STATISTICS WORKSHEET-3

Answer 1. b) Total Variation = Residual Variation + Regression Variation

Answer 2. c) binomial

Answer 3. a) 2

Answer 4. a) Type-I error

Answer 5. d) Confidence coefficient

Answer 6. b) Increased

Answer 7. b) Hypothesis

Answer 8. d) All of the mentioned

Answer 9. a) 0

Subjective Answers

Answer 10. Bayes theorem is a statistical formula to determine the conditional probability of an event. It describes the probability of an event based on prior knowledge of events that have already happened. Bayes Theorem is named after the Reverend Thomas Bayes and its formula for random events is –

$$P(A|B) = \frac{P(A)\,P(B|A)}{P(B)}$$

Here, P(A) = how likely A happens

P(B) = how likely B happens

P(A/B) = how likely does A happen given that B has happened

P(B/A) = how likely does B happen given that A has happened

Answer 11. A 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.

The formula for Z-Score is:

$$z = (x - \mu) / \sigma$$

where z = standard score

x = observed value

μ = mean of the sample

σ = standard deviation of the sample

Answer 12. T-test measures the difference between two means, which may or may not be related to each other, indicating the probability of the differences to have happened by chance. The accuracy of the values obtained depends on various factors, including the distribution patterns used and the variants influencing the collected samples.

Answer 13. A percentile is **a comparison score between a particular score and the scores of the rest of a group**. It shows the percentage of scores that a particular score surpassed. For example, if you score 75 points on a test, and are ranked in the 85 th percentile, it means that the score 75 is higher than 85% of the scores.

Formula for Percentile:-

$$n = (P/100) \times N$$

where, N = number of values in the data set

P = percentile

n = ordinal rank of a given value

Answer 14. ANOVA stands for Analysis of variance. It is a type of statistical test used to determine if there is a statistically significant difference between two or more categorical groups by testing for differences of means using variance.

Another Key part of ANOVA is that it splits the independent variable into 2 or more groups.

There are different types of ANOVA tests. The two most common are a “One-Way” and a “Two-Way.”

Answer 15. ANOVA helps you in some of the ways as:-

- It lets you Gather your data and Calculate the mean of the data easily.
- It compares multiple groups at once and see if they differ significantly from each other.
- It saves time and helps you avoid making errors with multiple comparisons.
- ANOVA is a great tool to use when you want to compare a continuous variable across 3 or more independent groups.

=standard score =observed value =mean of the sample =standard deviation of the sample