**STATISTICS– WORKSHEET 3**

1. Which of the following is the correct formula for total variation?

a) Total Variation = Residual Variation – Regression Variation

**b) Total Variation = Residual Variation + Regression Variation**

c) Total Variation = Residual Variation \* Regression Variation

d) All of the mentioned

**ANS- B**

1. . Collection of exchangeable binary outcomes for the same covariate data are called \_\_\_\_\_\_\_ outcomes.

a) random

b) direct

**c) binomial**

d) none of the mentioned

**ANS- C**

1. How many outcomes are possible with Bernoulli trial?

**a) 2**

b) 3

c) 4

d) None of the mentioned

**ANS- A**

1. . If Ho is true and we reject it is called

**a) Type-I error**

b) Type-II error

c) Standard error

d) Sampling error

**ANS- A**

1. . Level of significance is also called:

a) Power of the test

b) Size of the test

**c) Level of confidence**

d) Confidence coefficient

**ANS- C**

1. The chance of rejecting a true hypothesis decreases when sample size is:

**a) Decrease**

b) Increase

c) Both of them

d) None

**ANS- A**

1. Which of the following testing is concerned with making decisions using data?

a) Probability

**b) Hypothesis**

c) Causal

d) None of the mentioned

**ANS- B**

1. What is the purpose of multiple testing in statistical inference?

a) Minimize errors

b) Minimize false positives

c) Minimize false negatives

**d) All of the mentioned**

**ANS- D**

1. Normalized data are centred at \_\_\_ and have units equal to standard deviations of the original data

**a) 0**

b) 5

c) 1

d) 10

**ANS- A**

1. What Is Bayes' Theorem?

**ANS-** Bayes' Theorem is a way of finding a probability when we know certain other probabilities. The formula is: P(A|B) = P(A) P(B|A)P(B) Which tells us:

how often A happens given that B happens, written P(A|B), When we know how often B happens given that A happens, written P(B|A) and how likely A is on its own, written P(A) and how likely B is on its own, written P(B)

1. What is z-score?

**ANS-**  Z-score is a numerical measurement that describes a value's relationship to the mean of a group of values. Z-score is measured in terms of standard deviations from the mean. If a Z-score is 0, it indicates that the data point's score is identical to the mean score. Z-score of 1.0 would indicate a value that is one standard deviation from the mean. Z-scores may be positive or negative, with a positive value indicating the score is above the mean and a negative score indicating it is below the mean.

1. What is t-test?

**ANS-** The t score is a ratio between the difference between two groups and the difference within the groups. The larger the t score, the more difference there is between groups. The smaller the t score, the more similarity there is between groups. A t score of 3 means that the groups are three times as different from each other as they are within each other. When you run a t test, the bigger the t-value, the more likely it is that the results are repeatable. A large t-score tells you that the groups are different. A small t-score tells you that the groups are similar.

1. What is percentile?

**ANS-** A percentile is a term used in statistics to express how a score compares to other scores in the same set. While there is technically no standard definition of percentile, it's typically communicated as the percentage of values that fall below a particular value in a set of data scores. Percentiles are commonly used to report values from norm-referenced tests (in which the average is determined by comparing a set of results in the same group) as the percentages of scores that fall below those of the average of the set. For example, a male child age 12 with a weight of 130 pounds is at the 90th percentile of weight for males of that age, which indicates that he weighs more than 90 percent of other 12-year-old boys.

1. What is ANOVA?

**ANS-** Analysis of variance (ANOVA) refers to a set of techniques for comparing sample means among two or more groups. If the comparison reveals a statistically significant difference, the researcher concludes that the population means in one or more groups are different.

1. How can ANOVA help?

**ANS**- ANOVA helps to figure out if we need to reject the null hypothesis or accept the alternate hypothesis.