

41. 4-levels of A

$$SST = 280$$

3-levels of B

$$SSA = 26$$

$$\alpha = 0.05$$

$$r = 3$$

$$SSB = 23$$

set ANOVA table

$$SSAB = 175$$

S.o.V	df	SS	MS	F
Factor A	$a-1 = 3$	26	$MSA = \frac{26}{3} = 8.67$	$F^A = \frac{8.67}{2.71} = 3.2$
Factor B	$b-1 = 2$	23	$MSB = \frac{23}{2} = 11.5$	$F^B = \frac{11.5}{2.71} = 4.24$
Interaction AB	$(3)(2) = 6$	175	$MSAB = \frac{175}{6} = 29.17$	$F^{AB} = \frac{29.17}{2.71} = 10.76$
Error	$(4)(3)(2) = 24$	65	$MSE = \frac{65}{24} = 2.71$	
Total	36	280		

Now to test :

$$F_{\alpha}^A = F_{0.05}^A \text{ with } df_1 = 3, df_2 = 24 \rightarrow F_{\alpha}^A = 3.01 < F$$

So reject H_0 ($\alpha = 0.05$).

$$F_{\alpha}^B = F_{0.05}^B \text{ with } df_1 = 2, df_2 = 24 \rightarrow F_{\alpha}^B = 3.40 < F$$

So reject H_0 ($\alpha = 0.05$).

$$F_{\alpha}^{AB} = F_{0.05}^{AB} \text{ with } df_1 = 6, df_2 = 24 \rightarrow F_{\alpha}^{AB} = 2.51 < F$$

So reject H_0 ($\alpha = 0.05$).