Chemistry 101
First Exam

Name:_____ **Date: 17/10/2012**

Student no. _____ **Section:**_____

Useful Information: *Avogadro's number = 6.02 x 10^{23}*

H[1] 1.000																	**He**[2] 4
Li[3] 6.941	**Be**[4] 9.012											**B**[5] 10.81	**C**[6] 12.01	**N**[7] 14.01	**O**[8] 16	**F**[9] 19	**Ne**[10] 20.18
Na[11] 22.99	**Mg**[12] 24.31											**Al**[13] 26.98	**Si**[14] 28.09	**P**[15] 30.97	**S**[16] 32.06	**Cl**[17] 35.45	**Ar**[18] 39.95
K[19] 39.10	**Ca**[20] 40.08	**Sc**[21] 44.96	**Ti**[22] 47.9	**V**[23] 50.94	**Cr**[24] 51.99	**Mn**[25] 54.94	**Fe**[26] 55.85	**Co**[27] 58.93	**Ni**[28] 58.71	**Cu**[29] 63.54	**Zn**[30] 65.37	**Ga**[31] 69.72	**Ge**[32] 72.59	**As**[33] 74.92	**Se**[34] 78.96	**Br**[35] 79.9	**Kr**[36] 83.8
Rb[37] 85.47	**Sr**[38] 87.62	**Y**[39] 88.91	**Zr**[40] 91.22	**Nb**[41] 92.91	**Mo**[42] 95.94	**Tc**[43] 99.91	**Ru**[44] 101.1	**Rh**[45] 102.91	**Pd**[46] 106.4	**Ag**[47] 107.87	**Cd**[48] 112.4	**In**[49] 114.8	**Sn**[50] 118.69	**Sb**[51] 121.75	**Te**[52] 127.6	**I**[53] 126.9	**Xe**[54] 131.3
Cs[55] 132.9	**Ba**[56] 137.3	**57-71** *	**Hf**[72] 178.5	**Ta**[73] 180.9	**W**[74] 183.85	**Re**[75] 186.2	**Os**[76] 190.2	**Ir**[77] 192.2	**Pt**[78] 195.1	**Au**[79] 196.97	**Hg**[80] 200.6	**Tl**[81] 204.37	**Pb**[82] 207.2	**Bi**[83] 208.98	**Po**[84] 210	**At**[85] 210	**Rn**[86] 222

Write the best fit answer of the following questions in this table:

Q1 ***(1 pt)***	**Q2** ***(1 pt)***	**Q3** ***(1 pt)***	**Q4** ***(1 pt)***	**Q5** ***(1.0pt)***	**Q6** ***(1.0pt)***	**Q7** ***(1.0 pt)***	**Q8** ***(1.25pt)***
Q9 ***(1.25pt)***	**Q10** ***(2 pt)***	**Q11** ***(1 pt)***	**Q12** ***(1 pt)***	***Total (12)***			

1. Silver (Ag) (average atomic mass=107.868 amu) has two naturally occurring isotopes, ^{109}**Ag** and ^{107}**Ag**. Silver consists of 51.82% ^{107}**Ag** which has the mass of 106.905 amu. Calculate the mass of ^{109}Ag in amu:

a. 106.27 b. 105.87 c. 109.30 d. 108.90

2. Perform the following arithmetic and round the answer to the proper number of significant figures:

$(341.7cm^2 - 22cm^2) + (0.00224cm \times 814{,}050cm) = ?$

a. $2.15X10^4$ b. $2.14X10^3$ c. $2.15X10^3$ d. $2.14x10^4$

3. If a rectangular slab of Lithium (Li) weighs 1.49×10^3 mg and has sides that measure 20.9 mm by 11.2 mm by 12.0 mm, what is the density of Li in g/cm^3 ?

a. 0.53 b. 0.532 c. 0.530 d. 5.30

4. Tow samples of Quartz obtained from different places were analyzed. One sample was found to consist of 3.44 g Silicon and 3.91 g of Oxygen. The other consisted of 6.42 g Silicon and 7.30 g of Oxygen. Does these data suggest that Quartz is a:

a. Element b. Compound c. Mixture d. Molecular Element

5. Write the chemical formula for each of the following compounds:

a. Sulfur hexafluoride: ……. b. Iron(III) Sulphate: ……

c. Ammonium acetate: ……. d. Mercury(I) Oxide: ……

6. Write the name for each of the following compounds:

a. N_2F_4 : ……..

b. K_2O_2 : …….

c. $SiBr_4$: ……...

d. $Pb_3(PO_3)_4$: ……..

7 a. The transition metal among (Pb, Zn, Na, Ba) is ……...

b. The alkali metal among (C, Cu, Cs, Co) is …….

c. The metalloid among (S, Se, Si, Sn) is ……

d. The noble gas among (Ba, Re, Rh, Xe) is ……..

8. Consider the following balanced reaction: $P_4 + 6\ F_2 \rightarrow 4\ PF_3$

What mass of F_2 is needed to produce 120 g of PF_3 (actually) if the reaction has a 78.1% yield? P_4 is available in excess.

A. 77.7 g B. 120.0 g C. 60.7 g D. 99.5 g

9. An organic compound contains 56.79% **C**, 6.56% **H**, and 8.28% **N,** and 28.27% **O**. Its empirical formula is:

A. $C_8H_{11}NO$ B. $C_8H_{11}NO_3$ C. $C_9H_{14}NO_3$ D. $C_8H_{11}N_3O$

10. Consider the following balanced reaction: $6\ ClO_2 + 3\ H_2O \rightarrow 5\ HClO_3 + HCl$

If 4.25 g of ClO_2 is reacted with 0.853 g of H_2O,

A. Which is the LIMITING REACTANT……..

B. How many grams of Hydrochloric acid will be formed…….

C. How many moles of $HClO_3$ will be formed…….

D. How many grames of the reactant in excess will be left over……..

11. Consider the following reaction: $Na_2S_2O_3 + I_2 \rightarrow NaI + Na_2S_4O_6$.

The sum of all coefficients (reactants and products) in the balanced equation is: .A

A. 4 B. 5 C. 6 D. 7

12. The number of carbon atoms exist in 1.8 g of Glucose ($C_6H_{12}O_6$) is:

A. 6.5×10^{24} B. 3.6×10^{22} C. 6.02×10^{21} D. 1×10^{21}

-Good Luck-