Biology 4605/7220 Name Key
Quiz #6b 22 October 2003

1. Assign symbols to variables, then write a general linear model to analyze the following data (Daniel 1995 Ex 8.17 p337)

> **17.** The following table shows the emotional maturity scores of 27 young adult males cross-classified by age and the extent to which the use marijuana.

| Age (Factor A) | Marijuana Use (Factor B) Never | Occasional | Daily |
|---|---|---|---|
| 15-19 | 25 | 18 | 17 |
| | 28 | 23 | 24 |
| | 22 | 19 | 19 |
| 20-24 | 28 | 16 | 18 |
| | 32 | 24 | 22 |
| | 30 | 20 | 20 |
| 25-29 | 25 | 14 | 10 |
| | 35 | 16 | 8 |
| | 30 | 15 | 12 |

| Name | Symbol |
|---|---|
| Score | Sc |
| Age | A |
| MJUse | MJU |

GLM $Sc = \beta_o + \beta_A \cdot A + \beta_{MJU} \cdot MJU + \beta_{A*MJU} \cdot A \cdot MJU + \varepsilon$

2. Complete the ANOVA table for the data in the example above.

| Source | DF | SS | MS | F | P |
|---|---|---|---|---|---|
| C2 | 2 | 113.0 | 56.48 | 4.02 | 0.036 |
| C3 | 2 | 779.6 | 389.81 | 27.77 | 0.000 |
| C2*C3 | 4 | 175.9 | 43.98 | 3.13 | 0.040 |
| Error | 18 | 252.7 | 14.04 | | |
| Total | 26 | 1321.2 | | | |

3. Write an $H_A$ / $H_o$ pair for Factor A

$H_o$ : $\mu_{age17} = \mu_{age22} = \mu_{age27}$

$H_A$ : $\mu_{age17} \neq \mu_{age22} \neq \mu_{age27}$