**CHE1031 Chapter 1 Quiz**

Please read questions carefully, answer as completely as possible, and ask for clarification (by email) if needed. Since this is a take-home quiz, use all the resources at your command, including a periodic table. Remember that you’ll be taking exams on your own.

**1.1: Science & Chemistry**

1. In order to turn a hypothesis into a theory, scientists must design and carry out \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**1.2: Classification & properties of matter**

Physical states

2. Match these terms.

a) gas i) intermediate abundance

b) liquid ii) lowest energy level

c) solid iii) can be compressed

3. Which pure substance can be chemically separated into smaller units?

4. What is the critical difference between the terms molecules or compounds and mixtures?

State the definitions of each term to illustrate the difference.

5. Give *two examples* of each of these physical properties:

a) extensive properties:

b) intensive properties:

6. Give an example of a technique that can be used to separate mixtures or break up molecules based on the physical or chemical properties of their components **and** explain how the separation technique works.

**1.3: Units & measurement**

7. Convert 2345 picograms into kilograms. *(Think about significant digits.)*

8. Complete the calculation and provide the answer with the proper number of significant figures.

(345.1 x 68.2) =

(8.962 – 2.4)

**1.4: Dimensional analysis**

9. Calculate the volume (mL) occupied by 12 grams of uranium. The density of uranium is 19.1 g/cm3.

10. Convert the flow rate of 12 gallons per minute to drops per hour. The volume of 1 drop is 100 µL (microliters).