

mean squares for a two-factor, and assumed, are as follows:

ROWS

$$[19.2] \quad \frac{1}{nC} \sum^R T_{r..}^2 - \frac{T^2}{nRC}$$

S/R

$$[19.3] \quad \frac{1}{C} \sum^R \sum^n T_{r.s}^2 - \frac{1}{nC} \sum^R T_{r..}^2$$

WITHIN SUBJECTS

$$[19.4] \quad \sum^R \sum^C \sum^n X_{rci}^2 - \frac{1}{C} \sum^R \sum^n T_{r.s}^2$$

COLUMNS

$$[19.5] \quad \frac{1}{nR} \sum^C T_{.c.}^2 - \frac{T^2}{nRC}$$

R × C

$$[19.6] \quad \frac{1}{n} \sum^R \sum^C T_{rc.}^2 - \frac{1}{nC} \sum^R T_{r..}^2 - \frac{1}{nR} \sum^C T_{.c.}^2 + \frac{T^2}{nRC}$$

ce components as dependence component which is

es that the correct error rate. The correct error effects is the (C × S)/R

SC/R

$$[19.7] \quad \sum^R \sum^C \sum^n X_{rci}^2 - \frac{1}{C} \sum^R \sum^n T_{r.s}^2 - \frac{1}{n} \sum^R \sum^C T_{rc.}^2 + \frac{1}{nC} \sum^R T_{r..}^2$$

TOTAL

$$[19.8] \quad \sum^R \sum^C \sum^n X_{rci}^2 - \frac{T^2}{nRC}$$

o compute the required RC observations will be totals by $T_{r..}$ and $T_{.c.}$, column summed over sub-summed over columns is $T_{rc.}$, as follows:

In practical computation a number of these terms can be obtained by simple subtraction.

19.9 ILLUSTRATIVE EXAMPLE OF A TWO-FACTOR EXPERIMENT WITH REPEATED MEASUREMENTS ON ONE FACTOR

Table 19.5 shows illustrative data for a two-factor experiment with repeated measurements on one factor. Two groups of four subjects were used. Each subject was measured under five experimental conditions. The totals required for computational purposes are also shown in this table.