APPENDIX

FORMULAS USED FOR STATISTICAL ANALYSIS

Spearman – Brown Prophecy Formula for Reliability Test

\[ r_1 = \frac{2r}{1 + r} \]

Where, \( r \) is the Correlation co-efficient

R1 is the estimated reliability of the entire test.

For Calculating the correlation Co –efficient (r)

\[ r = \frac{\sum xy - \sum x \sum y / n}{\sqrt{[\sum x^2 - (\sum x)^2 / n][\sum y^2 - (\sum y)^2 / n]}} \]

Calculation of mean and standard Deviation

Mean (M) = \( \frac{\sum X_i}{n} \)

Where \( \sum \) = the symbol used of summation

\( X_i \) = Value of \( i^{th} \) item

\( N \) = Total number of items

Standard Deviation (SD) = \( \sqrt{\frac{\sum (X_i - \bar{X})^2}{n-1}} \)

\( X_i \) = Value of \( i^{th} \) item

\( \bar{X} \) = Means of the \( i^{th} \) item

\( N \) = Total number of items

Calculation of Chi- square value

\( \chi^2 = \frac{\sum (O - E)^2}{E} \)

Where O = the observed frequencies

\( E \) = the expected frequencies

Calculation of Paired ‘t’ test:

Paired ‘t’ = \( \frac{|d|}{SE \text{ of difference values}} \)

\( S.E = \frac{\sigma_d}{\sqrt{n}} \)

\( \sigma_d = \sqrt{\frac{\sum (d_i - \bar{d})^2}{n-1}} \)

Where \( |\bar{d}| \) = mean of differences i.e. (\( X_i - Y_i \))

\( \sigma_d \) = Standard deviation

\( n \) = Total number of items.