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 is 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. Normalized 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?

Bayes' Theorem is a way of finding a probability when we know certain other probabilities. The formula is: P(A|B) = P(A) P(B|A)P(B)
Which tells us: how often A happens given that B happens, written P(A|B),
When we know: how often B happens given that A happens, written P(B|A) and how likely A is on its own, written P(A) and how likely B is on its own, written P(B)

11. What is z-score?

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?

The t score is a ratio between the difference between two groups and the difference within the groups. The larger the t score, the more difference there is between groups. The smaller the t score, the more similarity there is between groups. A t score of 3 means that the groups are three times as different from each other as they are within each other. When you run a t test, the bigger the t-value, the more likely it is that the results are repeatable. A large t-score tells you that the groups are different. A small t-score tells you that the groups are similar.

13. What is percentile?

A percentile is a term used in statistics to express how a score compares to other scores in the same set. While there is technically no standard definition of percentile, it's typically communicated as the percentage of values that fall below a particular value in a set of data scores. Percentiles are commonly used to report values from norm-referenced tests (in which the average is determined by comparing a set of results in the same group) as the percentages of scores that fall below those of the average of the set. For example, a male child age 12 with a weight of 130 pounds is at the 90th percentile of weight for males of that age, which indicates that he weighs more than 90 percent of other 12-year-old boys.

14. What is ANOVA?

Analysis of variance refers to a set of techniques for comparing sample means among two or more groups. If the comparison reveals a statistically significant difference, the researcher concludes that the population means in one or more groups are different.

15. How can ANOVA help?

ANOVA help to figure out if we need to reject the null hypothesis or accept the alternate hypothesis.