Name: _____

Chemistry 121
Test 1, Version A
Fall 2007

You have 50 minutes to complete this 100 point test. Please mark each answer clearly and show all work. You may use a simple scientific calculator. NO GAPHING CALCULATORS.

I. (10 pts) Multiple Choice: Circle the best answer

1. In chemistry, the compounds on the left side of a balanced equation are referred to as:
   a. Isotopes.
   b. Coefficients.
   c. Products.
   d. Reactants.

2. Which of the following ions has 30 protons and 28 electrons?
   a. Zn^{2+}
   b. Ni^{2+}
   c. Ce^{2+}
   d. None of the above

3. Which one of the following ionic compounds has the correct formula?
   a. Ca_2O_2
   b. MgS
   c. KF_3
   d. AlO

4. Which one of the following numbers has 2 significant figures?
   a. 2.500
   b. 0.0250
   c. 0.000025
   d. None of the above

5. When 345 degrees Kelvin is converted to Celsius, the temperature is _____.
   a. 345 ºC.
   b. 618 ºC.
   c. 72 ºC.
   d. None of the above.

II. (15 pts) Calculations: Clearly show all work for full credit.

1. (5 pts) An element has two naturally occurring isotopes with the following masses and percent abundances. (a) Calculate the average atomic weight of this element and (b) give the **CHEMICAL NAME** of the element.

Isotopic Mass (u)	**Abundance**
78.9183	50.69%
80.92	49.31%

Element Name:_____

2. (5 pts) Ethylene glycol (antifreeze) has a density of 1.55 g/mL. What is the volume in L of 4.1 kg of this liquid?

3. (5 pts) Convert 2.56 gal to milliliters. (4 qt = 1 gal, 1L = 1.057 qt)

III. (72 pts) Atomic Notation and Naming

1. (12 pts) Complete the blanks in the following table:

Name	Symbol	Number of Protons	Number of Neutrons	Mass Number
	Sc			**42**
Sulfur			**17**	
		40	**42**	
			125	**207**

2. (30 pts) Name the following compounds:

   a. NF_3 _____

   b. CsI _____

   c. I_2O_5 _____

   d. $PbCl_4$ _____

   e. $CoSO_4$ _____

   f. NH_4I _____

   g. $KrCl_5$ _____

   h. $Cu(C_2H_3O_2)_2$ _____

   i. $BeCl_2 \cdot 2H_2O$ _____

   j. NO _____

3. (30 pts) Give the chemical formula for each of the following compounds.

   a. Sodium hydrogen sulfate

   b. Chromium(III) phosphate trihydrate

   c. Lead(II) chromate

   d. Disulfur tetrafluoride

   e. Carbon tetrachloride

   f. Rubidium permanganate

   g. Chlorine monoxide

   h. Diphosphorus pentasulfide

   i. Silver(I) nitrate

   j. Magnesium nitride

IV. (3 pts) Periodic Table: Give examples of the following using the **CHEMICAL NAME** of the element, not the symbol:

1. a halogen _____
2. a noble gas _____
3. an alkaline earth metal _____

Name: _____

V. (10 pts) Essay: In 4 – 6 grammatically correct sentences, answer ONE of the following questions.

1. Describe the experiment that Millikan performed when he determined the charge on an electron.
2. Explain how Rutherford deduced the presence of neutrons.

	IA												IIIA	IVA	VA	VIA	VIIA	VIIIA
1	1 **H** 1.008	IIA																2 **He** 4.00
2	3 **Li** 6.94	4 **Be** 9.01											5 **B** 10.81	6 **C** 12.01	7 **N** 14.01	8 **O** 16.00	9 **F** 19.00	10 **Ne** 20.18
3	11 **Na** 22.99	12 **Mg** 24.31	IIIB	IVB	VB	VIB	VIIB	VIIIB			IB	IIB	13 **Al** 26.98	14 **Si** 28.09	15 **P** 30.97	16 **S** 32.06	17 **Cl** 35.45	18 **Ar** 39.95
4	19 **K** 39.10	20 **Ca** 40.08	21 **Sc** 44.96	22 **Ti** 47.90	23 **V** 50.94	24 **Cr** 52.00	25 **Mn** 54.94	26 **Fe** 55.85	27 **Co** 58.93	28 **Ni** 58.71	29 **Cu** 63.55	30 **Zn** 65.37	31 **Ga** 69.72	32 **Ge** 72.59	33 **As** 74.92	34 **Se** 78.96	35 **Br** 79.90	36 **Kr** 83.80
5	37 **Rb** 85.47	38 **Sr** 87.62	39 **Y** 88.91	40 **Zr** 91.22	41 **Nb** 92.91	42 **Mo** 95.94	43 **Tc** [98]	44 **Ru** 101.1	45 **Rh** 102.9	46 **Pd** 106.4	47 **Ag** 107.9	48 **Cd** 112.40	49 **In** 114.8	50 **Sn** 118.7	51 **Sb** 121.8	52 **Te** 127.60	53 **I** 126.90	54 **Xe** 131.30
6	55 **Cs** 132.9	56 **Ba** 137.3	71 **Lu** 175	72 **Hf** 178.5	73 **Ta** 181	74 **W** 183.9	75 **Re** 186.2	76 **Os** 190.2	77 **Ir** 192.2	78 **Pt** 195.1	79 **Au** 197	80 **Hg** 200.59	81 **Tl** 204.4	82 **Pb** 207.2	83 **Bi** 209	84 **Po** [209]	85 **At** [210]	86 **Rn** [222]
7	87 **Fr** [223]	88 **Ra** [226]	103 **Lr** [262]	104 [261]	105 [262]	106 [263]												

57 **La** 138.9	58 **Ce** 140.1	59 **Pr** 140.9	60 **Nd** 144.2	61 **Pm** [145]	62 **Sm** 150.4	63 **Eu** 152	64 **Gd** 157.3	65 **Tb** 158.9	66 **Dy** 162.5	67 **Ho** 164.93	68 **Er** 167.3	69 **Tm** 168.9	70 **Yb** 173
89 **Ac** [227]	90 **Th** 232	91 **Pa** [231]	92 **U** 238	93 **Np** [237]	94 **Pu** [244]	95 **Am** [243]	96 **Cm** [247]	97 **Bk** [247]	98 **Cf** [251]	99 **Es** [252]	100 **Fm** [257]	101 **Md** [258]	102 **No** [259]