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:

Answer: b. The probability of failing to reject H_0 when H_1 is true

****
****

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

Answer: 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

Answer: 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

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

****
****

5) A Type II error is the error of

Answer: a. accepting Ho when it is false

****
****

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

Answer: a two-tailed test

****
****

7) In hypothesis testing, the level of significance is

Answer: b. the probability of committing a Type I error

****
****

8) In hypothesis testing, b is

Answer: the probability of committing a Type II error

****
****

9) When testing the following hypotheses at an α level of significance

H_0: $p = 0.7$
H_1: $p > 0.7$
The null hypothesis will be rejected if the test statistic Z is

Answer: a. $z > z_\alpha$

****
****

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

Answer: d. All of the above are needed

****
****

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

Answer: a. level of significance

****
****

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

Answer: 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?

Answer: Analysis of Variance, i.e. ANOVA in SPSS, is used for examining the differences in the mean values of the dependent variable associated with the effect of the controlled independent variables, after taking into account the influence of the uncontrolled independent variables. Essentially, ANOVA in SPSS is used as the test of means for two or more populations.

****
****

14) What are the assumptions of Anova?

Answer: Following are the assumptions of ANOVA :

1. Your dependent variable should be measured at the interval or ratio level (i.e., they are continuous).
2. Your independent variable should consist of two or more categorical, independent groups.

3. You should have independence of observations, which means that there is no relationship between the observations in each group or between the groups themselves.
4. There should be no significant outliers.
5. Your dependent variable should be approximately normally distributed for each category of the independent variable.
6. There needs to be homogeneity of variances. You can test this assumption in SPSS Statistics using Levene's test for homogeneity of variances.

****
****

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

Answer: The key differences between one-way and two-way ANOVA are as follows:

1. A one-way ANOVA is primarily designed to enable the equality testing between three or more means. A two-way ANOVA is designed to assess the interrelationship of two independent variables on a dependent variable.
2. A one-way ANOVA only involves one factor or independent variable, whereas there are two independent variables in a two-way ANOVA.
3. In a one-way ANOVA, the one factor or independent variable analyzed has three or more categorical groups. A two-way ANOVA instead compares multiple groups of two factors.
4. One-way ANOVA need to satisfy only two principles of design of experiments, i.e. replication and randomization.
5. As opposed to Two-way ANOVA, this meets all three principles of design of experiments which are replication, randomization, and local control.

****
****