STAT 210
Applied Statistics and Data Analysis:
Homework 6

Due on Oct. 30/2022

Question 1

The table below has the results of an experiment run to determine the effect of four different oven temperatures on the density of a certain type of ceramics.

Table 1: Question 1: Density of Ceramics

Temperature %	Density				
100	21.8	21.9	21.7	21.6	21.7
125	21.5	21.4	21.5	21.4	21.6
150	21.7	21.8	21.8	21.6	21.5
175	21.9	21.7	21.8	21.6	21.7

The data can be loaded by copying the commands below.

```
density <- c(21.8, 21.9, 21.7, 21.6, 21.7,
             21.5, 21.4, 21.5, 21.4, 21.6,
             21.7, 21.8, 21.8, 21.6, 21.5,
             21.9, 21.7, 21.8, 21.6, 21.7)
temp <- factor(rep(c(100,125,150,175), each = 5))
Q1data <- data.frame(temp,density)
```

Do a complete analysis of variance for this set. Plot the data. Write the equation for the model. Determine whether the treatments have an effect on the amount of hemoglobin in blood by means of a hypothesis test. Plot the diagnostic charts and comment on them. Use also Levene's test and Shapiro-Wilk. Use Tukey's HSD procedure to make pairwise comparisons and comment on the results.

Question 2

In an experiment to study the effect of fertilizers on the spear elongation in asparagus, four different fertilizers and a control group (no fertilizer) were tested and five asparagus spears were measured for each treatment. The treatments are coded `trmt1`, `trmt2`, `trmt3`, `trmt4`, and the control `Ctrl`. The measurements (`length`) is the length in mm of the asparagus spear. The data is in the file `spear`.

Do a complete analysis of variance for this set. Plot the data. Write the equation for the model. Determine whether the treatments have an effect of the length of the asparagus spear by means of a hypothesis test. Plot the diagnostic charts and comment on them. Use also Levene's test and Shapiro-Wilk. Use Tukey's HSD procedure to make pairwise comparisons and comment on the results.