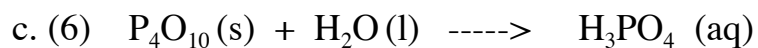
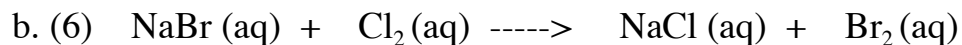
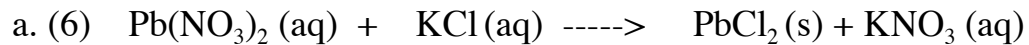


2. Write a balanced equation for each of the following reactions (it is not necessary to indicate the states of each substance):

a. (6) Burning of acetone (CH_3COCH_3) in oxygen

b. (6) Sodium metal reacts with water to give hydrogen gas and sodium hydroxide.

3. Balance the following chemical equations:



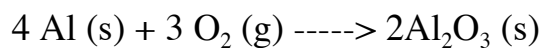
4. (15) Caustic soda (NaOH) is prepared commercially by passing an electric current through a concentrated solution of sodium chloride in water:



(a) (10) Calculate the theoretical yield of caustic soda if 125 Kg of NaCl is electrolyzed.

(b) (5) Calculate the percent yield if the electrolysis in part (a) produces 55.4 Kg of caustic soda.

5. (15) The following reaction occurs when aluminum is heated with oxygen:



A reacting mixture contains 50.0 Kg of Al and 50.0 Kg of oxygen.

a) (5) Find the limiting reactant

b) (5) How many grams of aluminum oxide will form ?

c) (5) How many grams of excess reactant will remain?

6. (10) Calculate the percentage composition in the compound oxalic acid ($\text{H}_2\text{C}_2\text{O}_4$).

7. (10) Calculate the empirical formula of the compound formed when 6.58 g of nitrogen combines with 1.42 g of hydrogen.

