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

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
Ans) 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
Ans) 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
Ans)C

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

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

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

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

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

10. What Is Bayes' Theorem?

11. What is z-score?

Simply put, a z-score (also called a *standard score*) gives you an idea of how far from the mean a data point is. But more technically it's a measure of how many standard deviations below or above the population mean a raw score is.

A z-score can be placed on a normal distribution curve. Z-scores range from -3 standard deviations (which would fall to the far left of the normal distribution curve) up to +3 standard deviations (which would fall to the far right of the normal distribution curve). In order to use a z-score, you need to know the mean μ and also the population standard deviation σ.

Z-scores are a way to compare results to a "normal" population. Results from tests or surveys have thousands of possible results and units; those results can often seem meaningless. For example, knowing that someone's weight is 150 pounds might be good information, but if you want to compare it to the "average" person's weight, looking at a vast table of data can be

overwhelming (especially if some weights are recorded in kilograms). A z-score can tell you where that person's weight is compared to the average population's mean weight.

12. What is t-test?

A *t* test is a statistical test that is used to compare the means of two groups. It is often used in hypothesis testing to determine whether a process or treatment actually has an effect on the population of interest, or whether two groups are different from one another.

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 75 points on a test, and are ranked in the 85 th percentile, it means that the score 75 is higher than 85% of the scores.

14. What is ANOVA?

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?

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.