

BIOL 310
SAMPLE EXAM

1. A portion of an AOV table for a one-way analysis of variance is shown below.

Source	df	SS	MS	F
Treatments	3			
Error		88.800		
Total	28	129.886		

A. Fill in the blanks in the ANOVA table & show work below. (5 pts.)

B. Assuming that there were equal replicates for all treatments, what was the replicate number? (2 pts.)

C. In a complete sentence, give the statistical decision (3 pts)

2. A plant ecologist tested the hypothesis that the types soil in which sunflower plants are grown influences their height (inches). He measured the height of three plants in each of four plots that represented different soil types. Analyze the data using the most appropriate method(s) to determine if the researchers hypothesis is supported and write a sentence that provides a biological interpretation of the results. (25 pts){show all work}

	Soil A	Soil B	Soil C
	25	22	37
	28	21	34
	26	16	38
Mean	26.33	19.67	36.33
Standard Error	.882	1.856	1.202

3. Some people who have heart attacks do not experience chest pain, although most do. A study of people admitted to emergency rooms with heart attacks compared the death rates for people who had chest pains to that for people who had less typical symptoms. The data from the study are presented in the table below. Answer the questions below. (10 points)

	Died	Survived	Row Total
Pain	822	18296	19118
No Pain	229	1534	1763
Column Total	1051	19830	20881

a) Briefly describe how you would analyze this data?

b) State H_0 and H_a :

c) Compute observed test statistic, table statistic, and df.

d) State statistical decision and provide a brief biological interpretation of your analysis.

4. (A) Determine regression equation for the data below.(B) Complete an ANOVA table and state your statistical decision concerning H_0 and H_a . (C) Determine the r^2 for the data. What does this value mean? (D) predict plant height at 30°C. **(15 points)**

Temp (°C)	5	12	17	24	33	35	38
Plant Height (inches)	1.8	2.7	3.4	6.4	8.4	8.9	9.7