STAT 568 – Assignment 2 – due date is on course outline

For each of the questions which are carried out on R – please e-mail me your R programs. Question numbers from the text refer to the current version; check with me if you are using an earlier version

1. Text, #4.4.
2. Text, #4.5.
3. Text, #4.16.
4. Text, #4.19.
5. Text #5.4.
6. Recall the leaf spring experiment. Fit model (13.1) from the lecture notes to the variables $x_B, x_C, x_D, x_E, x_Q \in [-1, 1]$ and minimize over these variables so as to obtain the optimal settings. The R function `nlminb` can be used for this. Verify that the minimum mse is .00366.
7. In the example of §5.4.2, verify that there are 64 D-optimal designs as claimed in the text, and then modify your program so as to enumerate all D_S-optimal designs for the estimation of the coefficients of x_{BCQ} and x_{DEQ}.
8. Text #5.12 (a), (b), (c). Part (a) can be done easily on R, by first introducing a suitable coding.
9. Text, #5.15.
10. Consider a 3_{IV}^{7-3} fractional factorial design with generators $E = ABC, F = ABD, G = AB^2C^2D$. List all 2 df components aliased with AB.