



CHEMISTRY 101 SECOND EXAM

Name: _____

Date: 06/05/2013

Student no. _____

Section: _____

Useful Information: Gas Constant $R = 0.08206 \text{ L.atm/K.mol}$, Specific heat of $\text{H}_2\text{O} = 4.18 \text{ J/g. } ^\circ\text{C}$

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

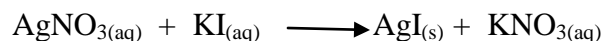
Write the best fit answer of the following questions in this table:

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Q9	Q10	Q11	Q12	Q13	Q14	Total (13)	

1. The mass (in grams) of NaOH required to prepare 4.0×10^2 mL of 0.6 M NaOH solution is:

- a) 0.65 b) 11.25 c) 4.75 d) 9.60

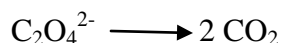
2. When 200 mL of 0.30 M AgNO₃ and 300 mL of 0.30 M KI are mixed the following reaction occurs:



The concentration of NO₃⁻ in the final solution is:

- a) 0.20 M b) 0.18 M c) 0.12 M d) 0.15 M

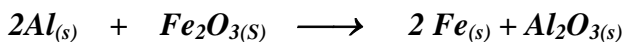
3. In the following half reaction:



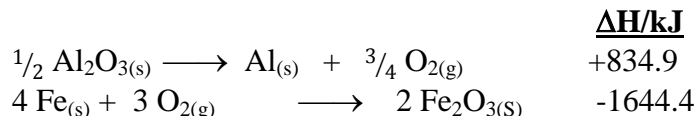
One of the following descriptions is correct:

- a) No electrons are lost or gained.
b) Two electrons are gained.
c) Two electrons are lost.
d) Only one electron is lost.

4. Calculate ΔH for the reaction:

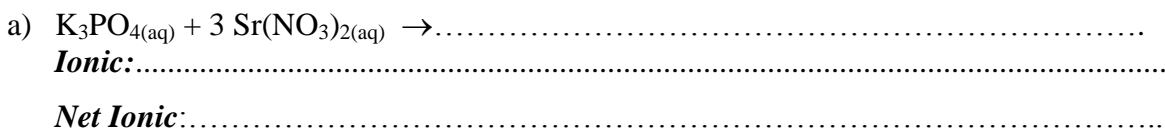


Given the following reactions and their respective enthalpy changes:

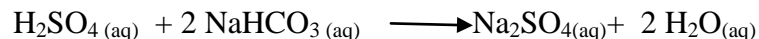


- a) 810 kJ b) 847.6 kJ c) 2492 kJ d) -847.6 kJ

5. Complete the following reactions then write the **IONIC** and the **NET IONIC** equation for each of them:



6. How many milliliters of 0.15 M H_2SO_4 are required to neutralize 8.20 g of NaHCO_3 , according to the following equation:

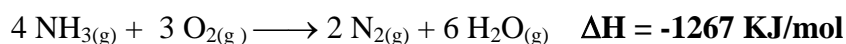


- a) 162.5 mL b) 325 mL c) 650 mL d) 32.5 mL

7. If 1625 J are obtained from 75 g of ethanol initially at 25 °C. Calculate the final temperature of ethanol, given that the specific heat of ethanol is 2.4 J/g. °C.

- a) 9 °C b) 25 °C c) 16 °C d) -9 °C

8. Ammonia, NH_3 , burns according to the following equation:



What is the enthalpy change (ΔH) released by burning 35.8 g of ammonia (NH_3).

- a) 667 KJ b) 2668 KJ c) -2668 KJ d) -667 KJ

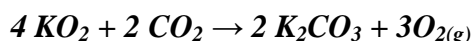
9. A student mixes 88.6 g of a liquid at 74.3 °C with 57.9 g of the same liquid at 24.8 °C in an insulated flask. What is the final temperature of the combined liquid?

- a) 54.7°C b) 167.7 °C c) 35.13 °C d) 67.7 °C

10. The pressure at which 0.25 mole of $\text{N}_2(\text{g})$ occupy 1×10^4 mL at 100 °C will be:

- a) 2.05 atm b) 0.765 atm c) 0.205 atm d) 7.65 atm

11. The mass of KO_2 *in kg* that produces 1000 L O_2 at **STP** from the following equation is:



- a) 8.45 b) 44.64 c) 3.17 d) 4.23

12. If the density of a noble gas equals 1×10^{-3} g/mL at -5 °C and a pressure of 418 torr, then this noble gas is:

- a) Ne b) Ar c) Kr d) Xe

13. A 50 mL sample of oxygen gas at 25 °C and 120 torr and a 100 mL sample of nitrogen at 25 °C and 160 torr are both placed in 200 mL flask at 25 °C. What is the final pressure in the flask? NO REACTION OCCURES

- a) 110 torr b) 250 torr c) 280 torr d) 800 torr

14. If an equal masses of $\text{O}_2(\text{g})$ and $\text{HBr}(\text{g})$ present in separate containers of equal volume and temperature, which one of the following statements is true?

- a) The pressure in the O_2 container is greater than that in HBr container.
- b) The pressure in the HBr container is greater than that in O_2 container.
- c) The pressure of both gases are the same.
- d) None of the above.

-GOOD LUCK-