STATISTICS WORKSHEET - 8

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

1. In hypothesis testing, type II error is represented by β and the power of the test is 1−β then β is:

ANS. c. The probability of failing to reject H1 when H0 is true

2. In hypothesis testing, the hypothesis which is tentatively assumed to be true is called the

ANS. b. null hypothesis

3. When the null hypothesis has been true, but the sample information has resulted in the rejection of the null, a _____ has been made

ANS. d. Type I error

4.For finding the p-value when the population standard deviation is unknown, if it is reasonable to assume that the population is normal, we use

ANS. b. the t distribution with n - 1 degrees of freedom

5. A Type II error is the error of

ANS. b. accepting Ho when it is true

6. A hypothesis test in which rejection of the null hypothesis occurs for values of the point estimator in either tail of the sampling distribution is called

ANS. d. a two-tailed test

7. In hypothesis testing, the level of significance is

ANS. b. the probability of committing a Type I error

8. In hypothesis testing, b is

ANS. a. the probability of committing a Type II error

9. When testing the following hypotheses at an α level of significance H0: p = 0.7 H1: p > 0.7 The null hypothesis will be rejected if the test statistic Z is

ANS. a. $z > z\alpha$

10. Which of the following does not need to be known in order to compute the P-value?

ANS. c. the level of significance

11. The maximum probability of a Type I error that the decision maker will tolerate is called the

ANS. a. level of significance

12. For t distribution, increasing the sample size, the effect will be on

ANS. d. All of the Above

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

13. What is Anova in SPSS?

ANS. ANOVA (Analysis of Variance) is a statistical technique used to analyze the differences between means of two or more groups. It is a popular statistical method used to test the hypothesis that the means of two or more groups are equal or not. SPSS (Statistical Package for the Social Sciences) is a software program commonly used for data analysis, including ANOVA.

14. What are the assumptions of Anova?

ANS. ANOVA (Analysis of Variance) has several assumptions that must be met in order for the results to be valid and reliable. These assumptions are:

1. Independence: The observations in each group must be independent of each other. In other words, the data points within each group should not be related to each other in any way.

2. Normality: The distribution of the dependent variable should be approximately normal within each group. This assumption can be checked by looking at histograms, normal probability plots, or using statistical tests such as the Shapiro-Wilk test.

3. Homogeneity of variance: The variance of the dependent variable should be equal across all groups. This assumption can be checked using statistical tests such as Levene's test.

4. Homogeneity of regression slopes: If there are multiple independent variables in the model, the relationship between each independent variable and the dependent variable should be the same for each group.

5. Random sampling: The data should be collected using random sampling methods so that the sample is representative of the population.

If any of these assumptions are violated, the results of the ANOVA may not be reliable, and alternative statistical methods may need to be used. It is important to check these assumptions before performing ANOVA to ensure that the results are valid and reliable.

15. What is the difference between one way Anova and two way Anova?

ANS.

	One-Way ANOVA	Two-Way ANOVA
Definition	A test that allows one to make comparisons between the means of three or more groups of data.	A test that allows one to make comparisons between the means of three or more groups of data, where two independent variables are considered.
Number of Independent Variables	One	Two
What is Being Compared?	The means of three or more groups of an independent variable on a dependent variable	The effect of multiple groups of two independent variables on a dependent variable and on each other.
Number of Groups of Samples	Three or more.	Each variable should have multiple samples.