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
   Answer: (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
   Answer: (c)

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

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)

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)

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)

9. Normalized data are centered at___and have units equal to standard deviations of the original data

a) 0
b) 5
c) 1
d) 10
Answer: (a)

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

10. What Is Bayes' Theorem?

Bayes' Theorem takes a test result and relates it to the conditional probability of that test result given other related events. For high probability false positives, the Theorem gives a more reasoned likelihood of a particular outcome.

11. What is z-score?
A z score is simply defined as the number of standard deviation from the mean. The z-score can be calculated by subtracting mean by test value and dividing it by standard value. Where x is the test value, μ is the mean and σ is the standard value.

12. What is t-test?
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.

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. For example, if you score 75points 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?
Analysis of variance (ANOVA) is a collection of statistical models and their associated estimation procedures (such as the "variation" among and between groups) used to analyze the differences among means. ANOVA was developed by the statistician Ronald Fisher.

15. How can ANOVA help?
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.