AP WORKSHEET 04G: Solubility and Precipitation

1. Write a **balanced** equation, **with state symbols**, to show the dissociation of each of the following ionic solids into their respective ions when they are dissolved in water. (10)

   (a) $K_2S_{(s)}$ ➔

   (b) $Ni(NO_3)_{2(s)}$ ➔

   (c) $MgSO_{4(s)}$ ➔

   (d) $Na_3PO_{4(s)}$ ➔

   (e) $(NH_4)_2CO_{3(s)}$ ➔

2. Predict whether each of the following compounds is soluble or insoluble in water. (10)

(a) Magnesium phosphate _____

(b) Silver nitrate _____

(c) Barium carbonate _____

(d) Iron (III) hydroxide _____

(e) Calcium chloride _____

(f) Aluminum sulfide _____

(g) K_2SO_4 _____

(h) Li_2CO_3 _____

(i) NaOH _____

(j) NH_4Br _____

3. Consider each of the following pairs of **aqueous solutions** being mixed.

On the basis of the solubility rules;

Either

- Write a full, balanced chemical equation for the double displacement reaction that takes place indicating the precipitate formed by adding the (s) state symbol in the equation, and using (aq) state symbols where appropriate, **AND** write the **Net Ionic Equation** including the state symbols.

or

- If NO precipitate (solid) forms, write **NO REACTION** instead of a full, balanced chemical equation, **AND DO NOT** write a Net Ionic Equation. (26)

(a) Potassium sulfide and Barium chloride

Balanced Chemical Equation:

Net Ionic Equation (if appropriate):

(b) Lead(II) nitrate and Ammonium chromate

Balanced Chemical Equation:

Net Ionic Equation (if appropriate):

(c) Sodium sulfate and Lithium nitrate

Balanced Chemical Equation:

Net Ionic Equation (if appropriate):

(d) Silver nitrate and Sodium sulfate

Balanced Chemical Equation:

Net Ionic Equation (if appropriate):

(e) Potassium phosphate and Cobalt(II) nitrate

Balanced Chemical Equation:

Net Ionic Equation (if appropriate):

(f) RbCl and $BaCl_2$

Balanced Chemical Equation:

Net Ionic Equation (if appropriate):

(g) KOH and $NaNO_3$

Balanced Chemical Equation:

Net Ionic Equation (if appropriate):

(h) $Mg(NO_3)_2$ and NH_4HCO_3

Balanced Chemical Equation:

Net Ionic Equation (if appropriate):

(i) Na_2CO_3 and $LiNO_3$

Balanced Chemical Equation:

Net Ionic Equation (if appropriate):

(j) Na_3PO_4 and $CuCl_2$

Balanced Chemical Equation:

Net Ionic Equation (if appropriate):

(k) $SrCl_2$ and Li_2SO_4

Balanced Chemical Equation:

Net Ionic Equation (if appropriate):