Chem. 110 Name _____
Spring 05 **EXAM 1** (Last) (First)

Part 1

1. Complete the following table (17 points)

Element Symbol	Name	State at Room Temp	Diatomic? Yes or no	Metal, Nonmetal Metalloid Or Noble gas	Period Number	Atomic Number	Family Name Or Family Number if No Name
P							
	chlorine						
			yes				**VIA**
Kr							
						53	

2. Write the symbols of the two elements in the above table that have very similar chemical and physical properties (1 point)

Answer_____and_____

3. Classify the following as Physical or Chemical changes (Put a P or C in answer space) (4 points)

a. When Alka Seltzer® is added to water, bubbles form Answer_____

b. When hydrogen and nitrogen are mixed at high temperature and pressure ammonia is obtained Answer_____

c. When water from the ocean evaporates, sodium chloride crystals are left behind

Answer_____

d. When two clear and colorless liquids are mixed a solid forms

Answer_____

4. Classify the following as Physical or Chemical Properties (Put a P or C in answer space) (3 points)

a. Silver metal will turn black after being in the air

Answer_____

b. sugar dissolves in water Answer_____

c. Lead is more dense than sulfur Answer_____

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5. Classify the following as Homogeneous mixture, Heterogeneous mixture or Pure substance (4 points)

a. A cup of H_2O molecules Answer_____

b. Tap water Answer_____

c. Wet sand Answer_____

d. A salad Answer_____

6. Classify the following as Compound, Element or Mixture (Put C, M, or E in answer space) (4 points)

a. Blue Kool Aid ® Answer_____

b. A substance that will not break down chemically Answer_____

c. Cobalt Answer_____

d. An alloy of zinc and tin Answer_____

7. Classify the following as potential energy or kinetic energy (Put PE or KE in answer space) (2 points)

a. A football thrown by Tom Brady Answer_____

b. A tank full of gasoline in a parked car Answer_____

8. Classify the following as an endothermic or exothermic process (1 point)

a. A solid chemical is mixed with water and the temperature goes up Answer_____

/11

Part 2 Problems

Problems: (you must show all work, correct units and correct number of significant figures)

1. Determine the number of significant figures for each of the following measured values. (2 points)

a. .004004300 Answer_____

b. $600.22100 \times 10^{-250}$ Answer_____

2. Carry out the following mathematical operations, expressing your answer to the correct number of significant figures. Assume that all numbers are measured quantities. (2 points) Put answer in scientific notation.

Calculate the following: $\frac{1.92 - 1.32411}{1.32411} \times 100$

Show work:

Answer_____

3. Carry out the following mathematical operation making sure that your answer is expressed in correct scientific notation form and to the correct number of significant digits. (2 points)

$(3.000 \times 10^{-8}) \times (9.0 \times 10^{-6})$

Answer_____

4. How many Kelvin is 147.8 degrees Celsius (2 points)

Answer_____

5. Carry out the following mathematical manipulation of units: (1 point)

a. $\frac{m^2 \times m^2}{hr \times m^3}$ Answer_____

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For problems 6-11 you must use dimensional analysis and put your answer in *scientific notation* with correct units and significant figures. (When possible go through the basic unit)

6. **Perform the following metric-metric conversion. (5 points)**
   How many micrograms is 751 centigrams?

Answer_____

7. **There are 34.55 dags per dig. 45.67 yillies is the same as 22.1 yallies. 22.5 yallies equals 8 (exactly) sosas which is equal to exactly 1 sammy. If there are 12.5 sosas in 99.5 dags, how many digs are in 1,234.5 yillies? (10 points)**

Answer_____

8. **Your speedometer says that you are traveling 88 miles/hour. What is your speed in dm/second? (12 points)**

Answer_____

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9. Gasoline has a density of 0.56 g/ cm^3. What is the volume in deciliters of 75.0 kg of gasoline? (8 points)

Answer_____

10. Osmium is the densest metal with a density of 22.60 g/cc. (10 points)
What is the volume, in cubic centimeters, of a block of osmium with dimensions 5.00 in X 4.00 in. X 0.25 ft?

Answer_____

11. The world's oceans contain approximately 1.35 X 10^9 km^3 of water. What is the volume in liters? (12 points)

Answer_____

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