

### STATISTICS WORKSHEET-3

Q.1) b

Q.2) c

Q.3) a

Q.4) a

Q.5) a

Q.6) b

Q.7) b

Q.8) d

Q.9) a

Q.10) **Bayes' Theorem:** It states that the conditional probability of an event, based on the occurrence of another event, is equal to the likelihood of the second event given the first event multiplied by the probability of the first event.

$$P(A|B) = \frac{P(A \cap B)}{P(B)} = \frac{P(B|A) \cdot P(A)}{P(B)}$$

Where:  $P(A)$  = The probability of A occurring,  $P(B)$  = The probability of B occurring,  $P(A|B)$  = The probability of A given B,  $P(B|A)$  = The probability of B given A,  $P(A \cap B)$  = The probability of both A and B occurring

Q.11) **z-score:** It is a statistical measurement that describes a value's relationship to the mean of a group of values. Z-score is measured in terms of standard deviations from the mean. If a Z-score is 0, it indicates that the data point's score is identical to the mean score. A Z-score of 1.0 would indicate a value that is one standard deviation from the mean.

$$z = \frac{(x - \mu)}{\sigma}$$

Where:  $z$  = Z-score,  $x$  = the value being evaluated,  $\mu$  = the mean,  $\sigma$  = the standard deviation

Q.12) **t-test:** It is an inferential statistic used to determine if there is a significant difference between the means of two groups and how they are related. T-tests are used when the data sets follow a normal distribution and have unknown variances, like the data set recorded from flipping a coin 100 times.

Q.13) 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.

Q.14) **ANOVA** is to test for differences among the means of the population by examining the amount of variation within each sample, relative to the amount of variation between the samples. Analyzing variance tests the hypothesis that the means of two or more populations are equal. In a regression study, analysts use the ANOVA test to determine the impact of independent variables on the dependent variable.

Q.15) There are two main types of ANOVA: one-way (or unidirectional) and two-way.

A one-way ANOVA evaluates the impact of a sole factor on a sole response variable. It determines whether all the samples are the same. The one-way ANOVA is used to determine whether there are any statistically significant differences between the means of three or more independent (unrelated) groups.

A two-way ANOVA is an extension of the one-way ANOVA. With a one-way, you have one independent variable affecting a dependent variable. With a two-way ANOVA, there are two independents.