Biology 4605/7220 Name _____
Quiz #12a 2 December 2002

1. A general*ized* linear model links a response variable to one or more explanatory variables X_i according to a link function. Here are 3 link functions.

identity link	Y	=	μ	+	error	Used with the general linear model (normal error)
log link	f	=	e^{μ}	+	error	Used with poisson response variable f
logit link	Odds	=	e^{μ}	+	error	Used with binomial variable expressed as Odds

e is the base of natural logarithms
μ is the sum of a series of explanatory terms: $\mu = \Sigma(\beta_i \cdot X_i)$

Write a generalized linear model for a prospective study of odds of deaths (D = odds of deaths calculated from number of admissions per month) in 100 hospitals, classified by size (S = number of beds), presence of a medical school (MS = present or absent), and age of the building (A = years). Assume no interactive effects.

D = _____ μ = _____

2. Complete the following ANOVA table and write the corresponding general linear model for analysis of growth rates G.

Source	df	
TR	____	TR= treatment (2 drugs, 1 control group)
Lab	____	all three treatments in each of 2 labs
TR*Lab	____	
M	____	M = rat weights
error	____	
total	34	

_____ = _____ + error

3. p-values printed in an ANOVA table by computer packages cannot be trusted if residuals are not normal. Name two ways you can obtain a better p-value.