

# **STATISTICS WORKSHEET**

**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  $\beta$  and the power of the test is  $1-\beta$  then  $\beta$  is:

- a. The probability of rejecting  $H_0$  when  $H_1$  is true
- b. The probability of failing to reject  $H_0$  when  $H_1$  is true
- c. The probability of failing to reject  $H_1$  when  $H_0$  is true
- d. The probability of rejecting  $H_0$  when  $H_1$  is true

Ans: b

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

Ans: b

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

Ans: d

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

Ans: b

5. A Type II error is the error of
- a. accepting  $H_0$  when it is false
  - b. accepting  $H_0$  when it is true
  - c. rejecting  $H_0$  when it is false
  - d. rejecting  $H_0$  when it is true

Ans: a

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

Ans: d

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

Ans: b

8. In hypothesis testing,  $\beta$  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

Ans: a

9. When testing the following hypotheses at an  $\alpha$  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

- a.  $z > z_\alpha$
- b.  $z < z_\alpha$
- c.  $z < -z$
- d. none of the above

Ans: d

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

Ans: c

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

Ans: a

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

Ans: d

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

13. What is Anova in SPSS?

Ans: SPSS is a software developed by IBM in which we can perform statistical tasks and much more.

Anova test is one of the task from them, we use this hypothesis testing to find the significance (p-value) so that we can check whether the null hypothesis is accepted or alternate hypothesis is accepted.

This test is performed when we have categorical column which has more than two variables.

14. What are the assumptions of Anova?

Ans: There are following assumptions of Anova: -

- The responses for each factor level have normal population distribution.
- These distribution have the same variance.
- The data are independent.

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

Ans: The only difference between one way Anova and two way Anova is one way Anova has one independent variable and two way Anova has two independent variables.