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?

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

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

2. Collection of exchangeable binary outcomes for the same covariate data are called outcomes. a) random b) direct c) binomial d) none of the mentioned

**Answer: c) binomial**

3. How many outcomes are possible with Bernoulli trial? a) 2 b) 3 c) 4 d) None of the mentioned

**Answer: a) 2**

4. If Ho is true and we reject it is called a) Type-I error b) Type-II error c) Standard error d) Sampling error

**Answer: a) Type-I error**

5. Level of significance is also called: a) Power of the test b) Size of the test c) Level of confidence d) Confidence coefficient

**Answer: b) Size of the test**

6. The chance of rejecting a true hypothesis decreases when sample size is: a) Decrease b) Increase c) Both of them d) None

**Answer:** b) Increase

7. Which of the following testing is concerned with making decisions using data? a) Probability b) Hypothesis c) Causal d) None of the mentioned

**Answer:** b) Hypothesis

8. 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.

**Answer: d) All of the mentioned**

9. Normalized data are centred at and have units equal to standard deviations of the original data a) 0 b) 5 c) 1 d) 10

**Answer:** ) 0

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

10. What Is Bayes' Theorem?

**Answer: Bayes, is a mathematical formula for determining conditional probability. Conditional probability is the likelihood of an outcome occurring, based on a previous outcome having occurred in similar circumstances. Bayes' theorem provides a way to revise existing predictions or theories (update probabilities) given new or additional evidence.**

11. What is z-score?

**Answer: 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. A 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.**

12. What is t-test?

**Answer: A t-test is an inferential statistic used to determine if there is a significant difference between the means of two groups and how they are related. T-tests are used when the data sets follow a normal distribution and have unknown variances, like the data set recorded from flipping a coin 100 times. The t-test is a test used for hypothesis testing in statistics and uses the t-statistic, the t-distribution values, and the degrees of freedom to determine statistical significance.**

13. What is percentile?

**Answer: a percentile is a term that describes how a score compares to other scores from the same set.**

14. What is ANOVA?

**Answer: Analysis of variance, or ANOVA, is a statistical method that separates observed variance data into different components to use for additional tests.**

**A one-way ANOVA is used for three or more groups of data, to gain information about the relationship between the dependent and independent variables.**

**If no true variance exists between the groups, the ANOVA's F-ratio should equal close to 1.**

15. How can ANOVA help

**Answer: ANOVA is helpful for testing three or more variables. It is similar to multiple two-sample t-tests. However, it results in fewer type I errors and is appropriate for a range of issues. ANOVA groups differences by comparing the means of each group and includes spreading out the variance into diverse sources. It is employed with subjects, test groups, between groups and within groups.**