

****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 The theoretical yield of a product is always the amount which is obtained after completion of all work-up steps.

T In a solution of $\text{KBr}(aq)$, individual ions of K^+ and of Br^- interact with solvent water molecules.

T The total hydration energy for MgCl_2 in water is stronger than the ionic bonding within the ionic network of the solid.

T Water can dissociate some covalent molecules into ions.

T HNO_3 can protonate water.

T Barium hydroxide is a strong base.

F Reaction of FeSO_4 with nitric acid produces $\text{SO}_2(g)$ as one of the products.

F In the combustion of methane, methane is reduced.

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2. (6 pts) Indicate whether each of the following is a strong acid (SA) or a weak acid (WA).

HI SA

HNO_2 WA

H_2SO_4 SA

3. (5 pts) Consider 250. mL of a solution of 0.375 M ammonium iodide. Circle the number of grams of ammonium iodide that are contained in the solution.

4.90

5.18

6.77

7.36

8.53

9.05

10.2

11.8

12.9

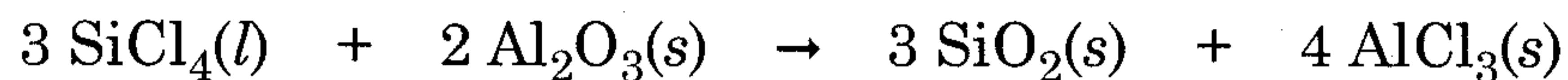
13.6

14.0

15.1

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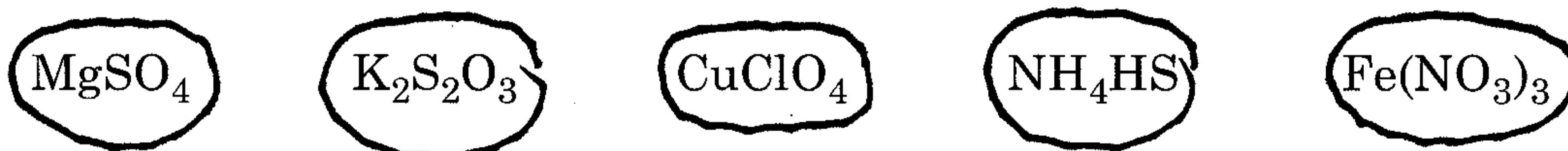
4. (6 pts) The following equation is balanced.



For the reaction of 11.8 mL of SiCl_4 , circle the amount (in g) of Al_2O_3 which is needed. The density of SiCl_4 is 1.48 g/mL.

- | | | | | | |
|------|------|------|------|------|------|
| 6.99 | 7.51 | 8.82 | 9.18 | 10.5 | 11.6 |
| 12.3 | 13.9 | 14.0 | 15.7 | 16.8 | 17.1 |

- ** 5. (6 pts) Circle the compounds below which are soluble in water.



- ** 6. (7 pts) The following equation is balanced.



The reaction is conducted beginning with 12.48 g S_4N_4 and 74.23 g Ag_2O . Circle the amount (in g) of NO which can be made.

- | | | | | | |
|-------|-------|-------|-------|-------|-------|
| 6.001 | 6.832 | 7.722 | 7.406 | 8.128 | 8.607 |
| 9.351 | 9.610 | 10.11 | 10.48 | 11.32 | 11.87 |

last name: F17 ExII

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** 7. (3 pts) Give the formula of oxalic acid. H₂C₂O₄

(3 pts) What is the formula of the precipitate which is formed upon mixing a solution of Co(NO₃)₂ and a solution of Na₂CO₃? CoCO₃

(3 pts) What is the formula of the salt produced in the reaction of hydrochloric acid and calcium hydroxide? CaCl₂

8. (6 pts) Give the oxidation number for each element in each substance below.

Na₄P₂O₇ Na: +1 P: +5 O: -2

BF₃ H: +1 B: +3 F: -1

9. (6 pts) The following equation is balanced.



Write the net ionic equation. (You can leave out phases.) Put your final answer in the box below. Only that will be graded.

