STATISTICS WORKSHEET-8

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

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

a. The probability of rejecting H0 when H1 is true   b. *The probability of failing to reject H0 when H1 is true*

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

Ques:-2 In hypothesis testing, the hypothesis which is tentatively assumed to be true is called the

a. correct hypothesis   b. *null hypothesis*

c. alternative hypothesis   d. level of significance

Ques:-3 When the null hypothesis has been true, but the sample information has resulted in the rejection of the null, a

_____ has been made

a. level of significance b. Type II error

c. critical value   d. *Type I error*

Ques:-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

a. the z distribution   b. *the t distribution with n - 1 degrees of freedom*

 c. the t distribution with n + 1 degrees of freedom   d. none of the above

Ques:-5 A Type II error is the error of

a. *accepting Ho when it is false*   b. accepting Ho when it is true

c. rejecting Ho when it is false   d. rejecting Ho when it is true

Ques:-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

a. the null hypothesis   b. the alternative hypothesis

c. a one-tailed test   d. *a two-tailed test*

Ques:-7 In hypothesis testing, the level of significance is

a. the probability of committing a Type II error   b. *the probability of committing a Type I error*

c. the probability of either a Type I or Type II, depending on the hypothesis to be tested d. none of the above

Ques:-8 In hypothesis testing, b is

a. *the probability of committing a Type II error*   b. the probability of committing a Type I error

c. the probability of either a Type I or Type II, depending on the hypothesis to be test   d. none of the above

Ques:-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

a. $z > z\alpha$ b. $z < z\alpha$

c. $z < -z$ d. none of the above

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

a. knowledge of whether the test is one-tailed or two-tail   b. the value of the test statistic

c. *the level of significance*   d. All of the above are needed

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

a. *level of significance* b. critical value

c. decision value   d. probability value

Ques:-12 For t distribution, increasing the sample size, the effect will be on

a. Degrees of Freedom   b. The t-ratio

c. Standard Error of the Means   d. *All of the Above*

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

Ques:-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.

ANOVA in SPSS must have a dependent variable which should be metric (measured using an interval or ratio scale). ANOVA in SPSS must also have one or more independent variables, which should be categorical in nature. In ANOVA in SPSS, categorical independent variables are called factors. A particular combination of factor levels, or categories, is called a treatment.

Ques:-14 What are the assumptions of Anova?

Answer:- To use the ANOVA test we made the following assumptions:

 Each group sample is drawn from a normally distributed population

All populations have a common variance

All samples are drawn independently of each other

Within each sample, the observations are sampled randomly and independently of each other

Factor effects are additive

Ques:-15 What is the difference between one way Anova and two way Anova?

Answer:- A hypothesis test that enables us to test the equality of three or more means simultaneously using variance is called One way ANOVA. A statistical technique in which the interrelationship between factors, influencing variable can be studied for effective decision making, is called Two-way ANOVA.

There is only one factor or independent variable in one way ANOVA whereas in the case of two-way ANOVA there are two independent variables.

One-way ANOVA compares three or more levels (conditions) of one factor. On the other hand, two-way ANOVA compares the effect of multiple levels of two factors.

In one-way ANOVA, the number of observations need not be same in each group whereas it should be same in the case of two-way ANOVA.

One-way ANOVA need to satisfy only two principles of design of experiments, i.e. replication and randomization. As opposed to Two-way ANOVA, which meets all three principles of design of experiments which are replication, randomization, and local control.