UNIT-IV DESIGN OF EXPERIMENTS

1. Analyze the following Latin Square Experiment

A(12)	D(20)	C(16)	B(10)
D(18)	A(14)	B(11)	C(14)
B(12)	C(15)	D(19)	A(13)
C(16)	B(11)	A(15)	D(20)

2. A company appoints 4 salesmen A, B, C and D and observes their sales in 3 seasons: Summer, Winter, and Monsoon.

Season	Salesmen			
	A	B	C	D
Summer	45	40	38	37
Winter	43	41	45	38
Monsoon	39	39	41	41

Analyze the following from the given data.

i) Do the salesmen differ significantly in performance?

ii) Is there significant difference between seasons?

3. A completely randomized design experiment with 10 plots and 3 treatments gave the following results.

Treatment	A	B	C	A	C	C	A	B	A	B
Yield	5	4	3	7	5	1	3	4	1	7

Analyze the result for treatment only

4. The following table gives the sample mean for 10 samples each of size 6, in the production of certain component. Construct the control charts for mean and comment on the nature of control

Sample	1	2	3	4	5	6	7	8	9	10
Mean	37.3	49.8	51.5	59.2	54.7	34.7	51.4	61.4	70.7	75.3

5. Analysis the variance in the Latin square of yields paddy where P,Q, R and S denote the difference methods of cultivation

Q122	P121	R123	Q122
Q124	R123	P122	S125
P120	Q119	S120	R121
R122	S123	Q121	P122

6. To study the performance of three detergents and three different water temperature the following 'whiteness' readings were obtained with designed equipments. Perform a two way analysis of variance, using 5% level of significance

Water Temp.	Detergent A	Detergent B	Detergent C
Cold water	57	55	67
Warm water	49	52	68
Hot Water	54	46	58

7. The following data are per hectare yield for 3 varieties of rice, each grown in four plots. Using ANOVA technique test whether there is significant difference between the average yields on the three varieties of rice.

Plots of land	Varieties of Rice		
	A	B	C
1	6	5	5
2	7	5	4

3	3	3	3
4	8	7	4

8. The following table gives the sample range for 10 samples each of size 6, in the production of certain component. Construct the control charts for range and comment on the nature of control.

Sample	1	2	3	4	5	6	7	8
Range	9.5	12.8	10	9.1	7.8	5.8	14.5	2.8

Sample	9	10
Range	3.7	8

9.