determine whether to reject or fail to reject the null hypothesis.

1. How do you find the sample mean difference?

Answer:- To find the sample mean difference between two samples, you simply subtract the mean of one sample from the mean of the other sample. Mathematically, this can be expressed as:

sample mean difference = sample mean of group 1 - sample mean of group 2

For example, if you have two samples of test scores for two different groups of students, you can find the sample mean difference as follows:

1. Calculate the mean score for group 1.
2. Calculate the mean score for group 2.
3. Subtract the mean score of group 2 from the mean score of group 1 to get the sample mean difference.

The sample mean difference can be used in hypothesis testing and confidence interval calculations to compare the means of two groups.

15.What is a two sample t test example?

Answer:-A two-sample t-test is used to determine if there is a significant difference between the means of two independent groups. Here is an example:

Suppose a researcher wants to determine if there is a significant difference in the mean height between males and females. The researcher collects a random sample of 50 males and 50 females and measures their heights. The mean height of the males is found to be 70 inches with a standard deviation of 3 inches, and the mean height of the females is found to be 64 inches with a standard deviation of 2.5 inches.

To test the hypothesis that there is a significant difference in mean height between males and females, the researcher can perform a two-sample t-test. The null hypothesis is that the means are equal, and the alternative hypothesis is that they are different. Assuming a significance level of 0.05, the researcher can calculate the test statistic and compare it to the critical value from the t-distribution with 98 degrees of freedom.

If the calculated test statistic exceeds the critical value, the null hypothesis is rejected, and the researcher concludes that there is a significant difference in mean height between males and females. If the calculated test statistic does not exceed the critical value, the null hypothesis is not rejected, and the researcher concludes that there is not enough evidence to suggest a significant difference in mean height between males and females.

窗体底端