Quiz IV General Chemistry I Lecture Fall 12 Dr. Hahn 20 pts 10/11 R 8:30 am A quiz # _____

Name (print name) Key Name (sign name) _____

Please show all work for full credit.

1. For the following reactants given the following balanced precipitation reactions (8 pts)

a. precipitation molecular equation (circle solid or aqueous for the two products) (2 pts each, 4 pts)

$Pb SO_4 (aq) + Ca S (aq) \rightarrow Pb S$ [(s) or (aq)] (circle one) + $Ca SO_4$ [(s) or (aq)] (circle one)

b. Give the **complete ionic equation** for the precipitation molecular equation above. (2 pts)

$Pb^{+2}(aq) + SO_4^{-2}(aq) + Ca^{+2}(aq) + S^{-2}(aq) \rightarrow$

$Pb S(s) + Ca^{+2}(aq) + SO_4^{-2}(aq)$

c. Give the **net ionic equation** for the precipitation molecular equation above. (2 pts)

$Pb^{+2}(aq) + S^{-2}(aq) \rightarrow Pb S(s)$

2. $H Cl + Na OH \rightarrow Na Cl + H_2O$

For the reaction shown above, if you start the reaction with 35.5 mL of 0.25 M H Cl, how many grams of Na OH will you need in order to get complete reaction? (40.01 grams NaOH / mole Na OH) (4 pts)

$35.5\,mL\ HCl\ soln \times \frac{0.25\ mol\ HCl}{1000\,mL\ HCl\ soln} \times \frac{1\ mol\ NaOH}{1\ mol\ HCl} \times \frac{40.01\ g\ NaOH}{1\ mol\ NaOH} = 0.355\ g$

3. What is the oxidation state of sulfur in H_2SO_4 Show work below. (4 pts)

H^{+1}, O^{-2}

$2(+1) + S + 4(-2) = 0$

$2 + S - 8 = 0$

$S = 8 - 2 = 6$

4. What is the volume of 1.5 mol of a gas at 280.2 K at 742 torr ? Show work and show units for all values for full credit. (4 pts) $PV = nRT$, $R = 0.08206 \frac{L\,atm}{mol\,K}$

$n = 1.5\ mol$, $T = 280.2\,K$, $P = 742\ torr \times \frac{1.00\ atm}{760\ torr} = 0.976\ atm$

$V = \frac{nRT}{P} = \frac{(1.5\ mol)(0.08206 \frac{L\,atm}{mol\,K})(280.2\,K)}{0.976\ atm} = 35\,L\ gas$

Quiz IV General Chemistry I Lecture Fall 12 Dr. Hahn 20 pts 10/11/12 R 8:30 am B quiz # _____

Name Key (print name) Name _____ (sign name)

Please show all work for full credit.

1. For the following reactants given the following balanced precipitation reactions (8 pts)

a. precipitation molecular equation (circle solid or aqueous for the two products) (2 pts each, 4 pts)

Na_2CO_3 (aq) + $Ca\,Cl_2$ (aq) → 2 Na Cl [(s) or (aq)] (circle one) + $Ca\,CO_3$ [(s) or (aq)] (circle one)

b. Give the **complete ionic equation** for the precipitation molecular equation above. (2 pts)

$2Na^+_{(aq)} + CO_3^{-2}_{(aq)} + Ca^{+2}_{(aq)} + 2Cl^-_{(aq)} \rightarrow 2Na^+_{(aq)} + 2Cl^-_{(aq)} + CaCO_3(s)$

c. Give **the net ionic equation** for the precipitation molecular equation above. (2 pts)

$Ca^{+2} + CO_3^{-2} \rightarrow CaCO_3(s)$

3. H Cl + Na OH → Na Cl + H_2O

For the reaction shown above, if you start the reaction with 20.5 mL of 0.15 M H Cl, how many grams of Na OH will you need in order to get complete reaction? (40.01 grams NaOH / mole Na OH) (4 pts)

$20.5\,mL\ HCl\ soln \times \frac{0.15\,mol\,HCl}{1000\,mL\ HCl\ soln} \times \frac{1\,mol\,NaOH}{1\,mol\,HCl} \times \frac{40.01\,g\,NaOH}{1\,mol\,NaOH} = 0.123\,g\ NaOH$

3. What is the oxidation state of phosphorus in H_3PO_4 Show work below. (4 pts)

H^+, O^{-2} $\quad (+1)3 + P + (-2)4 = 0 \quad P = 8 - 3 = 5$

$3 + P - 8 = 0$

4. What is the volume of 1.3 mol of a gas at 294.3 K at 723 mm Hg ? Show work and show units for all values for full credit. (4 pts) $PV = nRT$, $0.08206 \frac{L\,atm}{mol\,K}$

$n = 1.3\,mol$

$T = 294.3\,K$

$P = 723\,mm\,Hg \times \frac{1.00\,atm}{760\,mm\,Hg} = 0.951\,atm$

$V = \frac{nRT}{P}$

$V = \frac{(1.3\,mol)(0.08206 \frac{L\,atm}{mol\,K})(294.3\,K)}{(0.951\,atm)} = 33.0\,L\ gas$

Quiz IV General Chemistry I Lecture Fall 12 Dr. Hahn 20 pts 10/11/12 R 9:55 am A quiz # _____

Name Key (print name) Name _____ (sign name)

Please show all work for full credit.

1. For the following reactants given the following balanced precipitation reactions: (8 pts)

a. precipitation molecular equation (circle solid or aqueous for the two products) (2 pts each, 4 pts)

$2\ KI(aq) + Ag_2SO_4(aq) \rightarrow K_2SO_4$ [(s) or (aq)] (circle one) + 2 AgI [(s) or (aq)] (circle one)

b. Give the **complete ionic equation** for the precipitation molecular equation above. (2 pts)

$2K^+(aq) + 2I^-(aq) + 2Ag^+(aq) + SO_4^{-2}(aq) \rightarrow 2K^+(aq) + SO_4^{-2}(aq) + 2AgI(s)$

c. Give the **net ionic equation** for the precipitation molecular equation above. (2 pts)

$2Ag^+(aq) + 2I^-(aq) \rightarrow 2AgI(s)$

2. $HCl + NaOH \rightarrow NaCl + H_2O$

For the reaction shown above, if you start the reaction with 20.5 mL of 0.15 M Na OH, how many grams of H Cl will you need in order to get complete reaction? (36.51 grams H Cl / mole H Cl) (4 pts)

$$20.5\ mL\ NaOH\ soln. \times \frac{0.15\ mol\ NaOH}{1000\ mL\ NaOH\ soln.} \times \frac{1\ mol\ HCl}{1\ mol\ NaOH} \times \frac{36.51\ g\ HCl}{1\ mol\ HCl} = 0.112\ g\ HCl$$

3. What is the oxidation state of nitrogen in HNO_3 Show work below. (4 pts)

H^+, O^{-2}

$(+1)1 + N + (-2)3 = 0$

$1 + N - 6 = 0$

$N = 6 - 1 = 5$

4. What is the volume of 2.4 mol of a gas at 278.2 K at 715 mm Hg ? Show work and show units for all values for full credit. (4 pts) ($PV = nRT$, $R = 0.08206 \frac{L\ atm}{mol\ K}$)

$n = 2.4\ mol$, $T = 278.2\ K$

$$P = 715\ mm\ Hg \times \frac{1\ atm}{760\ mm\ Hg} = 0.941\ atm$$

$$V = \frac{nRT}{P} = \frac{(2.4\ mol)(0.08206 \frac{L\ atm}{mol\ K})(278.2\ K)}{(0.941\ atm)}$$

$V = 58\ L\ gas$

Quiz IV General Chemistry I Lecture Fall 12 Dr. Hahn 20 pts 10/11/12 R 9:55 am B quiz # _____

Name (print name) Key Name (sign name)

Please show all work for full credit.

1. For the following reactants given the following balanced precipitation reactions: (8 pts)

a. precipitation molecular equation (circle solid or aqueous for the two products) (4 pts, 2 pts each)

$Pb(NO_3)_2 + Ca(OH)_2 \rightarrow Pb(OH)_2$ [(s) or (aq)] (circle one) + $Ca(NO_3)_2$ [(s) or (aq)] (circle one)

b. Give the **complete ionic equation** for the precipitation molecular equation above. (2 pts)

$Pb^{+2}_{(aq)} + 2NO_3^-_{(aq)} + Ca^{+2}_{(aq)} + 2OH^-_{(aq)} \rightarrow Pb(OH)_{2(s)} + Ca^{+2}_{(aq)} + 2NO_3^-_{(aq)}$

c. Give **the net ionic equation** for the precipitation molecular equation above. (2 pts)

$Pb^{+2}_{(aq)} + 2\,OH^-_{(aq)} \rightarrow Pb(OH)_{2(s)}$

2. $HCl + NaOH \rightarrow NaCl + H_2O$

For the reaction shown above, if you start the reaction with 40.5 mL of 0.55 M Na OH, how many grams of H Cl will you need in order to get complete reaction? (36.51 grams H Cl / mole H Cl) (4 pts)

$40.5\,mL\ NaOH\ soln \times \frac{0.55\,mol\ NaOH}{1000\,mL\ NaOH\ soln} \times \frac{1\,mol\ HCl}{1\,mol\ NaOH} \times \frac{36.51\,g\ HCl}{1\,mol\ HCl} =$

3. What is the oxidation state of sulfur in H_2SO_3 Show work below. (4 pts)

H^+, O^{-2}

$2(+1) + S + 3(-2) = 0$

$2 + S - 6 = 0$

$S = 6 - 2 = 4$

4. What is the volume of 1.9 mol of a gas at 288.4 K at 751 torr ? Show work and show units for all values for full credit. (4 pts) $PV = nRT$, $R = 0.08206 \frac{L\,atm}{mol\,K}$

$n = 1.9\,mol$

$T = 288.4\,K$

$P = 751\,torr \times \frac{1\,atm}{760\,torr} = 0.988\,atm$

$V = \frac{nRT}{P}$

$V = \frac{(1.9\,mol)(0.08206 \frac{L\,atm}{mol\,K})(288.4\,K)}{0.988\,atm} = 45.L$

Quiz IV General Chemistry I Lecture Fall 12 Dr. Hahn 20 pts 10/11 R 8:30 am A quiz # 4-13

Name _____ Name _____
(print name) (sign name)

Please show all work for full credit.

1. For the following reactants given the following balanced precipitation reactions (8 pts)

a. precipitation molecular equation (circle solid or aqueous for the two products) (2 pts each, 4 pts)

$Pb\,SO_4\,(aq) + Ca\,S\,(aq) \rightarrow Pb\,S\,[\,(s)\text{ or }(aq)\,]\text{ (circle one)} + Ca\,SO_4\,[\,(s)\text{ or }(aq)\,]\text{ (circle one)}$

b. Give the **complete ionic equation** for the precipitation molecular equation above. (2 pts)

c. Give the **net ionic equation** for the precipitation molecular equation above. (2 pts)

2. $H\,Cl + Na\,OH \rightarrow Na\,Cl + H_2O$

For the reaction shown above, if you start the reaction with 35.5 mL of 0.25 M H Cl, how many grams of Na OH will you need in order to get complete reaction? (40.01 grams NaOH / mole Na OH) (4 pts)

3. What is the oxidation state of sulfur in H_2SO_4 Show work below. (4 pts)

4. What is the volume of 1.5 mol of a gas at 280.2 K at 742 torr ? Show work and show units for all values for full credit. (4 pts)

Quiz IV General Chemistry I Lecture Fall 12 Dr. Hahn 20 pts 10/11/12 R 8:30 am B quiz # 3-13

Name _____ Name _____
(print name) (sign name)

Please show all work for full credit.

1. For the following reactants given the following balanced precipitation reactions (8 pts)

a. precipitation molecular equation (circle solid or aqueous for the two products) (2 pts each, 4 pts)

Na_2CO_3 (aq) + Ca Cl_2 (aq) → 2 Na Cl [(s)or (aq)] (circle one) + Ca CO_3 [(s) or (aq)] (circle one)

b. Give the **complete ionic equation** for the precipitation molecular equation above. (2 pts)

c . Give **the net ionic equation** for the precipitation molecular equation above. (2 pts)

3. H Cl + Na OH → Na Cl + H_2O

For the reaction shown above, if you start the reaction with 20.5 mL of 0.15 M H Cl, how many grams of Na OH will you need in order to get complete reaction? (40.01 grams NaOH / mole Na OH) (4 pts)

3. What is the oxidation state of phosphorus in H_3PO_4 Show work below. (4 pts)

4. What is the volume of 1.3 mol of a gas at 294.3 K at 723 mm Hg ? Show work and show units for all values for full credit. (4 pts)

Quiz IV General Chemistry I Lecture Fall 12 Dr. Hahn 20 pts 10/11/12 R 9:55 am A quiz # 1-8

Name _____ Name _____
(print name) (sign name)

Please show all work for full credit.

1. For the following reactants given the following balanced precipitation reactions: (8 pts)

a. precipitation molecular equation (circle solid or aqueous for the two products) (2 pts each, 4 pts)

$2\ KI(aq) + Ag_2SO_4(aq) \rightarrow K_2SO_4$ [(s)or (aq)] (circle one) + 2 AgI [(s) or (aq)] (circle one)

b. Give the **complete ionic equation** for the precipitation molecular equation above. (2 pts)

c. Give the **net ionic equation** for the precipitation molecular equation above. (2 pts)

2. $HCl + NaOH \rightarrow NaCl + H_2O$

For the reaction shown above, if you start the reaction with 20.5 mL of 0.15 M Na OH, how many grams of H Cl will you need in order to get complete reaction? (36.51 grams H Cl / mole H Cl) (4 pts)

3. What is the oxidation state of nitrogen in HNO_3 Show work below. (4 pts)

4. What is the volume of 2.4 mol of a gas at 278.2 K at 715 mm Hg ? Show work and show units for all values for full credit. (4 pts)

Quiz IV General Chemistry-I Lecture Fall 12 Dr. Hahn 20 pts 10/11/12 R 9:55 am B quiz # 1-7

Name _____ (print name) Name _____ (sign name)

Please show all work for full credit.

1. For the following reactants given the following balanced precipitation reactions: (8 pts)

a. precipitation molecular equation (circle solid or aqueous for the two products) (4 pts, 2 pts each)

$Pb(NO_3)_2 + Ca(OH)_2 \rightarrow Pb(OH)_2$ [(s)or (aq)] (circle one) + $Ca(NO_3)_2$ [(s) or (aq)] (circle one)

b. Give the **complete ionic equation** for the precipitation molecular equation above. (2 pts)

c. Give **the net ionic equation** for the precipitation molecular equation above. (2 pts)

2. $HCl + NaOH \rightarrow NaCl + H_2O$

For the reaction shown above, if you start the reaction with 40.5 mL of 0.55 M Na OH, how many grams of H Cl will you need in order to get complete reaction? (36.51 grams H Cl / mole H Cl) (4 pts)

3. What is the oxidation state of sulfur in H_2SO_3 Show work below. (4 pts)

4. What is the volume of 1.9 mol of a gas at 288.4 K at 751 torr ? Show work and show units for all values for full credit. (4 pts)