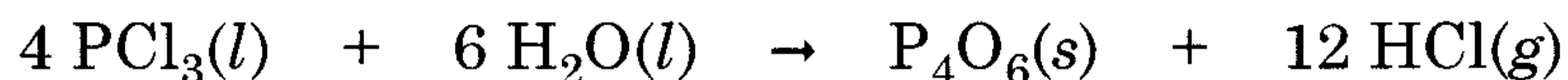


****KEEP YOUR WORK AND ANSWERS COVERED.****

1. (24 pts) Indicate whether each statement is true (T) or false (F). Be certain T or F is clearly indicated.

- F A 1.0 M solution of ammonium sulfate contains 1.0 M NH_4^+ ions and 1.0 M SO_4^{2-} ions.
- F CF_4 is an electrolyte in water.
- T CuCl is a precipitable compound.
- F When separate solutions of $\text{HCl}(aq)$ and $\text{SO}_2(aq)$ are mixed, a salt is formed.
- T A solution of $\text{Ca}(\text{OH})_2$ is alkaline.
- T CO_2 is a weak acid.
- F During a redox reaction, the oxidation number of the oxidant will increase.
- F The reaction of potassium hydroxide and hydrofluoric acid is a redox process.

** 2. (6 pts) The following equation is balanced.

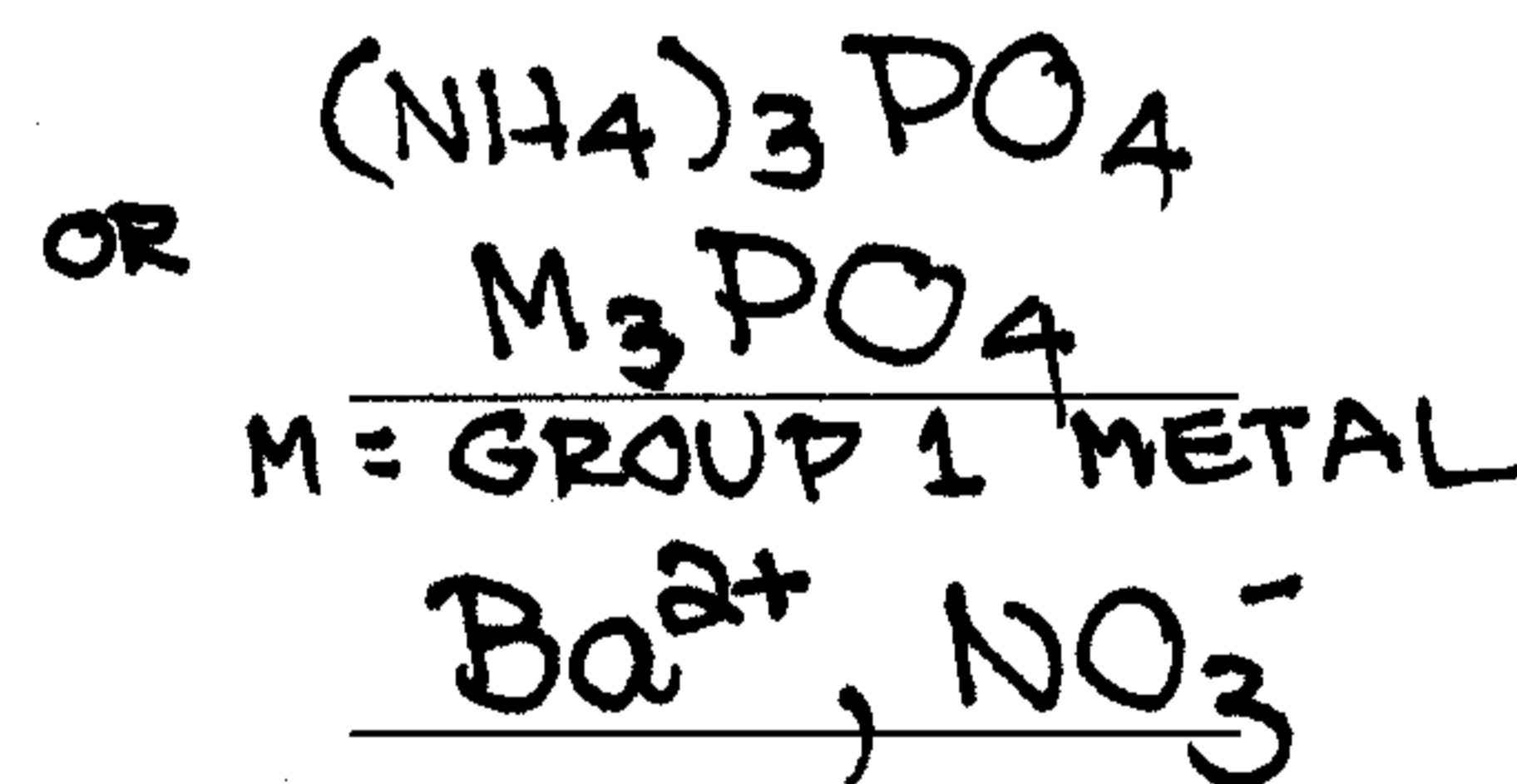


For a reaction which is conducted using 23.9 mL of PCl_3 (density = 1.57 g/mL), circle the mass (in g) of P_4O_6 which can be made.

3.71	5.05	7.32	9.86	11.8	13.9
<u>15.0</u>	17.6	19.4	21.3	23.3	25.1

3. (3 pts) Give the formula of one soluble compound which has the phosphate anion.

(3 pts) List the spectator ion(s) for the reaction of barium hydroxide and nitric acid.



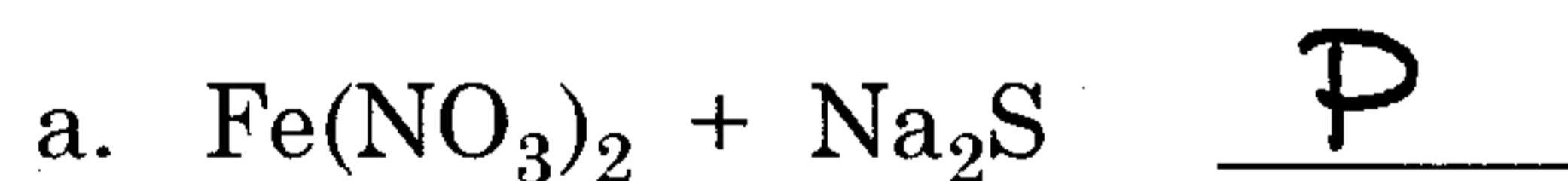
4. (5 pts) The following equation is balanced.



Consider a reaction using 400. mL of 2.61 M H_2O_2 . After all workup steps are completed, an actual yield of 19.6 g CaSO_4 is obtained. Circle the percent yield for this process.

51.7%	<u>55.2%</u>	58.6%	61.9%	64.4%	67.2%
71.8%	75.2%	78.0%	81.7%	83.6%	86.9%

5. (6 pts) Consider mixing the separate, aqueous solutions as given for 'a' and 'b' below. If the mixing will result in a precipitation, write P. If the mixing will result in an acid-base reaction, write AB. If the mixing will result in a gas-forming reaction, write GF. If there is no reaction upon mixing, write NR. (You do not have to balance the equations.)



- ** 6. (5 pts) You need to prepare 200. mL of 2.7 M potassium nitrate. Circle the mass (in g) of potassium nitrate which are needed.

13	17	21	26	32	38
43	46	49	52	<u>55</u>	58

- ** 7. (3 pts) Give the formula of hypochlorous acid.

HClO

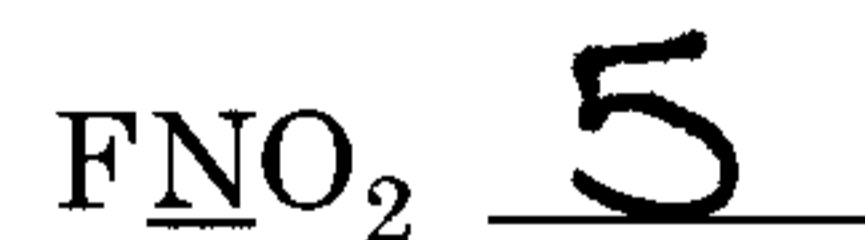
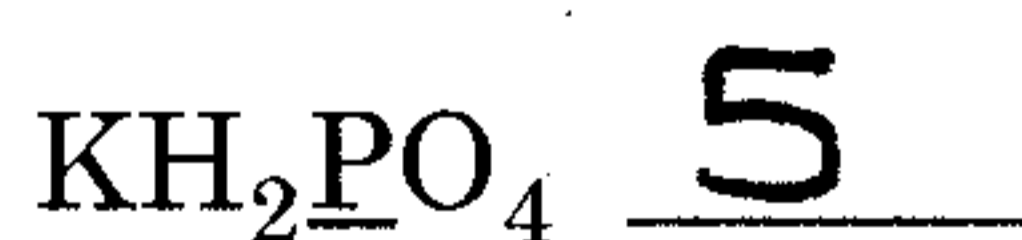
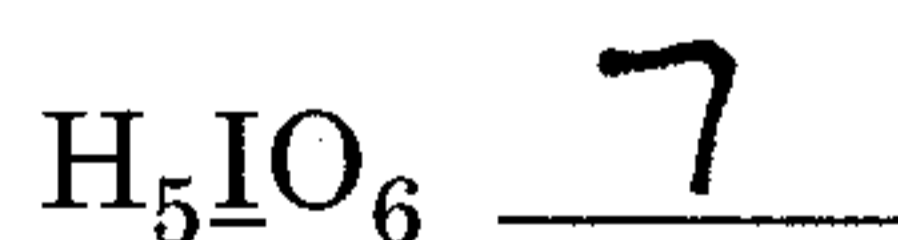
- (3 pts) Give the formula of the salt which is produced in the reaction of HCl and NH_3 .

 NH_4Cl

- ** 8. (5 pts) Consider a solution of $\text{Ca}(\text{ClO}_4)_2$ dissolved in water. Of the following statements, circle the letters (a - e) of the statements that are correct.

- a. Individual Ca^{2+} ions are present. b. Individual ClO_4^- ions are present.
 c. Individual Cl^- ions are present. d. Individual O^{2-} ions are present.
e. There are twice as many anions as cations.

9. (6 pts) For each compound below, give the oxidation number of the underlined atom.



- ** 10. (6 pts) Consider the reaction of sodium hydrogen sulfide and nitric acid. Write the balanced equation in net ionic format. (You can leave out phases.) Put your final answer in the box below. Only that will be graded.

