

Chem 155 Homework #1 Due in class, *before the bell rings* on Mon. Jan. 11

Note: no late homework will be accepted

Reading: Review Chapter 9, Read Chapter 10

Problems. Note: the problems each week are a minimal set to start you learning the material—it is expected that after working these problems you will be more proficient, and able to tackle even more difficult problems. You might consider working additional problems such as *’ed problems in Oxtoby and problems from previous midterm exams to prepare for the exams (which will be more challenging than in 145).

- 1) List seven strong acids
- 2) List six strong bases

3)A) Find at least one solution to the following 2nd order equation using successive approximations (also known as iterations). The answer(s) to within 1% is fine. Show your result after each step.

$$\frac{x^2}{.06 - x} = 2.14 \cdot 10^{-3}$$

3B) Find at least one solution to the following equation using the “graphing” method in Appendix C2 (or by graphing with a calculator—if you follow the graphing calculator method you must provide two solutions and a sketch of the graph). The answer(s) to within 1% is fine.

$$x^2 \frac{(4.00 - x)}{(5.00 + x)} = 1.23$$

4) Under what range of conditions is the “buffer equation” (Henderson-Hasselbalch equation) a reasonable approximation? (you may find yourself using it outside of this range and it may work! but it is good to know the limits)

Chapter 10 Problems**10.1****10.2****10.4****10.9****10.15****10.27****10.39****10.43****10.48**

10.50 – Also answer: Why might you want to avoid using this buffer in practice? Use table 10.2 to select a suitable alternative.

10.52**10.67**