Reactions: Ion-exchange

Name: _____

The following reactions are molecular equations:

$NaCl + Pb(NO_3)_2 \rightarrow PbCl_2 + NaNO_3$

Similarly the following equations as written could represent ion-exchange reactions:

$CaCl_2 + AgNO_3 \rightarrow AgCl + Ca(NO_3)_2$

$NaCH_3COO + Mg(NO_3)_2 \rightarrow Mg(CH_3COO)_2 + 2NaNO_3$

Balance the above equations.

Predict and write potential products for the following reactions. For those reactions that do take place, write full ionic and net ionic equations as well.

> *Remember that the difference between a molecular equation and a full ionic equation is that in a full ionic equation soluble salts in solution appear in their dissociated (ionic) form.*
>
> *The different between a full ionic and a net ionic equation is that the spectator ions do not appear in the net ionic equation.*

$Li_2SO_4 + Ba(NO_3)_2 \rightarrow$

$KOH + CuCl_2 \rightarrow$

$Na_3PO_4 + Zn(NO_3)_2 \rightarrow$

$Mg_3(PO_4)_2 + Sr(NO_3)_2 \rightarrow$

$ZnCl_2 + Fe(NO_3)_2 \rightarrow$

$(NH_4)_2CO_3 + Ca(NO_3)_2 \rightarrow$

Practice with ion-exchange reactions

Write balanced equations (with state symbols and all) for reactions between solutions of compound in column A and every compound in column B. If there is no reaction, then indicate so on the product side. For every pair of mixture that undergoes a reaction, include also full ionic and net ionic equations for the reaction.

Column A	Column B
1. Sodium sulfide	magnesium nitrate
2. Potassium phosphate	calcium nitrate
3. Potassium sulfate	strontium nitrate
4. Sodium carbonate	barium nitrate
5. Sodium chloride	lead(II) nitrate
6. Sodium hydroxide	iron(II) nitrate
	zinc nitrate

Further practice with ion-exchange reactions

Write balanced equations (with state symbols and all) for reactions between solutions of compound in column A and every compound in column B. If there is no reaction, then indicate so on the product side. For every pair of mixture that undergoes a reaction, include also full ionic and net ionic equations.

> *Remember that the difference between a molecular equation and a full ionic equation is that in a full ionic equation soluble salts in solution appear in their dissociated (ionic) form.*
>
> *The different between a full ionic and a net ionic equation is that the spectator ions do not appear in the net ionic equation.*

The best way of remembering a charge on a polyatomic ion is to remember the formula of one compound containing it (eg H_2SO_4 in the case of sulfate), knowing which you can work out the charge on the polyatomic ion (2– since it combines with 2 hydrogens).

Column A	Column B
1. Sodium carbonate	magnesium ethanoate
2. lithium phosphate	silver nitrate
3. ammonium sulfate	strontium nitrate
4. lead(II) nitrate	iron(II) chloride
5. copper(II) sulfate	iron(III) nitrate
6. ammonium hydroxide	zinc nitrate
7. sodium hydroxide	barium bromide
8. calcium nitrate	aluminum chloride
	barium nitrate