HOMEWORK ASSIGNMENT #5

ACHYUTHA SANTHOSHI

A20314248

a.

The GLM Procedure

Dependent Variable: surface

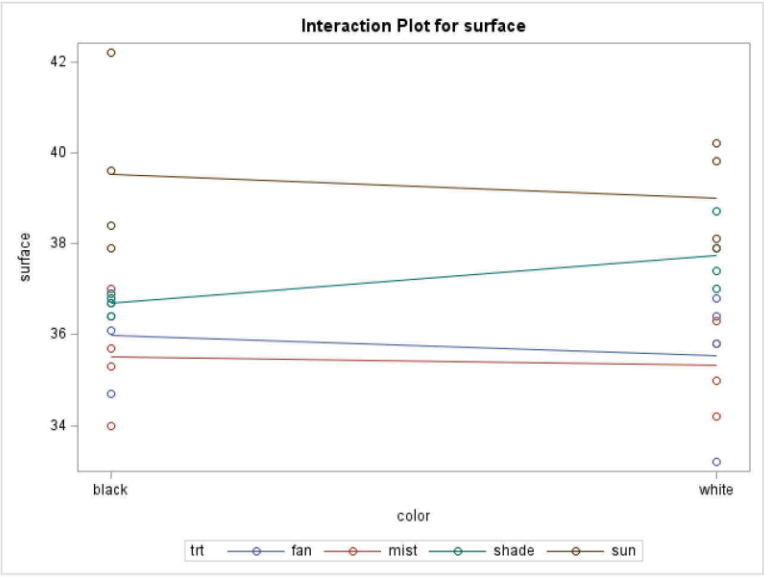
Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	7	76.7196875	10.9599554	7.68	<.0001
Error	24	34.2625000	1.4276042		
Corrected Total	31	110.9821875			

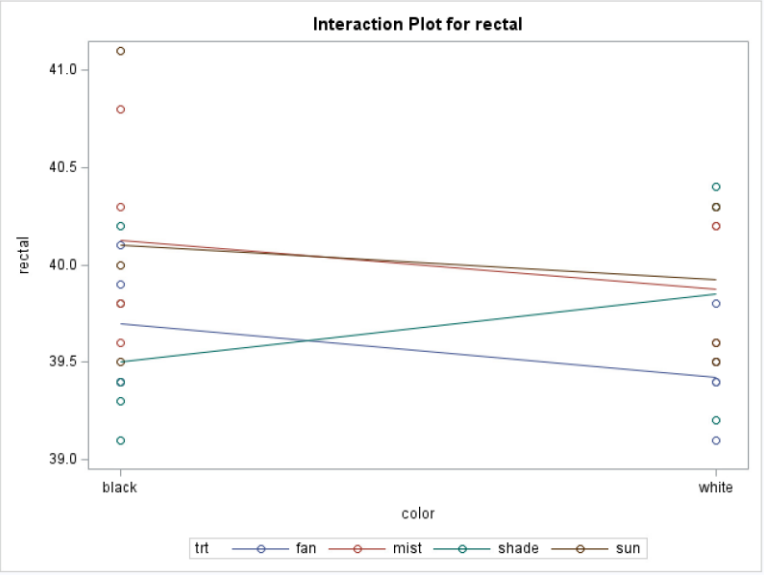
R-Square	Coeff Var	Root MSE	surface Mean
0.691279	3.236635	1.194824	36.91563

Source	DF	Type I SS	Mean Square	F Value	Pr > F
color	1	0.00281250	0.00281250	0.00	0.9650
trt	3	73.54093750	24.51364583	17.17	<.0001
color*trt	3	3.17593750	1.05864583	0.74	0.5377

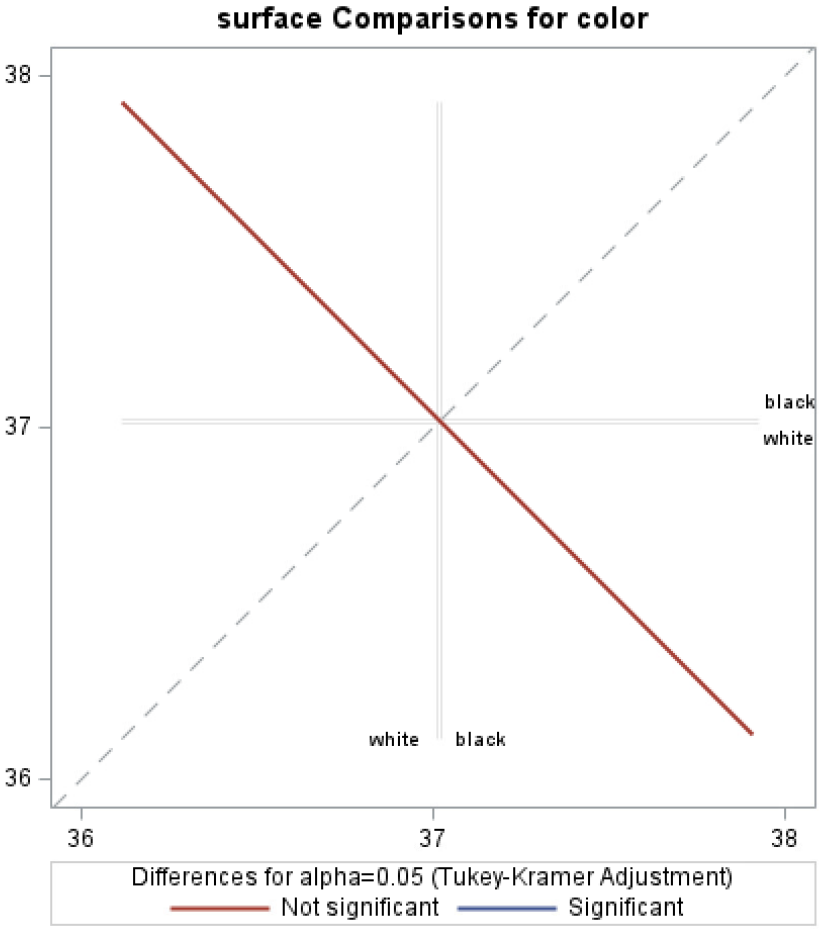
Source	DF	Type III SS	Mean Square	F Value	Pr > F
color	1	0.00281250	0.00281250	0.00	0.9650
trt	3	73.54093750	24.51364583	17.17	<.0001
color*trt	3	3.17593750	1.05864583	0.74	0.5377

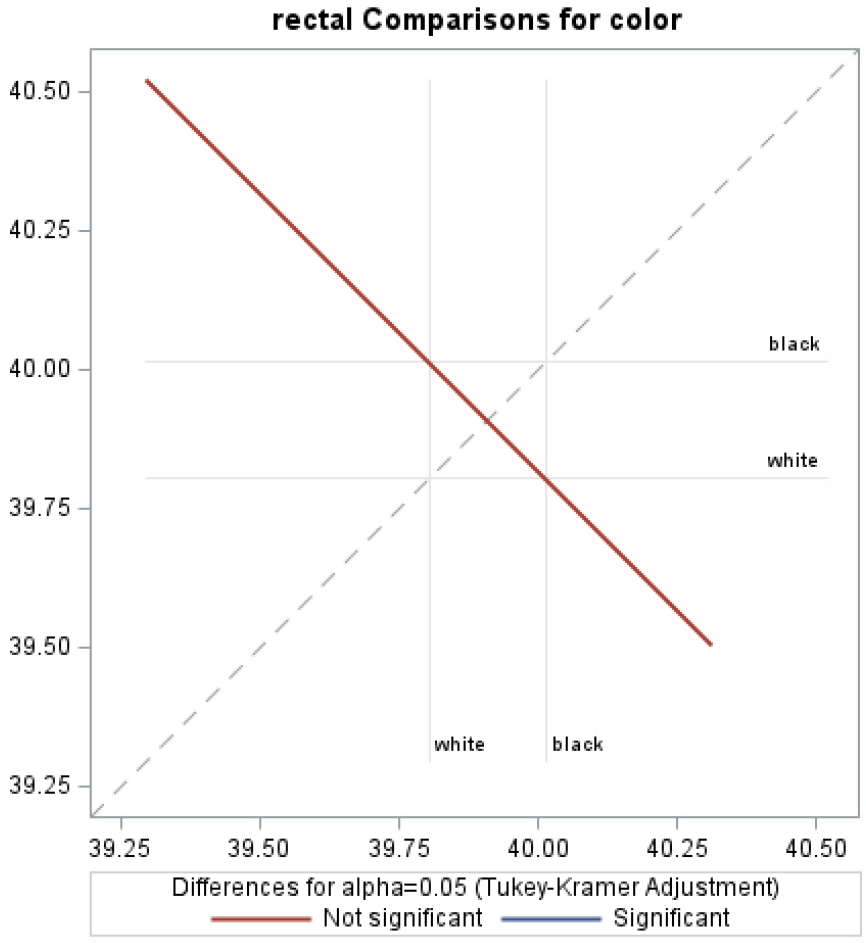
b.

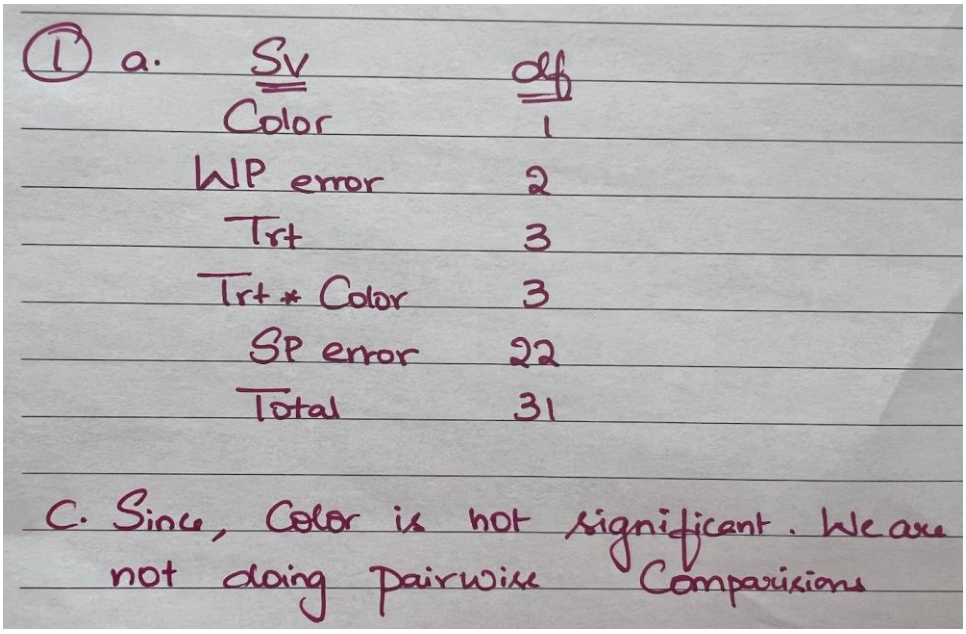

Interaction Plot for surface
surface
42
40
38
36
34
black
white
color
trt
fan
mist
shade
sun


Interaction Plot for rectal
rectal
41.0
40.5
40.0
39.5
39.0
black
white
color
trt
fan
mist
shade
sun

C.


surface Comparisons for color
38
37
36
black
white
white
black
36
37
38
Differences for alpha=0.05 (Tukey-Kramer Adjustment)
Not significant
Significant





① a.

SV	df
Color	1
WP error	2
Trt	3
Trt * Color	3
SP error	22
Total	31

c. Since, Color is not significant. We are not doing pairwise Comparisions

2. a.

The SAS System

The MEANS Procedure

Treatment=1 Time=1

Analysis Variable : Response	
Mean	Std Dev
20.7000000	23.9810573

Treatment=1 Time=2

Analysis Variable : Response	
Mean	Std Dev
28.5700000	11.9959299

Treatment=1 Time=3

Analysis Variable : Response	
Mean	Std Dev
31.2400000	14.2952362

Treatment=1 Time=4

Analysis Variable : Response	
Mean	Std Dev
29.4400000	12.6474591

Treatment=1 Time=8

Analysis Variable : Response	
Mean	Std Dev
25.6300000	14.2625422

Treatment=2 Time=1

Analysis Variable : Response	
Mean	Std Dev
-0.7600000	12.2624268

Treatment=2 Time=2

Analysis Variable : Response	
Mean	Std Dev
12.5500000	10.4261690

Treatment=2 Time=3

Analysis Variable : Response	
Mean	Std Dev
18.2300000	10.8257974

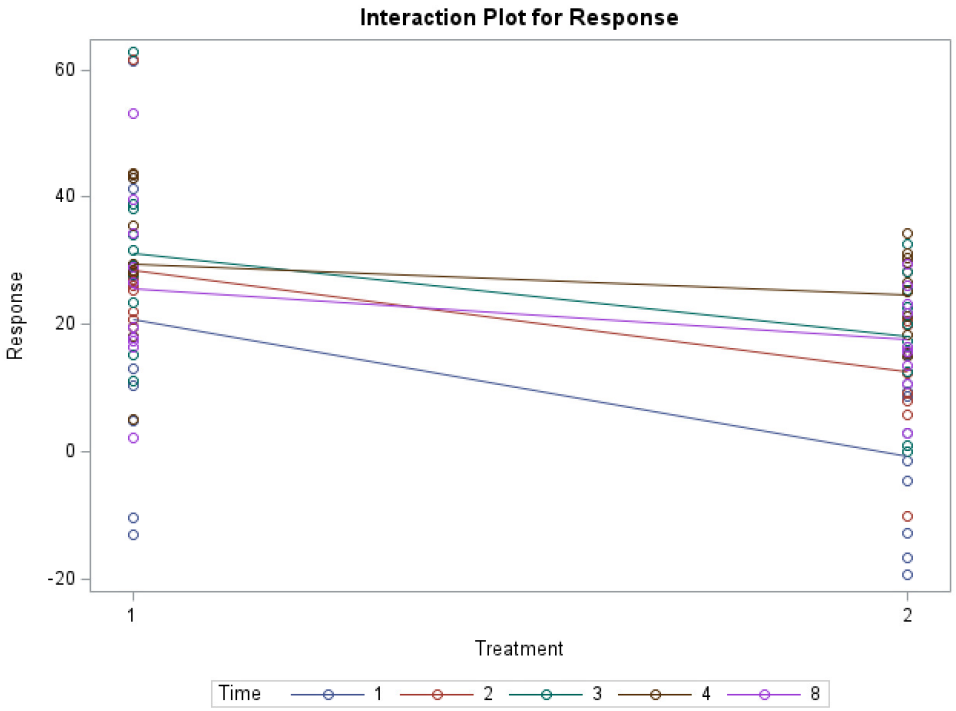
Treatment=2 Time=4

Analysis Variable : Response	
Mean	Std Dev
24.7900000	6.9069128

Treatment=2 Time=8

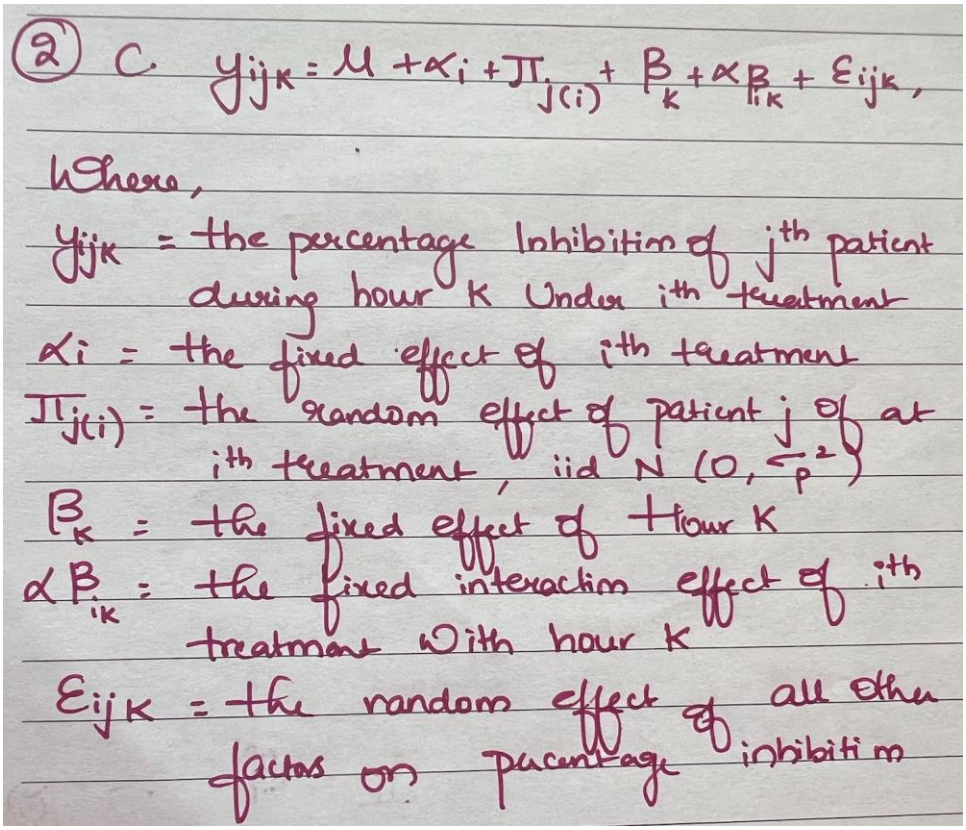
Analysis Variable : Response	
Mean	Std Dev
17.5700000	7.8265999

b.



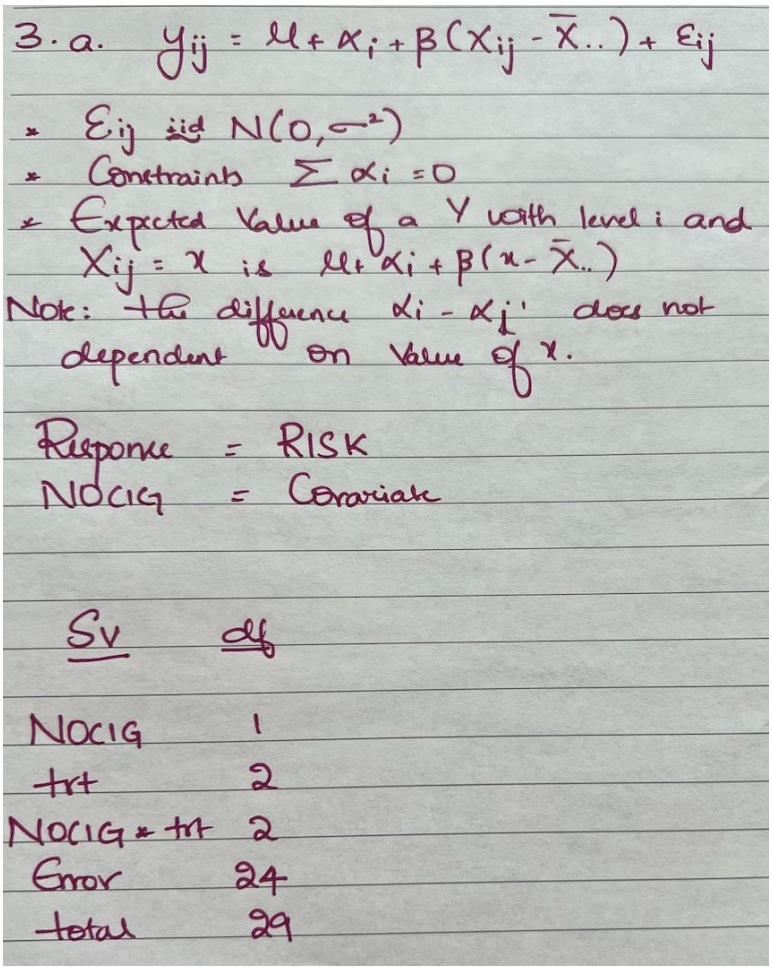
c.

Type 3 Tests of Fixed Effects				
Effect	Num DF	Den DF	F Value	Pr > F
Treatment	1	90	22.54	<.0001
Time	4	90	4.89	0.0013
Treatment*Time	4	90	1.23	0.3044

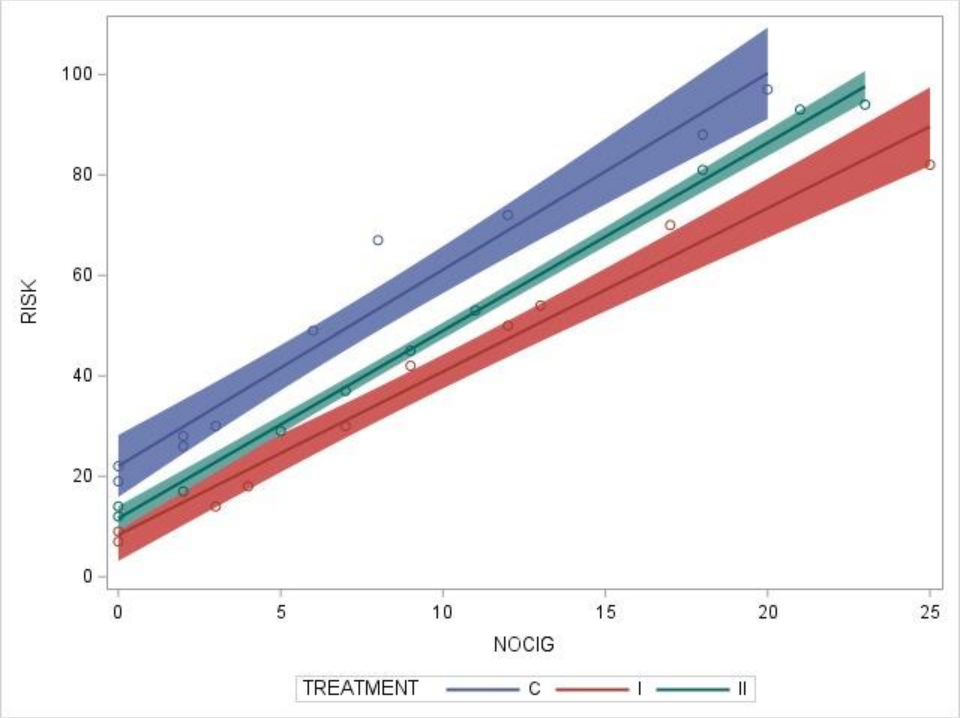


3.

a.


3. a. $y_{ij} = \mu + \alpha_i + \beta(x_{ij} - \bar{x}_{..}) + \varepsilon_{ij}$
* ε_{ij} iid $N(0, \sigma^2)$
* Constraints $\sum \alpha_i = 0$
* Expected Value of a Y with level i and $x_{ij} = x$ is $\mu + \alpha_i + \beta(x - \bar{x}_{..})$
Note: the difference $\alpha_i - \alpha_{i'}$ does not dependent on value of x.
Response = RISK
NOCIG = Covariate
Sv df
NOCIG 1
trt 2
NOCIG * trt 2
Error 24
total 29

b.



c. Yes, From the above plot we can say that they have similar slopes.

d. Test: H0: Same Slope

H1: Not Same Slope

By checking the p value of interaction

Since, P value is 0.0619 which is greater than 0.05 alpha. We reject H0

Hence we have same slopes

e. Since the P value of trt factor is 0.0003 less than 0.05 which is significant, there appears to be a difference in the mean risk index for the three treatments