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INTERNSHIP BATCH : 33

TOPIC: STATISTICS

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WORKSHEET NO : 3

Q1. b) Total Variation = Residual Variation + Regression Variation

Q2. c) binomial

Q3. a) 2

Q4. a) Type-I error

Q5. b) Size of the test

Q6. b) Increase

Q7. b) Hypothesis

Q8. d) All of the mentioned

Q9. a) 0

Q10. What Is Bayes' Theorem?

ANS: In statistics and probability theory, the Bayes' theorem (also known as the Bayes' rule) is a mathematical formula used to determine the conditional probability of events. Essentially, the Bayes' theorem describes the probability of an event based on prior knowledge of the conditions that might be relevant to the event.

$$P(A \mid B) = \frac{P(B \mid A)P(A)}{P(B)}, \text{ if } P(B) \neq 0.$$

Where:

- P(A|B) – the probability of event A occurring, given event B has occurred
- P(B|A) – the probability of event B occurring, given event A has occurred
- P(A) – the probability of event A
- P(B) – the probability of event B

11. What is z-score?

ANS: 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.

The **basic z score formula** for a sample is: **$z = (x - \mu) / \sigma$**

Q12. What is t-test?

ANS: 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.

Q13. What is percentile?
ANS: In statistics, a k-th percentile (percentile score or centile) is a score below which a given percentage k of scores in its frequency distribution falls (exclusive definition) or a score at or below which a given percentage falls.

Q14. What is ANOVA?
ANS: ANOVA is used to compare difference of mean among more than 2 group. It does this by looking at variation in the data and where that variation is found ANOVA compare the amount of variation between group with the amount of the variation within group. In this we find F-Value and on the F-value we find P-value.

Formula:

F=Sample means of between group / Sample mean of within group

Q15. How can ANOVA help?
ANS: 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. It is employed with subjects, test groups, between groups and within groups