UNIT- II DESIGN OF EXPERIMENTS

Completely Randomised Design (one way classification).

Steps:

1) Null Hypothesis: H_0 : There is no significant difference b/w columns and errors.

2) Alternative Hypothesis: H_1 : There is a significant difference b/w columns and errors.

3) Find N, No. of given observation and C, No of Samples

4) Find T, Total number of summation of given items.

$$T = \Sigma X_1 + \Sigma X_2 + \Sigma X_3 + \dots$$

5) Find Correction Factor,

$$CF = \frac{T^2}{N}$$

6) Find Sum of Squares of Treatments

$$SST = \Sigma X_1^2 + \Sigma X_2^2 + \Sigma X_3^2 + \dots - C.F$$

7) Find Sum of the squares of columns.

$$SSC = \frac{(\Sigma X_1)^2}{n} + \frac{(\Sigma X_2)^2}{n} + \dots - C.F$$

8) Find Sum of the squares of Errors.

$$SSE = SST - SSC$$

9) Find Mean Squares b/w Samples.

$$MSC = \frac{\text{Sum of Squares b/w samples}}{d.f} = \frac{SSC}{d.f} = \frac{SSC}{C-1}$$

10) Find Mean squares within Samples

$$MSE = \frac{\text{Sum of Squares within Samples}}{d.f} = \frac{SSE}{d.f} = \frac{SSE}{N-C}$$

11) ANOVA Table

Source of Variations	Degrees of freedom	Sum of Squares	Mean Sum of Squares	Variance ratio F_{cal}	Table Value
B/w Column	C - 1	SSC	MSC	$\frac{MSC}{MSE}$ (or) $\frac{MSE}{MSC}$	F_{cal} for (C-1, N-C)
B/w Error	N - C	SSE	MSE		F_{cal} for (N-C, C-1)

12) Conclusion:

$F_{cal} < F_{tab}$, we accept the null hypothesis

$F_{cal} > F_{tab}$, we reject the null hypothesis.

Table 2

Treatment