Reactions Assessment Practice

1. Identify the following as redox or solubility:

a. Redox ____ $2K + Cl_2 \rightarrow 2KCl$ $K^0 \rightarrow K^{+1} + 1e^-$ → Oxidized; $Cl_2^0 + 2e^- \rightarrow 2Cl^-$ → Reduced

b. Solubility ____ $FeCl_2 + 2AgNO_3 \rightarrow Fe(NO_3)_{2(aq)} + 2AgCl_{(s)}$

c. Solubility ____ $2H_3PO_4 + 3\,Ba(OH)_2 \rightarrow 6\,HOH_{(l)} + Ba_3(PO_4)_{2(s)}$

d. Redox ____ $MnCl_2 + 2Na \rightarrow 2NaCl + Mn$ $Mn^{+2} + 2e^- \rightarrow Mn$ → Reduced; $Na^0 \rightarrow Na^{+1} + 1e^-$ → Oxidized

2. For the redox reactions above, identify what is oxidized and what is reduced. (see above)

3. For the solubility reactions above, identify the states of matter using a solubility chart. (see above)

4. a. What factors help you identify redox reactions? Charges are changing.

b. What factors help you identify solubility reactions? Charges do not change; a solid, liquid or gas forms.

5. A spontaneous reaction occurs between calcium and beryllium. → voltage is positive

a. Identify the net ionic equation. $Ca^0 + Be^{+2} \rightarrow Ca^{+2} + Be^0$

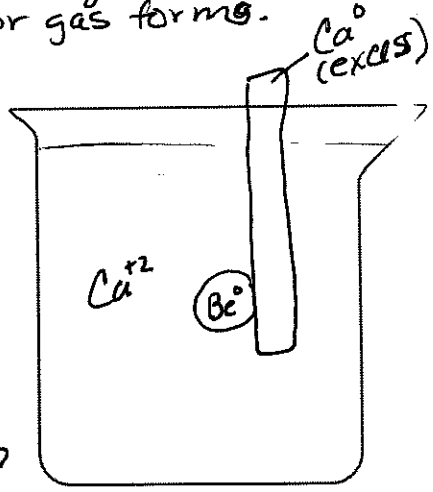
b. Identify the ½ reactions. $Ca^0 \rightarrow Ca^{+2} + 2e^-$ 2.87 V; $Be^{+2} + 2e^- \rightarrow Be^0$ −1.70 V; +1.17 V

c. What is being oxidized? Calcium

d. What is being reduced? Beryllium

e. Determine the (electropotential) voltage. +1.17 V

f. Draw the result of the reaction in the beaker. – The result is the product $Ca^{+2} + Be^0$ (clings to excess Ca^0 metal)



6. A reaction occurs when equal amounts of $(NH_4)_3PO_4$ and $BaCl_2$ are mixed.

a. Write the molecular equation.

$2(NH_4)_3PO_4 + 3\,BaCl_2 \rightarrow 6\,NH_4Cl_{(aq)} + Ba_3(PO_4)_{2(s)}$

b. Write the total ionic equation.

$6NH_4^{+1} + 2\,PO_4^{-3} + 3Ba^{+2} + 6Cl^{-1} \rightarrow 6NH_4^{+1} + 6Cl^- + Ba_3(PO_4)_{2(s)}$

c. Write the net ionic equation.

$2\,PO_4^{-3} + 3Ba^{+2} \rightarrow Ba_3(PO_4)_{2(s)}$

d. What are the spectator ions? NH_4^{+1} and Cl^{-1}

e. Draw the result of the reaction in the beaker. Result is product!