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

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

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

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

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

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

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

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

9. Normlized data are centred at_and have units equal to standard deviations of the original data

a) 0

b) 5

c) 1

d) 10

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

10. What Is Bayes' Theorem?

Ans. In probability, the Bayes theorem is a mathematical formula, which is used to determine the conditional probability of a given event. Conditional probability is defined as the likelihood that an event will occur, based on the occurrence of a previous outcome. P(A|B) is the probability of event A occurring given that B is true. P(B|A) is the probability of event B occurring given that A is true. P(A) and P(B) are the probabilities of observing A and B respectively without any given conditions.

11. What is z-score?

Ans. In statistics, Z-score is the method to find out the outliers present in the data, and also z-score shows how much the particular point is away from the standard deviation. Z-scores range from -3 standard deviations up to +3 standard deviations. Formula for find out the z-score is : $z = (x – \mu) / \sigma$ where , x = data point μ = Mean value σ = Standard deviation

12. What is t-test?

Ans. The independent sample t-test or 2 samples t-test compares the mean of two independent groups in order to determine whether the mean of two different variables is identical or not.

13. What is percentile?

Ans. In statistics, the percentile is used to indicate the value below which the group the percentage of data fall. For example, the 20th percentile is the value (or score) below which 20% of the observations may be found.

14. What is ANOVA?

Ans: ANOVA test is a type of statical test that allows a comparison of more than two groups at the same time it helps to determine whether a relationship exists between them or not.

15. How can ANOVA help?

Ans. The one-way ANOVA can help you to determine whether or not there are significant differences between the means of your independent variables(for ex- Age, Sex, Position). When you understand how each independent variables are different from others, you can begin to understand which of them has a connection to your dependent variables and begin to learn what is driving that behavior