CHM151 Quiz 4a 25 Pts Fall 2009 Name: Key

SHOW ALL WORK TO RECEIVE CREDIT.

Atomic masses: **H 1.008, C 12.01, Na 22.99, P 30.97, S 32.07, O 16.00, K 39.01**

1. (9 Pts) **Complete and balance** each of the following reactions:

a. 3 $Ba(OH)_2(aq)$ + 2 $H_3ASO_4(aq)$ → $6H_2O(l) + Ba_3(AsO_4)_2(s)$

↓ AsO_4

b. 3 $HBrO_4(aq)$ + ____ $Al(OH)_3(s)$ → $3H_2O(l) + Al(BrO_4)_3$

c. 2 $HCl(aq)$ + $Na_2CO_3(aq)$ → $H_2CO_3(aq) + 2NaCl(aq)$

↳ $H_2O(l) + CO_2(g)$

2. (4 Pts) How many grams of Na_3PO_4 are needed to prepare 700 mL of 3.00 M Na_3PO_4 solution?

$$\frac{700\ \cancel{mL}\ Na_3PO_4}{} \left| \frac{3.00\ \cancel{mol}\ Na_3PO_4}{1000\ \cancel{mL}\ Na_3PO_4} \right| \frac{163.94\ g}{\cancel{mol}} = 344\ g\ Na_3PO_4$$

3. (4 Pts) How many grams of Na_3PO_4 are in 445 mL of 3.00 M Na_3PO_4 solution?

$$\frac{445\ \cancel{mL}}{} \left| \frac{3.00\ \cancel{mol}\ Na_3PO_4}{1000\ \cancel{mL}} \right| \frac{163.94\ g}{\cancel{mol}} = 219\ g\ Na_3PO_4$$

4. (8 Pts) Write the total ionic and net ionic equations for each of the following.

a.	$2HClO_2(aq) + Ba(OH)_2(aq) \rightarrow 2H_2O(l) + Ba(ClO_2)_2(aq)$ weak acid
1. total ionic equation	$2HClO_2 + \cancel{Ba^{2+}} + 2OH^- \rightarrow 2H_2O(l) + \cancel{Ba^{2+}} + 2ClO_2^-(aq)$
2. net ionic equation	$2HClO_2 + 2OH^- \rightarrow 2H_2O(l) + 2ClO_2^-$

b.	$2HClO_4(aq) + Ba(OH)_2(aq) \rightarrow 2H_2O(l) + Ba(ClO_4)_2(aq)$ strong Acid
1. total ionic equation	$2H^+ + \cancel{2ClO_4^-} + \cancel{Ba^{2+}} + 2OH^- \rightarrow 2H_2O(l) + \cancel{Ba^{2+}} + \cancel{2ClO_4^-}$
2. net ionic equation	$2H^+ + 2OH^- \rightarrow 2H_2O(l)$

CHM151 Quiz 4b 25 Pts Fall 2009 Name: Key

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Atomic masses: **H 1.008, C 12.01, Na 22.99, P 30.97, S 32.07, O 16.00, K 39.01**

1. (9 Pts) **Complete and balance** each of the following reactions:

a. $3\ HClO_4(aq) + \_\_\_\ Al(OH)_3(s) \rightarrow 3\ H_2O(l) + Al(ClO_4)_3(aq)$

b. $3\ Ba(OH)_2(aq) + 2\ H_3ASO_4(aq) \rightarrow 6\ H_2O(l) + Ba_3(AsO_4)_2(s)$

c. $2\ HBr(aq) + K_2CO_3(aq) \rightarrow H_2CO_3(aq) + 2\ KBr(aq)$
$\hookrightarrow H_2O(l) + CO_2(g)$

2. (4 Pts) How many grams of K_3PO_4 are needed to prepare 700 mL of 3.00 M K_3PO_4 solution?

$$700 \times 10^{-3}\ L \left| \frac{3.00\ mol\ K_3PO_4}{1\ L} \right| \frac{212\ g}{mol} = 445\ g\ K_3PO_4$$

3. (4 Pts) How many grams of K_3PO_4 are in 445 mL of 3.00 M K_3PO_4 solution?

$$445 \times 10^{-3}\ L \left| \frac{3.00\ mol\ K_3PO_4}{L} \right| \frac{212\ g}{mol} = 283\ g\ K_3PO_4$$

4. (8 Pts) Write the total ionic and net ionic equations for each of the following.

a.	$2HClO_4(aq) + Ba(OH)_2(aq) \rightarrow 2H_2O(l) + Ba(ClO_4)_2(aq)$ Strong Acid Strong Base
1. total ionic equation	$2H^+ + 2ClO_4^- + Ba^{2+} + 2OH^- \rightarrow 2H_2O(l) + Ba^{2+} + 2ClO_4^-$
2. net ionic equation	$2H^+ + 2OH^- \rightarrow 2H_2O(l)$

b.	$2HClO_2(aq) + Ba(OH)_2(aq) \rightarrow 2H_2O(l) + Ba(ClO_2)_2(aq)$ Weak acid Strong Base
1. total ionic equation	$2HClO_2 + Ba^{2+} + 2OH^- \rightarrow 2H_2O(l) + Ba^{2+} + 2ClO_2^-$
2. net ionic equation	$2HClO_2 + 2OH^- \rightarrow 2H_2O(l) + 2ClO_2^-$