

### STATISTICS WORKSHEET-3

Answers:-

1. b) Total Variation = Residual Variation + Regression Variation
2. c) binomial
3. a) 2
4. a) Type-I error
5. b) Size of the test
6. b) Increase
7. b) Hypothesis
8. b) Minimize false positives
9. c) 1
10. Bayes' Theorem is a statistical rule that helps calculate the probability of an event based on prior knowledge of related events. It states the relationship between the probability of an event and the conditional probability of another event given that the first event has occurred. The theorem helps in updating the probability of an event after new evidence is obtained.
11. A z-score is a measure of how many standard deviations a data point is from the mean of a data set. It indicates the position of a data point in relation to the mean of a set of values, expressed in terms of standard deviations. A positive z-score indicates that the data point is above the mean, while a negative z-score indicates that it is below the mean. A z-score helps to standardize the data and make it easier to compare values from different data sets.
12. A t-test is a statistical test used to determine if there is a significant difference between the means of two groups. It measures how far the sample mean deviates from a known value and assesses whether this difference is large enough to be considered significant or if it could have occurred by chance. The test results can be used to accept or reject hypotheses about the population means.
13. A percentile is a value below which a certain percentage of observations in a data set fall. It represents the rank of a data point within a set of values. For example, if a data point has a percentile rank of 75, it means that 75% of the data points in the set are below that value and 25% are above it. Percentiles help to understand the distribution of data and identify outliers or values that are significantly different from the majority of the data.
14. ANOVA is a statistical method used to compare the means of multiple groups to see if they are significantly different from each other. It helps determine if there are any significant differences between the groups, and identifies which groups are responsible for the differences in the data.
15. ANOVA helps by:
  - i. Testing the hypothesis of equal means among multiple groups.
  - ii. Identifying which groups are significantly different from each other.
  - iii. Providing insights into the relationship between variables in a data set.
  - iv. Supporting decision making by determining whether the null hypothesis can be rejected or not.