CHM 1020 - PreTEST 1

Welcome to your first test. Please feel free to mark on the multiple choice portion of the test but make sure that all your multiple choice answers are on the scantron sheet. Put the answers to the problems directly on the pages where the questions are. Please notice the periodic table at the end of this test. Good luck.

Useful info: $F = \frac{9}{5}C + 32$ and $K = C + 273$

I. (50 points) **Multiple Choice and Completion** - Choose the best answer and print the letter of this answer in the appropriate space on the scantron sheet.

1. The number 5×10^{-3}, written in exponential notation, can be written in full as
(A) 0.005 (B) 0.05 (C) 500 (D) 5000

2. $(5.9 \times 10^{-8})/(8.3 \times 10^{-3}) =$
(A) 7.1×10^{5} (B) 7.1×10^{11} (C) 7.1×10^{-6} (D) 7.1×10^{-5} (E) 7.1×10^{-11}

3. How many significant figures are in the number 0.05160?
(A) one (B) two (C) three (D) four (E) five (F) six.

4. A calculator answer of 2.3169 must be rounded off to three significant figures. What answer is reported? (A) 2.316 (B) 2.317 (C) 2.31 (D) 2.32

5. What is the volume of 33.00 g a liquid that has a density of 0.89 g/ml?
(A) 29.4 ml (B) 29 ml (C) 33.9 ml (D) 37.2 ml (E) 37 ml

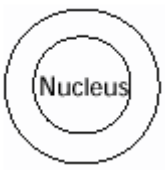
6. The maximum number of electrons that may occupy the second electron shell is
(A) 2. (B) 8. (C) 10. (D) 18. (E) 32.

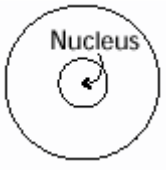
7. How many electrons are permitted in a single p orbital? A) 2 B) 6 C) 10 D) 18 E) 28

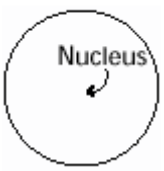
8. Which scientist is given credit for the theory that electrons orbit the nucleus in orbits of specific energies? (A) Proust (B) Guy-Lussac (C) Avogadro (D) Rutherford (E) Bohr

9. A certain radioactive element has a half life of one hour. If you start with a 1-gram sample of the element at noon, how much is left at 3:00 pm?
(A) 1 gram (B) ½ gram. (C) ¼ gram. (D) 1/8 gram (E) zero grams

10. Which of the following diagrams best represents the size of the atomic nucleus relative to the size of the atom:

(A) 

(B) 

(C) 

Name_____

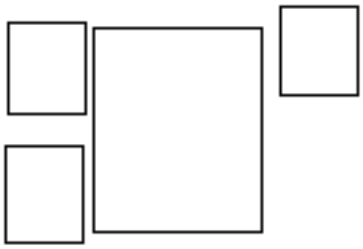
PART II: PROBLEMS: Please write your answers on this sheet!! Show all work! Show units.

Problem 1

1. I weigh 169 pounds. What is my weight in kilograms?
(Use the factor label method and use the correct number significant figures in your answer.)

2. The density of copper is 8.92 g/mL. What is the weight in pounds of 869mL of copper?

3. An atom has 34 protons, 42 neutrons and 36 electrons. Describe this atom using the format described in class. (8 pts)



4. **Nuclear reactions**.(18 pts) Complete the following nuclear reactions.

$$^{141}_{56}\text{Ba} \rightarrow \quad + \ ^{0}_{-1}\text{e} \qquad\qquad ^{213}_{83}\text{Bi} \rightarrow \quad + \ ^{4}_{2}\text{He}$$

5. Please write the ground electron configuration for the following elements. Please use shell-subshell notation. (12 pts)

C: _____ Si: _____

Fe: _____