Homework 3.1 – Practice Problems on Net Ionic Equations

Show the total ionic and net ionic forms of the following equations. Note – You need to make sure the original equation is balanced before proceeding!

1. $LiCl\ (aq) + AgNO_3\ (aq) \rightarrow AgCl\ (s) + LiNO_3\ (aq)$

Molecular equation: See above

Complete ionic equation: $Li^+ + Cl^- + Ag^+ + NO_3^- \rightarrow AgCl + Li^+ + NO_3^-$

Net ionic equation: $Cl^- + Ag^+ \rightarrow AgCl\ (s)$

2. $Na_2S\ (aq) + CaCl_2\ (aq) \rightarrow NaCl\ (aq) + CaS\ (s)$

Molecular equation: See above

Complete ionic equation: $2Na^+ + S^{2-} + Ca^{2+} + 2Cl^- \rightarrow 2Na^+ + 2Cl^- + CaS$

Net ionic equation: $Ca^{2+} + S^{2-} \rightarrow CaS\ (s)$

3. $ZnCl_2\ (aq) + KOH\ (aq) \rightarrow Zn(OH)_2\ (s) + 2KCl\ (aq)$

Molecular equation: $Zn^{2+} + Cl^- + K^+ + OH^- \rightarrow Zn(OH)_2 + K^+ + Cl^-$

Complete ionic equation:

Net ionic equation: $Zn^{2+} + 2OH^- \rightarrow Zn(OH)_2$

4. $Na_2CO_3\ (aq) + Co(NO_3)_2\ (aq) \rightarrow NaNO_3\ (aq) + CoCO_3\ (s)$

Molecular equation: See above

Complete ionic equation: $2Na^+ + CO_3^{2-} + Co^{2+} + 2NO_3^- \rightarrow 2Na^+ + NO_3^- + CoCO_3$

Net ionic equation: $CO_3^{2-} + Co^{2+} \rightarrow CoCO_3\ (s)$

5. $NaOH\ (aq) + MnBr_2\ (aq) \rightarrow NaBr\ (aq) + Mn(OH)_2\ (s)$

Molecular equation: See above

Complete ionic equation: $Na^+ + OH^- + Mn^{2+} + 2Br^- \rightarrow Na^+ + 2Br^- + Mn(OH)_2\ (s)$

Net ionic equation: $2OH^- + Mn^{2+} \rightarrow Mn(OH)_2\ (s)$

6. sodium chromate (aq) + Copper (I) sulfate (aq) → sodium sulfate (aq) + Copper Chromate (s)

Molecular equation: $Na_2CrO_4 + Cu_2SO_4 \longrightarrow Na_2SO_4 + Cu_2CrO_4$

Complete ionic equation: $2Na^+ + CrO_4^{2-} + 2Cu^{+1} + SO_4^{2-} \longrightarrow 2Na^+ + SO_4^{2-} + Cu_2CrO_4$

Net ionic equation: $Cu^{+1} + CrO_4^{2-} \longrightarrow Cu_2CrO_4(s)$

7. silver nitrate (aq) + potassium chloride (aq) → silver chloride (s) + potassium nitrate (aq)

Molecular equation: $AgNO_3 + KCl \longrightarrow AgCl(s) + KNO_3$

Complete ionic equation: $Ag^+ + NO_3^- + K^+ + Cl^- \longrightarrow AgCl(s) + K^+ + NO_3^-$

Net ionic equation: $Ag^+ + Cl^- \longrightarrow AgCl(s)$

8. magnesium nitrate (aq) + sodium carbonate (aq) → magnesium carbonate (s) + sodium nitrate (aq)

Molecular equation: $Mg(NO_3)_2 + Na_2CO_3 \longrightarrow MgCO_3(s) + 2NaNO_3$

Complete ionic equation: $Mg^{2+} + 2NO_3^- + 2Na^+ + CO_3^- \longrightarrow MgCO_3 + 2Na^+ + 2NO_3^-$

Net ionic equation: $Mg^{2+} + CO_3^{2-} \longrightarrow MgCO_3(s)$

9. Mercury (I) Nitrate (aq) + Potassium Bromide (aq) → Mercury (I) Bromide (s) + Potassium Nitrate (aq)

Molecular equation: $HgNO_3 + KBr \longrightarrow HgBr(s) + KNO_3$

Complete ionic equation: $Hg^+ + NO_3^- + K^+ + Br^- \longrightarrow HgBr(s) + K^+ + NO_3^-$

Net ionic equation: $Hg^{+1} + Br^{-1} \longrightarrow HgBr(s)$

10. Iron (III) Iodide (aq) + Silver Nitrate (aq) → Iron (III) Nitrate (aq) + Silver Iodide (s)

Molecular equation: $FeI_3 + AgNO_3 \longrightarrow Fe(NO_3)_3 + AgI(s)$

Complete ionic equation: $Fe^{3+} + I^- + Ag^+ + NO_3^- \longrightarrow Fe^{3+} + NO_3^- + AgI(s)$

Net ionic equation: $Ag^+ + I^- \longrightarrow AgI(s)$