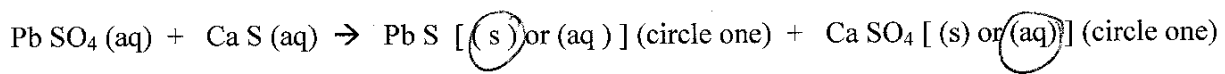


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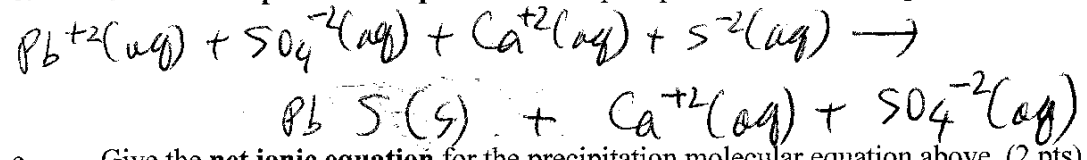
Please show all work for full credit.

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

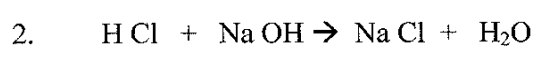
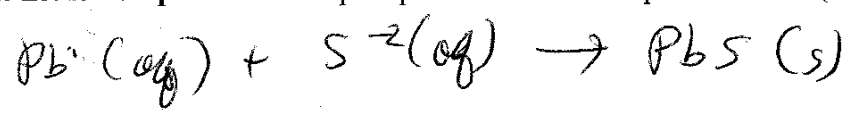
a. precipitation molecular equation (circle solid or aqueous for the two products) (2 pts each, 4 pts)



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)



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

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

3. What is the oxidation state of sulfur in H₂SO₄ Show work below. (4 pts)

H^+, 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)

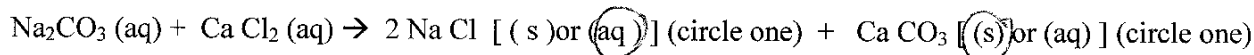
$PV = nRT, R = 0.08206 \frac{\text{L atm}}{\text{mol K}}$
 $n = 1.5 \text{ mol}, T = 280.2 \text{ K}, P = 742 \text{ torr} \times \frac{1.00 \text{ atm}}{760 \text{ torr}} = 0.976$
 $V = \frac{nRT}{P} = \frac{(1.5 \text{ mol})(0.08206 \frac{\text{L atm}}{\text{mol K}})(280.2 \text{ K})}{0.976 \text{ atm}} = 35 \text{ L gas}$

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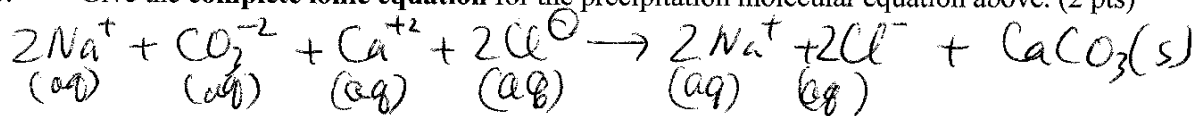
Please show all work for full credit.

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

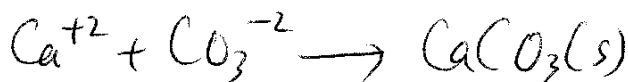
a. precipitation molecular equation (circle solid or aqueous for the two products) (2 pts each, 4 pts)



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. $\text{HCl} + \text{NaOH} \rightarrow \text{NaCl} + \text{H}_2\text{O}$

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

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

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

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

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)

$PV = nRT, 0.08206 \frac{\text{L atm}}{\text{mol K}}$
 $n = 1.3 \text{ mol}$
 $T = 294.3 \text{ K}$
 $P = 723 \text{ mmHg} \times \frac{1.00 \text{ atm}}{760 \text{ mmHg}} = 0.951 \text{ atm}$
 $V = \frac{nRT}{P}$
 $V = \frac{(1.3 \text{ mol})(0.08206 \frac{\text{L atm}}{\text{mol K}})(294.3 \text{ K})}{(0.951 \text{ atm})} = 33.0 \text{ L gas}$

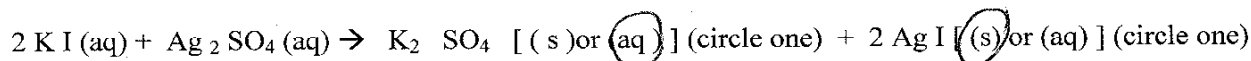
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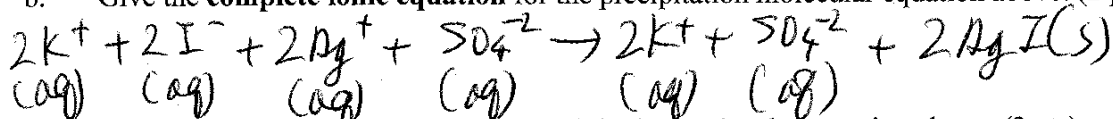
Please show all work for full credit.

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)



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)



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

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

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

$$\begin{aligned} & \text{H}^+, \text{O}^{-2} \\ & (+1)1 + N + (-2)3 = 0 \qquad 1 + N - 6 = 0 \\ & \qquad \qquad \qquad N = 6 - 1 = 5 \end{aligned}$$

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)

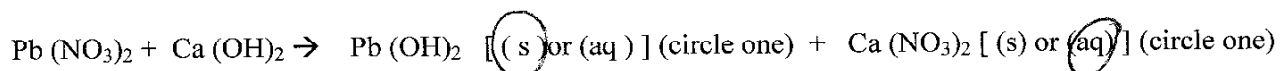
$$\begin{aligned} & n = 2.4 \text{ mol}, T = 278.2 \text{ K} \\ & P = 715 \text{ mmHg} \times \frac{1 \text{ atm}}{760 \text{ mmHg}} = 0.941 \text{ atm} \\ & PV = nRT, R = 0.08206 \frac{\text{L atm}}{\text{mol K}} \\ & V = \frac{nRT}{P} = \frac{(2.4 \text{ mol})(0.08206 \frac{\text{L atm}}{\text{mol K}})(278.2 \text{ K})}{(0.941 \text{ atm})} \\ & V = 58 \text{ L gas} \end{aligned}$$

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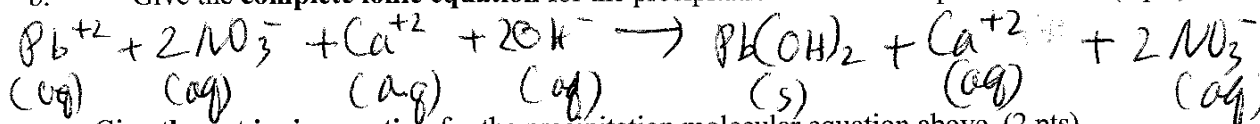
Please show all work for full credit.

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

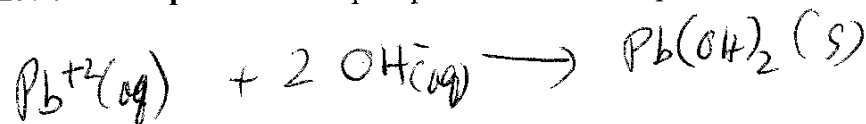
a. precipitation molecular equation (circle solid or aqueous for the two products) (4 pts, 2 pts each)



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)



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

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

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)

$PV = nRT, R = 0.08206 \frac{\text{L atm}}{\text{mol K}}$
 $n = 1.9 \text{ mol}$

$T = 288.4 \text{ K}$

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

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

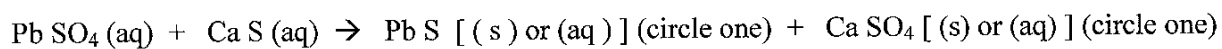
$V = \frac{(1.9 \text{ mol})(0.08206 \frac{\text{L atm}}{\text{mol K}})(288.4 \text{ K})}{0.988 \text{ atm}} = 45.2$

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Please show all work for full credit.

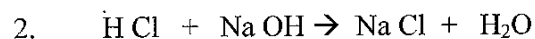
1. For the following reactants given the following balanced precipitation reactions (8 pts)

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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)



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)

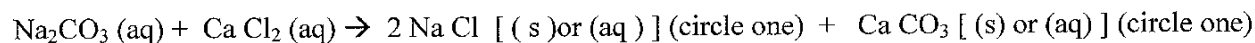
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4. What is the volume of 1.5 mol of a gas at 280.2 K at 742 torr? Show work and show units for all values for full credit. (4 pts)

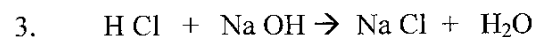
Name _____ Name _____
(print name) (sign name)

Please show all work for full credit.

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



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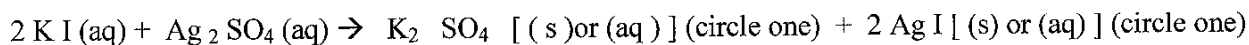
4. What is the volume of 1.3 mol of a gas at 294.3 K at 723 mm Hg ? Show work and show units for all values for full credit. (4 pts)

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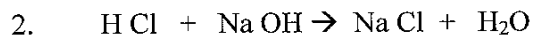
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3. What is the oxidation state of nitrogen in HNO_3 Show work below. (4 pts)

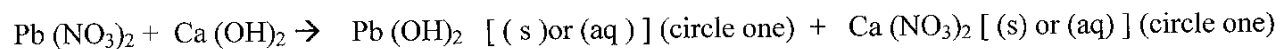
4. What is the volume of 2.4 mol of a gas at 278.2 K at 715 mm Hg ? Show work and show units for all values for full credit. (4 pts)

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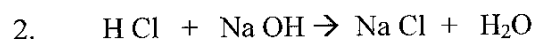
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a. precipitation molecular equation (circle solid or aqueous for the two products) (4 pts, 2 pts each)



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