Applied Regression **Test 3** **Spring**

Name: _____ **Instructor: D. Kushary**

1. In an attempt to compare the assessments provided by the four assessors (Factor-A) it employs, a municipal official sends each assessor to view the same five homes (Factor-B). Each assessor visited each home in a random order, and summary results of their assessments are provided below.

SST = 7620.8, SSE = 521.3, $F_B - Stat = 3.259$ (For Homes)

(a) Write down the model and the competed ANOVA table.

(b) Test the effect of the assessors at 5% level.

2. A researcher fitted a SLR model where X = Illumination and Y = Ability to read using the data in the file. (Sheet Name = TimeSeries)

(a) Use a simple SLR model analysis to predict the ability to read and test the auto-correlation at 10% level.

(b) Use Cochran-Orcutt method to remove correlation and find the final model.

(c) Use your final model to predict the ability to read when illumination is 11.

3. The board of directors of a professional association conducted a sample survey of 30 members to assess the effects of several possible amounts of dues increase. The data set (Sheet Name = Logistic)contains

X = the dollar increase in annual dues posited in the survey interview, and

$$Y = \begin{cases} 1 & \text{if he/she indicated that the membership will not be renewed at that amount of dues increase} \\ 0 & \text{if the membership will be renewed.} \end{cases}$$

(a) Write down the estimated model and predict the probability of renewal if the dollar increase in annual dues is \$40.00.

(b) Find 98% confidence interval for the odds ration of non-renewal if the increase in dues is \$10.00.

(c) Is the model fit adequate at 3% level?

Extra Credit:

(d) Find the odds of renewing membership if the dues increases by \$5.