CHEMISTRY 101
FIRST EXAM

Name:_____ **Date: 14/03/2012**

Student no. _____ **Section:**_____

Useful Information: *Gas Constant R= 0.08206 L.atm/K.mol*

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 ***(0.75 pt)***	**Q2** ***(0.75 pt)***	**Q3** ***(0.75 pt)***	**Q4** ***(0.75 pt)***	**Q5** ***(0.75 pt)***	**Q6** ***(0.75 pt)***	**Q7** ***(0.5 pt)***	**Q8** ***(0.75 pt)***
Q9 ***(0.75 pt)***	**Q10** ***(0.75 pt)***	**Q11** ***(0.75 pt)***	**Q12** ***(0.5 pt)***	**Q13** ***(0.5 pt)***	**Q14** ***(1 pt)***	**Q15** ***(1 pt)***	**Q16** ***(1 pt)***

1. Find the volume in liters of 40 kg of carbon tetrachloride, whose density is 1.60 g/cm^3.

A. 0.025 L B. 25000 L C. 25 L D. 40 L

2. Carry out the following operation and express the answer in the correct number of significant figures: 10.892 – (7.310/5.70) =

A. 9.612 B. 9.61 C. 9.60 D. 9.609

3. An element (X) has three naturally occurring isotopes: ^{39}X, ^{40}X and ^{41}X. Their respective natural abundance is 93.2581%, 0.0117% and 6.7302% , this element is:

A. P B. Ar C. K D. Ca

4. The correct order of **decreasing** mass percent of Oxygen in

1) Caffeine ($C_8H_{10}N_4O_2$, Mwt=194.19),

2) Sucrose($C_{12}H_{22}O_{11}$, Mwt=342.30) and

3) Ethanol (C_2H_6O, Mwt=46.0) is:

A .1>2>3 B. 2>3>1 C. 3>2>1 D. 1>3>2 .3

5. Calculate the **mass** in grams of **carbon** present in 1000 molecules of $\mathbf{C_5H_{12}}$:

A. 9.96×10^{-20} B. 60000

C. 8.30×10^{-21} D. 1.99×10^{-20}

6. Determine whether Ozone (O_3) represents:

A. Molecule which is compound B. Compound which is molecule

C. Compound which is not molecule C. Molecule which is not compound

7. The transition metal among the following elements is

A. Ca B. Co C. Cs D. C

8. A compound is composed of 60.8% Na, 28.5% B and 10.7% H. The empirical formula of this compound is :

A. NaBH B. $Na_2B_2H_7$ C. $NaBH_4$ d. D. NaB_2H_6

9. The formula of ammonium dichromate is

A. $NH_4Cr_2O_7$ B. $(NH_4)_2CrO_4$ C. NH_3CrO_3 D. $(NH_4)_2Cr_2O_7$

10. Consider the following reaction: $Na_2SiF_{6(S)} + Na_{(S)} \rightarrow Si_{(S)} + NaF_{(S)}$.

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

A. 10 B. 11 C. 13 D. 12

11. The empirical formula of Mercury (I) sulfide is:

A. HgS B. Hg_2S_2 C. Hg_2S D. Hg_2SO_4

12. The name of $Fe(BrO_3)_2$ is

A. Iron(III) bromite B. Iron(II) bromate C. Iron dibromate D. Iron(II) bromide

13. The name of BaO_2 is:

A. Barium oxide B. Barium dioxide C. Barium(II) oxide D. Barium peroxide

14. Ascorbic acis(176 g/mol) is an organic compound containing C, H, and O given that combustion of 5.24 g sample of the compound produces 7.86 g CO_2 and 2.14 g H_2O. Determine the ***empirical formula*** of Ascorbic acid:

A. $C_2H_4O_2$ B. $C_6H_8O_6$ C. C_2H_3O D. $C_3H_4O_3$

15. Consider the reaction, $3CCl_4 + 2SbF_3 \longrightarrow 3CCl_2F_2 + 2SbCl_3$

If 150.0 g of CCl_4 (153.8 g/mol) is mixed with 100 g of SbF_3 (178.8 g/mol), then the mass in grams of CCl_2F_2 (121.0 g/mol) that can be formed is equal to:

A .121.0 g B. 117.9 g C. 101.5 g D. 250.0 g

16. Consider the reaction, $C_6H_6 + Br_2 \longrightarrow C_6H_5Br + HBr$

If 25.0 g of C_6H_6 (78.0 g/mol) are reacted with excess Br_2 and only 15.0 g of C_6H_5Br (157.0 g/mol) were obtained, then the percentage yield of this reaction is equal to :

A. 60.0% B. 29.8% C .9.0% D15.9%

-GOOD LUCK-