

Name: _____

Chemistry 121
Spring2003
Exam I
50 minutes/100 pts

I. MULTIPLE CHOICE: (30 pts, 3 points each) Carefully and clearly circle the best answer.

1. In order for Eric Cartman to pass 4th grade, he must correctly write 0.005706 in scientific notation with 3 significant figures. Please help Eric out by correctly writing this number.
 - a. 0.005706
 - b. 571×10^{-5}
 - c. 57.1×10^{-4}
 - d. 5.71×10^{-3}
 - e. 0.571×10^{-2}

2. What is the correct elemental symbol for manganese? (Not magnesium!)
 - a. Mg
 - b. Mn
 - c. Mo
 - d. Zn
 - e. Zn

3. What element below has chemical properties similar to those of phosphorous?
 - a. Si
 - b. Ar
 - c. Se
 - d. N
 - e. K

4. A mixture that is similar throughout is termed:
 - a. isotonic
 - b. an isotope
 - c. homogeneous
 - d. heterogeneous
 - e. hydroscopic

5. How many protons does Chlorine have?
 - a. 7
 - b. 17
 - c. 35
 - d. 70
 - e. 52

6. The correct formula for barium sulfate is:
 - a. BaSO_3
 - b. $\text{Ba}(\text{SO}_3)_2$
 - c. Ba_2SO_3
 - d. BaSO_4
 - e. Ba_2SO_4

7. Which of the following is NOT a form of kinetic energy?
- a. Mechanical Energy
 - b. Electrical Energy
 - c. Thermal Energy
 - d. Sound Energy
 - e. Gravitational Energy
8. Name the following compound: N_2F_4
- a. Nitrogen Fluorine
 - b. Dinitrogen Tetrafluorine
 - c. Nitrogen Fluoride
 - d. Dinitrogen Tetrafluoride
 - e. Dinitrogen fluoride
9. Convert $23^\circ C$ to Kelvin
- a. 23K
 - b. $-250.K$
 - c. 296K
 - d. 6280K
 - e. None of these
10. What is the most massive part of an atom?
- a. The nucleus
 - b. The electrons
 - c. Only the protons
 - d. Only the neutrons
 - e. Anything not in the nucleus

II. Short Answers and Calculations (80 pts): Clearly indicate your answer in the space provided. Partial credit will be given for correct work. If I cannot read the work, it will not be graded.

1. (10 pts) Give an example of the following:
- a. A halogen _____
 - b. An alkali metal _____
 - c. An alkali earth metal _____
 - d. A nonmetal _____
 - e. A noble gas _____
2. (10 pts) An isotope of Aluminum has a mass number of 29. Express this element in atomic notation:
- $${}^Z_A X$$
3. (10 pts) What is the volume (in mL) of a piece of solid bromine that weighs 2.05g and has a density of 3.12 g/mL?

4. (10 pts) What is the molar mass of potassium nitrate, KNO_3 ?

5. (10 pts) What is the weight percent of oxygen in potassium nitrate, KNO_3 ? (HINT: use answer from #4)

6. (10 pts) How many atoms of potassium are in 2.56g of KNO_3 ? (HINTS: use the molar mass you calculated in #4 and you will need Avogadro's Number for this one)

7. (10 pts) What volume of 2.0M NaCl should be used to make 2.00L of 0.050 M NaCl?

8. (10 pts) What is the empirical formula of a compound containing 75.7% carbon, 8.8% hydrogen and 15.5% oxygen? (HINT: Assume 100.g and only find the empirical formula, not the molecular formula)