**Final Proficiency Exam**

Spring 2020 CHEM 6450

***Multiple Choice***

1. Unless you are working with a very large dataset or analyses that take long times to compute, we don’t usually save our working environment, just the script. What is the primary reason for this?
   1. Re-running your script every time proves reproducibility of your code.
   2. Saving work environments takes up a lot of space.
   3. R doesn’t allow you save your working environment.
   4. Working environment files can easily get corrupted.
2. If you write code that doesn’t do what you intended it to but also does not stop code execution, what is this called?
   1. Error
   2. Warning
   3. Silent error
   4. This isn’t possible
3. I want to randomly sample 20 integers from 1 to 100 with replacement. All of the following lines of code will do this EXCEPT:
   1. sample(1:100, 20, TRUE)
   2. sample(x = 1:100, size = 20, replace = TRUE)
   3. sample(size = 20, x = 1:100, replace = TRUE)
   4. sample(20, 1:100, TRUE)
4. We often write relative code that avoids typing in specific numbers and values when those values can be generated by a function (*i.e.* rows <- 20 versus rows <- nrow(data)). This is advantageous in the following ways EXCEPT:
   1. Helps prevent silent errors previous code changes.
   2. Saves time / is more efficient to write.
   3. Increases the reproducibility of the code.
   4. Better reveals the intent of the code.

***Concepts Section***

1. Examine the following code and explain why select( ) worked the first time, but generated an error the second time it was called:

> library(tidyverse)

-- Attaching packages --------------------------------------- tidyverse 1.3.0 -

v ggplot2 3.2.1 v purrr 0.3.3

v tibble 2.1.3 v dplyr 0.8.3

v tidyr 1.0.0 v stringr 1.4.0

v readr 1.3.1 v forcats 0.4.0

-- Conflicts ------------------------------------------ tidyverse\_conflicts() -

x dplyr::filter() masks stats::filter()

x dplyr::lag() masks stats::lag()

> select(mtcars, mpg) %>% head(3)

mpg

Mazda RX4 21.0

Mazda RX4 Wag 21.0

Datsun 710 22.8

> library(poLCA)

Loading required package: scatterplot3d

Loading required package: MASS

Attaching package: ‘MASS’

The following object is masked from ‘package:dplyr’:

select

> select(mtcars, mpg) %>% head(3)

Error in select(mtcars, mpg) : unused argument (mpg)

***Coding Section***

To complete this section, start a new script file with the following layout:

# YOUR NAME

# Final Proficiency Exam

# #1 ---------------- (new section: CTRL + SHIFT + R)

here’s my code # with adequate commenting

# #2 ---------------- (new section: CTRL + SHIFT + R)

here’s my code # with adequate commenting

All instructions for the coding section can be found in a template I’ve provided for you: