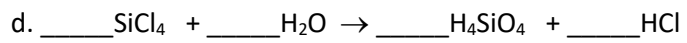
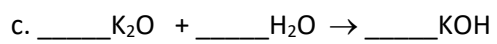
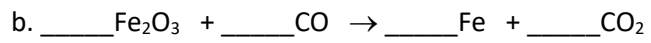
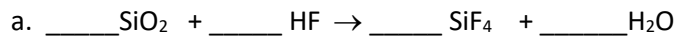


1. **Balance** the following chemical equations:



2. A binary compound of iron and nitrogen is analyzed, and 1.5634 g of the compound is found to contain 1.3394 g of iron. When a second sample of this compound is treated with water and heated, the nitrogen is driven off as ammonia, leaving a compound that contains 77.73% iron and 22.27% oxygen by mass. Calculate the empirical formulas of the two iron compounds. Write the chemical equation that occurs between the first iron compound and water. Calculate the mass of ammonia produced in the reaction.

3. Calculate the following.

a. the number of nitrogen atoms in 35.00 g of ammonium azide.

b. the number of grams of vanadium(III) oxalate that contains 153.013 g of carbon

c. the number of grams of manganese(V) permanganate that contains the same number of oxygen atoms as in 243.2 g of hydrogen peroxide.

d. the number of molecules of tetrasulfur decoxide that contains 200.0 g of sulfur.

4. 222.222 g of chromium(IV) nitrate reacts with potassium carbonate in a double replacement reaction. Calculate the ***number of grams of solid produced*** if there is a 96.10 % yield.

5. Iron(III) nitrate and potassium carbonate solutions react in a double replacement reaction. Write the balanced chemical, ionic and net ionic equations. If 66.6 mL of a 0.666 M solution of iron(III) nitrate is mixed with 66.6 mL of a 0.666 M solution of potassium carbonate what mass of the solid product is produced?