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**Homework Ch5** (35 pts) **Due:** 4/21

When fitting models in Minitab, consider all available main effects and interactions. When asked for residual plots, display residuals vs. individual factors, and a normal P-P plot of residuals. Complete the following Chapter 5 exercises.

5.6

a) Part (a) says that providing bounds on each p-value is sufficient. We’re all adults here; present the actual p-values. (10 pts)

Factor A’s p-value: 0.8513

Factor B’s p-value: 0.0331

Factor Interaction’s p-value: 0.116

b) How many levels for factor B?

3 levels

c) How many replicates?

3 replicates

d) Conclusion

Factor B is significant with p-value @0.0331

5.8

a) Analyze and conclusion

Table

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The temperature and pressure are both significant.

b) Residual plot and comment on it

Graphical user interface, application

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The residual vs pressure isn’t great, but other than that it doesn’t violate any assumptions.

c) Part (c) asks you to identify which factor levels optimize yield. Make your argument based on the interaction plot. (10 pts)

Chart, line chart

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Most optimal set up would be temperature at 170C and 215 pressure.

5.17 Continue to consider the full factorial model with main effects and interaction. Use Minitab both to report the factor-level means for Pressure, and to test for pairwise differences among them using Tukey’s approach. (5 pts)

Table

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Table

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There is a significant difference at temperature + pressure interaction vs another temperature + pressure interaction for the following respectively: (170, 215) vs (150, 200), (160, 230) vs (150, 215), (170, 215) vs (160, 200), (170, 215) vs (160,200), (160, 230) vs (160, 215), (170, 200) vs (160, 230), (170, 215) vs (160, 230), (170, 230) vs (170, 215).

5.23 (10 pts)

a) Analyze and conclusion

Table

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Cooking time, Pressure, hardwood concentration are all significant. As well as pressure\*hardwood interaction.

b) Residual plot and comment

A picture containing text, indoor, map

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No assumptions are violated. Looks great

c) Part (c) asks you to identify which factor levels optimize yield. Make your argument based on the interaction plot. (10 pts)

Chart, line chart

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Most optimal set up would be hardwood percentage concentration at 2, pressure at 650, and cook for 4 hrs.