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) 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

   ANS: C) Binomial

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

   ANS: 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

   ANS: a) Power 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

   ANS: 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

ANS: 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**

ANS: 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

ANS: a) 0

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

10. What Is Bayes' Theorem?

ANS: 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". For example: if we have to calculate the probability of taking a blue ball from the second bag out of three different bags of balls, where each bag contains three different colour balls viz. red, blue, black. In this case, the probability of occurrence of an event is calculated depending on other conditions is known as conditional probability.**
P(A|B)=P(B|A)P(A)/P(B)

11. What is z-score?

ANS: A measure of how many standard deviations below or above the population mean a raw score is called z score. It will be positive if the value lies above the mean and negative if it lies below the mean. It is also known as standard score.

12. What is t-test?

ANS: The t-test is a test that is mainly used to compare the mean of two groups of samples. It is meant for evaluating whether the means of the two sets of data are statistically significantly different from each other. There are many types of t-test.

13. What is percentile?

ANS: a value on a scale of 100 that indicates the percent of a distribution that is equal to or below it a score in the 95th percentile.

14. What is ANOVA?

ANS: ANOVA is to test for differences among the means of the population by examining the amount of variation within each sample, relative to the amount of variation between the samples. Analyzing variance tests the hypothesis that the means of two or more populations are equal.

15. How can ANOVA help?

ANS: ANOVA checks the impact of one or more factors by comparing the means of different samples. We can use ANOVA to prove/disprove if all the medication treatments were equally effective or not. Another measure to compare the samples is called a t-test. When we have only two samples, t-test and ANOVA give the same results.