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

   Ans – 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

   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- b)- Size 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 concerned with making decisions using data?testing is
   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- 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

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 is named after Reverend Thomas Bayes,Who worked on condition probability in the eighteenth century. Bayes' rule calculates what can be called the **posterior probability** of an event, taking into account **prior probability** of **related events**.

Bayes' theorem converts the results from your test into the real probability of the event. For example, you can: Correct for measurement errors. If you know the real probabilities and the chance of a false positive and false negative, you can correct for measurement errors.

11. What is z-score?

Ans- Z-score **indicates how much a given value differs from the standard deviation**. The Z-score, or standard score, is the number of standard deviations a given data point lies above or below mean. Standard deviation is essentially a reflection of the amount of variability within a given data set.

12. What is t-test?

Ans- A T-test is the final statistical measure for determining differences between two means that may or may not be related. The testing uses randomly selected samples from the two categories or groups. It is a statistical method in which samples are chosen randomly, and there is no perfect normal distribution.

T. TEST **uses the data in array1 and array2 to compute a non-negative t-statistic**. If tails=1, T. TEST returns the probability of a higher value of the t-statistic under the assumption that array1 and array2 are samples from populations with the same mean. The value returned by T.

13. What is percentile?

Ans- The word "percentile" is used informally in the above definition. In common use, the percentile usually indicates that a certain percentage falls below that percentile. For example, if you score in the 25th percentile, then 25% of test takers are below your score. The "25" is called the percentile rank.

A percentile (or a centile) is a measure used in statistics indicating the value below which a given percentage of observations in a group of observations 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- Analysis of variance, or ANOVA, is **a statistical method that separates observed variance data into different components to use for additional tests**. A one-way ANOVA is used for three or more groups of data, to gain information about the relationship between the dependent and independent variables.

15. How can ANOVA help?

Ans- ANOVA is a method to determine if the mean of groups are different. In inferential statistics, we use samples to infer properties of populations. Statistical tests like ANOVA help us justify if sample results are applicable to populations.