



CHEMISTRY 101 SECOND EXAM(121)

Name: _____

Date: 16/12/2012

Student no. _____

Section: _____

Useful Information: Gas Constant $R = 0.08206 \text{ L.atm/K.mol}$

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	La^{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	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Q9	Q10	Q11	Q12	Q13	Total (12)		

1. If the oxidation number of chromium (Cr) is (3+), then one of the following representations is correct:

- a. CrO_2 b. HCrCl_4 c. Cr_3O_2 d. $\text{K}_2\text{Cr}_2\text{O}_7$

2. One of the following reactions does not represent **redox** reaction:

- a. $2\text{Al} + 6\text{HCl} \longrightarrow 3\text{H}_2 + 2\text{AlCl}_3$
b. $2\text{H}_2\text{O} \longrightarrow 2\text{H}_2 + \text{O}_2$
c. $2\text{NaCl} + \text{Pb}(\text{NO}_3)_2 \longrightarrow \text{PbCl}_2 + 2\text{NaNO}_3$
d. $2\text{NaI} + \text{Br}_2 \longrightarrow 2\text{NaBr} + \text{I}_2$

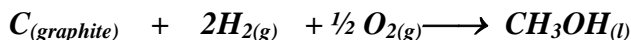
3. Aluminum reacts with excess H_2SO_4 according to the following equation:



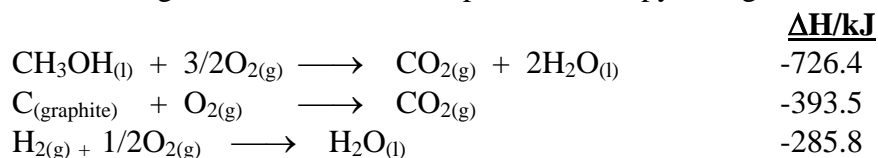
The Volume of a 0.1 M acid required to react completely with 1 g aluminum is:

- a. 370.4 mL b. 555.6 mL c. 740.8 mL d. 200.0 mL

4. Calculate ΔH for the reaction:



Given the following reactions and their respective enthalpy changes:



- a. -834.1 kJ b. -618.7 kJ c. -238.7 d. 47.1 kJ

5. If 60 ml of water was added to 120 mL of 0.450 M KCl solution. What was the molarity of the resulting solution:

- a. 0.600 M b. 0.150 M c. 0.225 M d. 0.300 M

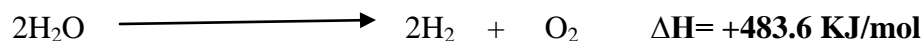
6. If 10 ml of 0.2 M NaOH solution required to neutralize a sample of 0.1 M phosphoric acid (H_3PO_4). What was the Volume of the acid:

- a. 6.67 mL b. 20.00 mL c. 60.00 mL d. 13.32 mL

7. If the density of Argon gas (Ar) at -5°C equals 1 g/L, its pressure (in atm) at the same temperature will be:

- a. 1.0 b. 11 c. 5.5 d. 0.55

8. Consider the reaction:



At a certain temperature. If the increase in volume is 32.7 L against an external pressure of 1.00 atm, calculate ΔU for this reaction. (Hint: 1 L. atm = 101.3 J)

- a. 963.9 KJ b. 480.3 KJ c. 483.6 KJ d. 450.9 KJ

9. A sheet of gold weighing 10.0 g and at a temperature of 18.0 °C is placed flat on a sheet of iron weighing 20.0 g and at a temperature of 55.6 °C. What is the final temperature of the combined metals: (Specific Heat of Au= 0.129, Fe= 0.444 J/g. °C)

- a. 61.9 °C b. 52.9 °C c. 50.8 °C d. 68.1 °C

10. A 370 mL sample of oxygen is collected over water at 23 °C and a pressure of 0.992 atm. If the vapor pressure of water at 23 °C is 0.028 atm. Then the volume of this sample of dry oxygen will occupy at STP is:

- a. 329 mL b. 311 mL c. 387 mL d. 416 mL

11. A sample of N₂ gas is placed into 0.29 L flask at 25 °C if 0.1 g of O₂ is added so that the total pressure in the flask is 101 KPa, calculate:

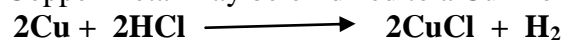
The pressure of N₂ gas:.....

The mass of N₂ gas:.....

12. The Volume of a sample of gas is 750 mL at 75 °C and 0.750 atm. At what temperature will the sample occupy 1.00 L under a pressure of 1.00 atm.

- a. 618.7 K b. 415.0 K c. 215.0 K d. 298 K

13. Copper metal may be oxidized to a Cu¹⁺ ion by the following equation:



If 6.4 g of Cu is Oxidized, what volume of Hydrogen (at STP) is evolved:

- a. 22.4 L b. 12.2 L c. 0.05 L d. 1.1 L

-GOOD LUCK-