Name_____

HORT/AGRON/ANSC 603
Final Exam
December 17, 1999

1. An experiment to test the effect of dietary chocolate on levels of the stress hormone cortisol in graduate students is designed with 6 treatments and 6 replicates. Give the sources and degrees of freedom and indicate all F-tests for the fixed model with arrows given the following conditions:

4 A. The experiment is installed as a completely randomized design.

Source	df
Bet Trt	5 ←
Within Trt	30 ←
Total	35

4 B. The experiment is installed as a randomized complete block design (RCBD), with students blocked on previous academic performance.

Source	df
Total	35
Trt	5 ←
Rep	5 ←
Error	25 ←

4 C. The experiment is installed as a Latin square design with 6 students (columns) each receiving each treatment over 6 time periods (rows).

Source	df
Total	35
Trt	5 ←
Col	5 ←
Row	5 ←
Error	20 ←

4 D. The experiment is installed as a RCBD and 4 blood samples are taken from each student.

Source	df
Total	143
Trt	5
Rep	5
Expt error	25
Sample error	108

4 E. The experiment is installed as a RCBD and sugar intake is measured as a covariate.

Source	df	
Total	35	
Rep	5	(may be omitted)
(Trt + Error	30)	
Trt	5	
A. Regr (Adj for Trt)	1	
Regr	1	
B. Trt (Adj for Regr)	5	
Dev Regr + Trt	24	

4 F. The experiment is installed as a RCBD and the treatments are 6 equally spaced levels of chocolate in the diet. Divide up the treatment degrees of freedom appropriately.

Source	df
Total	35
Rep	5
(Trt	5)
Regr	1
Dev Regr	4
Error	25

or

Trt	
Lin	1
Quad	1
Cubic	1
Quartic	1
Quintic	1
Error	25

4 G. The experiment is installed as a RCBD and the treatments are 2 levels of sugar and 3 levels of chocolate arranged in a 2 x 3 factorial. Divide up the treatment degrees of freedom appropriately.

Source	df
Total	35
Rep	5
(Trt	5)
Sug	1
Choc	2
S*C	2
Error	25

4 H. The experiment is installed as a split plot with 2 levels of previous chocolate intake in the main plot and 3 levels of added chocolate in the split plot.

Source	df
Tot	35
Prev C	1
Rep	5
Error A	5
Add C	2
Pre*Add	2
Error b	20