

## STATISTICS WORKSHEET-3

Ques1:

- b) Total Variation = Residual Variation + Regression Variation

Ques2:

- c) Binomial

Ques3:

- a) 2

Ques4:

- a) Type I error

Ques5:

- b) Size of the test

Ques6:

- c) Increase

Ques7:

- b) Hypothesis

Ques8:

- c) All of the mentioned

Ques9:

- a) 0

Ques10:

Bayes theorem: If  $E_1, E_2, \dots, E_n$  are mutually disjoint events with  $P(E_i) \neq 0$ , ( $i=1, 2, \dots, n$ ), then for any arbitrary event  $A$  which is a subset of union  $E_i$  ( $i=1, 2, \dots, n$ ) such that  $P(A) > 0$ , we have

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

Where,

$P(E_1), P(E_2), \dots, P(E_n)$  are the prior probabilities

$P(A|E_i)$ ,  $i=1, 2, \dots, n$  are called likelihoods and

$P(E_i|A)$ ,  $i=1, 2, \dots, n$  are called posterior probabilities

Ques11:

z-score tell the how much there is standard deviation about the mean. It works on large sample. z-score can be positive, negative or zero. The mathematical formula for the z score is

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

Where, z follows normal distribution with mean 0 and variance 1.

Ques12:

Let  $x_i$  ( $i=1,2,\dots,n$ ) be a random sample of size n from a normal population with mean  $\mu$  and variance  $\sigma^2$ . Then Student's t is defined by the statistics:

$$t = \frac{\bar{x}-\mu}{s/\sqrt{n}}$$

where,

$\bar{x} = \frac{1}{n} \sum x_i$  is the sample mean and  $s^2 = \frac{1}{n-1} \sum (x_i - \bar{x})^2$  is an unbiased estimate of the population variance  $\sigma^2$ .

t test works on small sample.

Ques13:

A percentile is a comparison score between a particular score and the scores of the rest of a group.

Ques14:

ANOVA stand for Analysis Of Variance. It is a statistical method which tells us that there are any statistical difference between the means of three or more independent groups.

Ques15:

ANOVA is helpful when there are three or more variables for testing. It is also similar to the two-sample t-test.