**CHM 130 Fall 2016 Exam I (Ch. 1-4)   Name: _____**

Phones must be off and put away. I see a phone = Cheating = 0 on the exam.

Show all your work with units for calculations. Make sure each answer has the proper number of significant figures and units. There is only one best choice for multiple choice questions. Good luck! You got this!

1. Which statement is FALSE about the scientific method? (Circle one)
    a. You only need to do one experiment.
    b. You need to formulate a hypothesis.
    c. You should draw a conclusion.
    d. You should make observations.
    e. You should perform research.

2. Which state of matter has a definite shape and constant volume?

    a. gas   b. liquid   c. solid

3. Label each of the following as a chemical property (CP) or physical property (PP).

    a. shiny _____   b. explosive _____   c. boiling point of 32°C _____

4. Boron is a metal, nonmetal or semimetal? _____

5. Label each of the following as a **mixture, compound or element**:

    _____   _____   _____
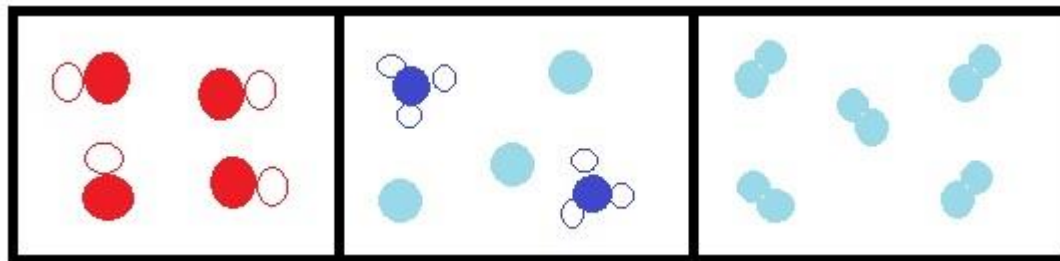
6. Write the symbol for the following elements:

    a. Sodium _____   b. silicon _____   c. silver _____

7. Write the name for the following elements:

    a. N _____   b. Au _____   c. Mg _____

8. What is the physical state (solid, liquid or gas) of each of the following elements?

    a. Pb _____   b. Br_2 _____   c. Ne _____

9. How many significant figures are in each of the following numbers?

    a. 22,020 _____   b. 0.000300 _____   c. 14.000 _____

10. Write these numbers in scientific notation:

    a. 0.000000003050 mL = _____

    b. 23,000,000,000 µm = _____

11. Perform the following calculations and express the answers with the proper units and significant figures.

    a. 935.256 mg + 82.6 mg = _____

    b. $1.16 \times 10^{74}\, m^2$ / $5.24 \times 10^{36}\, m$ = _____

    c. 2020 cm x 34.92 cm = _____

12. How many µL (microliters) are in one L? _____

13. Peyton's super bowl ring is 18 K gold. If the mass of the ring is 86.24 g, and 64.67 g is actually gold, what is the percent of gold in the super bowl ring?

14. Jermain's lawn is 125.5 feet wide. What is this in meters?

15. During her yoga routine, Mary Ann drank 955 mL of vitamin water. How many dL is this?

16. Bo, my male yorkie, weighs 9.2 lbs. How many kg is this?

17. Kelly worked 42.5 hours this week. How many minutes is this?

18. Peyton's super bowl ring has a mass of 86.24 grams and the volume is 5.75 mL. What is the density of the ring?

19. Aluminum melts at 933 Kelvin. What is this in degrees Celsius?

20. Convert -78.5 °F to °C.

21. If Sally holds an ice cube, heat transfers from _____ to _____.

22. Fill in this table for the various atoms:

Atom	# protons	# neutrons	# electrons	Mass number
Carbon-11				
$^{131}_{53}I$				

23. True or False? ^{40}Ca and ^{40}K are isotopes of each other. _____

24. What is the charge for a proton?

   a. Positive   b. neutral   c. negative

25. How many atoms are in this formula: $Al(C_2H_3O_2)_3$?   # atoms = _____

Bonus: If the density of mercury is 13.56 g/mL, what is the volume for 2453.6 grams?