

## R STUDIO – EXERCISE 10

## QUESTION 1

A completely randomized design experiment with 10 plots and 3 treatments gave the following results: Analyze the results for treatment effects.

Plot	1	2	3	4	5	6	7	8	9	10
Treatment	A	B	C	A	C	C	A	B	A	B
Yield	5	4	3	7	5	1	3	4	1	7

```
> A=c(5,7,3,1)
> B=c(4,4,7,0)
> C=c(3,5,1,0)
> data1=data.frame(A,B,C)
> summary(data1)
> stgr > crd > crd
Call:
aov(formula = values ~ ind, data = stgr)
```

```
Terms:
ind Residuals
Sum of Squares 7.16667 59.50000
Deg. of Freedom 2 9
```

```
Residual standard error: 2.571208
Estimated effects may be unbalanced
```

```
> summary(crd)
Df Sum Sq Mean Sq F value
ind 2 7.17 3.583 0.542
Residuals 9 59.50 6.611
Pr(>F)
ind 0.599
Residuals
```

## QUESTION 2

Three varieties of a crop are tested in a randomised block design with four replications, the layout being as given below: The yields are given in kilograms. Analyze for significance.

C48	A51	B52	A49
A47	B49	C52	C51
B49	C53	A49	B50

```
> data > time=c(t(as.matrix(data)))
> f=c("A","B","C")
> g=c("1","2","3","4")
> k=ncol(data)
> n=nrow(data)
> blockname=gl(k,1,n*k,factor(f))
> blockname
[1] A B C A B C A B C A B C
Levels: A B C
> blocknumber=gl(n,k,n*k,factor(g))
> blocknumber
[1] 1 1 1 2 2 2 3 3 3 4 4 4
Levels: 1 2 3 4
> anova=aov(time~blockname+blocknumber)
> anova
Call:
aov(formula = time ~ blockname + blocknumber)
Terms:
blockname blocknumber Residuals
Sum of Squares 8 18 10
Deg. of Freedom 2 3 6
Residual standard error: 1.290994
Estimated effects may be unbalanced
> summary(anova)
Df Sum Sq Mean Sq F value Pr(>F)
blockname 2 8 4.000 2.4 0.1715
blocknumber 3 18 6.000 3.6 0.0852 .
Residuals 6 10 1.667
---
Signif. codes:
0 '***' 0.001 '**' 0.01 '*' 0.05 '.' 0.1 ' ' 1
```