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
   e) ANSWER: 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
   ANSWER: c) binomial

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

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) 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
   ANSWER: 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
   ANSWER: c) Both of them

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) 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
   e) ANSWER: b) Minimize false positives

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
   ANSWER: a) 0

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

10. What Is Bayes' Theorem?
    ANSWER: Bayes' theorem describes the probability of an event occurring in relation to a given condition. The case of conditional probabilities is also taken into account. Bayes' theorem is also known as the "causal" probability formula. for example:
    If he needs to calculate the probability of picking up a blue ball from the second bag of three different balls, each bag contains balls of three different colors. red, blue, black. The probability of an event occurring is calculated as a function of other conditions and is called conditional probability.

11. What is z-score?
    ANSWER: The number of standard deviations by which the raw score is below or above the population is called the Z-score. Positive if the value is above the average, negative if below the average. Also called standard score. Shows how many standard deviations the entity has from the mean. To use the z-score, we need to know the mean μ and the population standard deviation σ. Z-scores are useful for calculating the probability of a score occurring within the standard normal distribution. You can also compare two values of her obtained from different samples. A table of values of ϕ that gives the values of the CDF of the normal distribution is called a z-score table.

12. What is t-test?

ANSWER: The t-test is the final statistical measure used to determine the difference between two means, which may or may not be related. This test uses randomly selected samples from two categories or groups. This is a statistical technique where samples are randomly selected and there is no perfect normal distribution. The type of t-test you perform depends on whether the samples you analyze belong to the same category or to different categories. The inference thus obtained indicates the probability that the mean difference occurred by chance. This test is useful for comparing population ages, harvest periods of two different species, school performance, and so on.

13. What is percentile?

ANSWER: Do not confuse percentiles with percentages. The latter is used to represent whole fractions, while percentiles are values below which a certain percentage of data in a dataset is found. In reality, there is a big difference between the two. For example, a student taking a difficult exam can achieve a score of 75%. This means he got all 3 of his 4 questions correct. However, students who scored in the 75th percentile achieved a different result. This percentile means that the student scored higher than her 75% of the other students who took the exam. In other words, the percentage score reflects how well the student did on the exam itself. The percentile score reflects how well he did compared to other students.

14. What is ANOVA?

ANSWER: ANOVA (Analysis Of Variance) is a collection of statistical models used to assess the difference between the means of two independent groups by separating the variability into systematic and random factors. This helps determine the effect of the independent variable on the dependent variable. It helps determine the impact of various factors on stock price volatility movements. Therefore, with its help, statisticians, economists or analysts conduct in-depth analysis of stock indices in various market conditions. Additionally, the ANOVA test helps determine the significance or randomness of experimental results.

15. How can ANOVA help?

ANSWER: Analysis of variance is an essential approach to research. Various factors that affect the specific placement of information. It is a collection of statistical models that are actually used to study differences. Among all groups included in the sample.

Analysis of variance (ANOVA) was developed by the eminent analyst Ronald Fisher. ANOVA is widely used in statistical hypothesis inference tests to examine experimental information. ANOVA performs an important task in determining whether invalid hypotheses should be rejected or alternative guesses should be accepted.

Statistics itself is a complex subject. This is why ANOVA is so difficult in statistics. Contains all the information to help you understand how to use ANOVA in statistics.