STATISTICS WORKSHEET-3

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

   ANS: b

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

   ANS: c

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

   ANS: a

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

   ANS: a

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

   ANS: b

6. The chance of rejecting a true hypothesis decreases when sample size is:
   a) Decrease
   b) Increase

ANS: b

7. 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

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

   ANS: d

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

   ANS: a

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

10. What Is Bayes' Theorem?

    Bayes' theorem describes the probability of occurrence of an event related to any condition. It is also considered for the case of conditional probability. Bayes theorem is also known as the formula for the probability of "causes"

    Eg: If we have two events A and B, and we are given the conditional probability of A given B, denoted P(A|B), we can use Bayes' Theorem to find P(B|A), the conditional probability of B given A.

11. What is z-score?

    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.

    The value of the z-score tells you how many standard deviations you are away from the mean.

A t-test is used to compare the means of two groups. The testing uses randomly selected samples from the two categories or groups. It is a statistical method in which samples are chosen randomly, and there is no perfect normal distribution.

13. What is percentile?

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.
Eg: if you score 75 points on a test, and are ranked in the 85th percentile, it means that the score 75 is higher than 85% of the scores.

14. What is ANOVA?

ANOVA is used to analyze the differences among means. Analysis of variance, (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.

15. How can ANOVA help?

Analysis of variance (ANOVA) is a statistical technique that is used to check if the means of two or more groups are significantly different from each other. ANOVA checks the impact of one or more factors by comparing the means of different samples