**Final Exam– Topics**

Answer these questions. Be complete, show your work, and show your work. And show your work. All answers must be legible to be graded. You may not leave the room to use the bathroom unless you ask ahead of time, and you may leave for no more than three minutes. When you’re done, you can study for other classes, but you can’t use any electronic devices until everybody is done. Remember to show your work for partial credit.

1. Let’s say that for some unspecified reason I have 1.99 liters of nitrogen at a pressure of 0.65 atm at a temperature of 320 C. Given this information, how many moles of nitrogen are in this container? (R = 0.08206 L atm/mol K) (5 pt)
2. If I were to compress this nitrogen-filled container until the volume of the gas was 0.25 L, what would the new pressure in this container be? (5 pt)
3. As you know, there’s no such thing as an ideal gas. However, some gases behave more like ideal gases than others. From what you know of the kinetic molecular theory, does nitrogen or neon act more like an ideal gas? Give reasons to support your answer! (3 pt)
4. What are the four assumptions made in the kinetic molecular theory? (8 pt)
5. Why is it important to use Kelvin instead of degrees Celsius when solving problems with gases? (3 pt)
6. How can you tell a base from its formula? (2 pt)
7. What is the pH of a 0.090 M solution of HI? (6 pt)
8. What is the pH of a 3.2 x 10-5 M solution of LiOH? (6 pt)
9. What are the pH ranges for each of the following? (1 pt each)

* acids
* bases
* neutral compounds

1. I’m going to do a titration:
2. When I perform a titration, why is extremely important that I titrate acids with bases, or bases with acids (as opposed to acids with acids or bases with bases)? (3 pt)
3. I have a beaker that contains 150 mL of an acid that has an unknown concentration. If it takes 210 mL of 1.5 M KOH to neutralize this acid, what is the concentration of this acid? (3 pt)
4. What is the pH of this acid? (3 pt)
5. What does an indicator do? What is it used for? (3 pt)
6. What are some general properties of bases? (3 pt)

