Name: _____

Chem 121 Test 1A
Fall 2009

PART A: Naming, Fill-in the blank, Significant Figures, Essay – clearly indicate your answer in the spaces provided. You may **NOT** use a calculator for Part A.

1. (26 pts) Naming and Formulas: Write the correct name/formula.

$Ca(C_2H_3O_2)_2$	
tetraphosphorus pentasulfide	
FeO	
cobalt(II) hydroxide	
$AsBr_4$	
zinc(I) sulfite tetrahydrate	
N_3O_6	
$PbSO_4 \cdot 2\ H_2O$	
magnesium dichromate	
trinitrogen pentafluoride	
MnS_2	
barium nitride	
SeI_2	

2. (6 pts) Indicate the number of significant figures in each measurement and write the measurement in correct scientific notation.

Measurement	# of Sig Figs	In Scientific Notation
12500 mi		
0.08900 g		
560.0 cm		

3. (6 pts) Fill in the blank with the best correct response.
   a. Atoms with the same number of protons but different numbers of neutrons are called _____.

   b. An atom that has lost an electron becomes a(n)_____ and an atom that has gained an electron is called a(n) _____. (*be specific*)

   c. In a balanced equation, _____ appear on the left and _____ appear on the right.

   d. The numbers used to balance a chemical equation are called _____.

4. (12 pts) Atomic Notation: Fill in the blanks

Element name	Symbol	# of Protons	# of Neutrons	Mass Number
sulfur				36
	Ga		38	
			51	88
		47	61	

5. (10 pts) ESSAY: Answer **ONE** of the following in **4 – 6 grammatically** correct sentences
   a. Describe the experiment that discovered the presence of the nucleus.
   b. Describe Millikan's oil drop experiment and what it was used to determine.

	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 **Rf** [267]	105 **Db** [268]	106 **Sg** [271]	107 **Bh** [272]	108 **Hs** [270]	109 **Mt** [276]	110 **Ds** [281]	111 **Rg** [280]	112 **Uub** [285]	113 **Uut** [284]	114 **Uuq** [289]	115 **Uup** [288]	116 **Uuh** [293]		118 **Uuo** [294]

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]

PART B: Calculations – show all work for calculations (do nothing in your head, even moving decimal places) to receive full credit.

1. (10 pts) Neon has three naturally occurring isotopes ^{20}Ne, ^{21}Ne and ^{22}Ne. Calculate the average atomic mass.

Isotopic Mass	Percent Abundance
19.9924 u	90.48%
20.9938 u	0.27%
21.9914 u	9.25%

2. (10 pts) Rutherford's experiment determined that the atomic nucleus is very dense. In fact, it has a density of 2.3×10^{17} kg/m^3. A single hydrogen nucleus contains only one proton. The mass of a proton is 1.6726×10^{-24} g. What is volume (in L) of a hydrogen nucleus? (1000 L = 1 m^3)

3. (10 pts) The baby penguin that was recently hatched at the Tennessee Aquarium had a birth weight of 0.485 kg. What is this weight in ounces? (16 oz = 1lb, 1 lb = 453.6g)

4. (10 pts) The average speed of a garden snail is 0.0468 km/hr. What is this in m/s?