**Introduction to Data Mining**

***Quiz 2, Spring 2016 Total Marks = 15;*** *Time: 15 min.*

*Declaration:* By submitting this quiz for grading, I affirm that I have neither given nor received help from another examinee and acknowledge that **this is a closed-book, closed-notes test.**

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Signature: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Q1. (3 pts)** Given D as a DataFrame of compatible size/values and the class lasso has been properly instantiated etc., what will the function lasso.predict(D) do?

**Q2. (2+1= 3 pts).** Briefly explain what you understand by “Multi-Dimensional Scaling” and give an example (other than the one in the notes) where this can be a useful procedure.

**Q3 (2+1 pts).** What will you expect will happen to the (i) bias and (ii) variance of a linear regression model as the size of the training set is increased (everything else remains the same)?

**Q4. (3 pts)** What will be the Bayes Decision Rule for a 3-class classification problem?

**Q5. (2+1 = 3pts)** What gradient does SGD compute (i.e. gradient of what function and w.r.t. what variable(s)) ? Why is this a stochastic procedure?