Exam 4

Due Thursday July 30th, 2020 at 11:59pm

Instructions:

- Please turn in the final copy of your Exam 1 into your shared dropbox folder: "1 Turned-in Exams".
  - Name your file: "Lastname Firstname Exam4"
  - Please only turn in a single pdf
- Your answers must be written in your own words, extracting what you need from your software output to support your narrative.
- Please do not copy and paste R output.
- Graphs must be in the section where they help answer a question with an explanation.
- You may attach code and output to your assignment as an Appendix. The appendix may be looked at if something is not clear in your writing.

Problem 1. Seat-Belt Experiment Revisited

(a) (2 points) Based on the significant effects identified in the ANOVA for strength location in Table 6.6 (WH), use the main effects plots for A, C and D and the $A \times B, C \times D, A \times C$, and $B \times D$ interaction plots to determine optimal factor settings for maximizing strength location. Will the results be affect by further considering the minimization of dispersion? (Recall, that only factor A is significant for strength dispersion.) Note: You can use the main effect and interaction plots given in the textbook.

(b) (2 points) Based on the significant effects identified in the ANOVA for flash location in Table 6.7 (WH), use the main effects plot for A and C, and the $A \times C, B \times C$, and $B \times D$ interaction plots to determine optimal factor settings for minimizing flash location. Will the results be affect by further considering the minimization of dispersion? (Recall, that only factor A is significant for flash dispersion.) Note: You can use the main effect and interaction plots given in the textbook.

Problem 2. Three-level FFD

Consider a 3^{5-2} design with $D = ABC$ and $E = A^2BC$.

(a) (2 points) Find its defining contrast subgroup. What is the resolution?

(b) (2 points) Find the $3^2 - 1$ effects aliased with the main effect of A.

(c) (2 points) Find all the aliasing relations between main effects and two-factor interaction components (ignoring 3-factor interactions or higher).

(d) (2 points) Identify the clear main effects and clear two-factor interaction components if they exist.