# Statistics– WORKSHEET 6

## Q1 to Q9 have only one correct answer. Choose the correct option to answer your question.

1. Which of the following is the correct formula for total variation?
   1. Total Variation = Residual Variation – Regression Variation
   2. Total Variation = Residual Variation + Regression Variation
   3. Total Variation = Residual Variation \* Regression Variation
   4. All of the mentioned

**Ans. B) Total Variation = Residual Variation + Regression Variation**

1. Collection of exchangeable binary outcomes for the same covariate data are called outcomes.
   1. random
   2. direct
   3. binomial
   4. none of the mentioned

**Ans. C) binomial**

1. How many outcomes are possible with bernoulli trial?
   1. 2
   2. 3
   3. 4
   4. None of the mentioned

**Ans. A) 2**

1. If Ho is true and we reject it, then it is called:
2. Type-I error
3. Type-II error
4. Standard error
5. Sampling error

**Ans. A) Type-I error**

1. Level of significance is also called:
2. Power of the test
3. Size of the test
4. Level of confidence
5. Confidence coefficient

**Ans. B) Size of the test**

1. The chance of rejecting a true hypothesis decreases when sample size:
2. Decreases
3. Increases
4. Both of them
5. None of them

**Ans. B) Increases**

1. Which of the following testing is concerned with making decisions using data?
2. Probability
3. Hypothesis
4. Causal
5. None of the mentioned

**Ans. B) Hypothesis**

1. What is the purpose of multiple testing in statistical inference?
2. Minimize errors
3. Minimize false positives
4. Minimize false negatives
5. All of the mentioned

**Ans. D) All of the mentioned**

1. Normalized data is centered at and has unit equal to standard deviations of the original data.

(a) 0 (b) 5

(c) 1 (d) 10

**Ans. (A) 0**

## Q10and Q15 are subjective answer type questions, Answer them in your own words briefly.

1. What Is Bayes' Theorem?

Ans. Bayes’ Theorem finds the probability of an event occurring given the probability of another event that has already occurred.

1. What is z-score?

Ans. Z score is also called standard score. This score helps to understand if a data value is greater or smaller than mean and how far away it is from the mean. More specifically, Z score tells how many standard deviations away a data point is from the mean.

**Z score = (x -mean) / std. deviation**

If the z score of a data point is more than 3, it indicates that the data point is quite different from the other data points. Such a data point can be an outlier.

1. What is t-test?

Ans. **T- Test: -**A t-test is a type of inferential statistic which is used to determine if there is a significant difference between the means of two groups which may be related in certain features. It is mostly used when the data sets, like the set of data recorded as outcome from flipping a coin a 100 times, would follow a normal distribution and may have unknown variances. T test is used as a hypothesis testing tool, which allows testing of an assumption applicable to a population.

T-test has 2 types: **1. one sampled t-test.** 2**. two-sampled t-test**.

1. What is a percentile?

Ans. Percentiles indicate the percentage of scores that fall below a particular value. They tell you where a score stands relative to other scores. For example, a person with an IQ of 120 is at the 91stpercentile, which indicates that their IQ is higher than 91 percent of other scores.

Percentiles tell you how a value compares to other values. The general rule is that if value X is at the kth percentile, then X is greater than K% of the values.

1. What is ANOVA?

Ans. **An**alysis **o**f **Va**riance is a statistical method, used to check the means of two or more groups that are significantly different from each other. It assumes Hypothesis as

H0: Means of all groups are equal.

H1: At least one mean of the groups are different.

1. How can ANOVA help?

Ans.