I have constructed the second intellectual mini-festival for Friday 13-Mar. The main topics for the quiz will be two-way ANOVA and simple linear regression. Specifically, you will be asked to do the following things:

1) I will provide R output that performs a complete two-way ANOVA both on the original scale and on a transformed scale. You will be asked to check assumptions, decide which scale to use for interpretation, assess for or against effects (interaction and main), identify significant differences among level or group/treatment means (depending on which effects are present), determine which level or group/treatment means are larger or smaller and by how much, place significance letters on an appropriate effects plot, and properly interpret a back-transformed difference in means.

2) I will provide R output that performs a complete simple linear regression on both the original scale and on a transformed scale and for the both variables treated as the response variable. You will be asked to identify the response variable, check assumptions, decide which scale to use for interpretation, assess if a significant relationship exists in the data, specifically describe what that relationship is, decide what type of prediction to make (fit or prediction), and interpret the proper prediction or confidence interval (possibly back-transformed to the original scale).

3) You will be asked to perform two "short-answer" questions (no choice will be offered – i.e., answer two of two). Things that I would prepare for are: interpretations of models in both two-way and SLR; interpretations of SS, MS, and F in both two-way and SLR; value of simultaneously manipulating two factors in a study; describing why main effects cannot be interpreted if there is an interaction effect; algebraically demonstrating how to "linearize" an exponential or power function and how one would estimate the parameters in the original function; why prediction and confidence interval widths differ; and centering data.

Make sure to answer all questions with intervals rather than point estimates as appropriate (e.g., "I am 95% confident that the value of the intercept is between 3.5 and 5.6").

Let me know if you have any questions.