

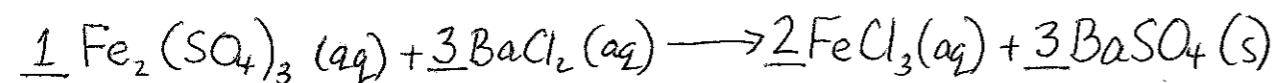
# Solutions

## Chemistry 11 Review Questions

1. The following question covers many of the topics covered in chemistry 112 that are necessary for chemistry 122. Show ALL work and state final answers with the appropriate unit and level of precision.

A scientist mixes 10.5 g of iron (III) sulfate with 12.1 g of barium chloride.

- a. Predict the products of the reaction above.



- b. Identify the precipitate formed  $\text{BaSO}_4$ .

- c. Balance the equation

- d. Determine the theoretical yield of precipitate.

$$10.5 \text{g Fe}_2(\text{SO}_4)_3 \times \frac{1 \text{mol Fe}_2(\text{SO}_4)_3}{399.8778 \text{g Fe}_2(\text{SO}_4)_3} \times \frac{3 \text{mol BaSO}_4}{1 \text{mol Fe}_2(\text{SO}_4)_3} \times \frac{233.3896 \text{g BaSO}_4}{1 \text{mol BaSO}_4} = 18.385 \text{g BaSO}_4$$

$$12.1 \text{g BaCl}_2 \times \frac{1 \text{mol BaCl}_2}{208.233 \text{g BaCl}_2} \times \frac{3 \text{mol BaSO}_4}{3 \text{mol BaCl}_2} \times \frac{233.3896 \text{g BaSO}_4}{1 \text{mol BaSO}_4} = 13.562 \text{g BaSO}_4$$

Theoretic Yield =  $13.562 \text{g BaSO}_4$  ( $\text{BaCl}_2$  is the limiting reagent)

- e. Determine the percent yield if they actually produced 6.25 grams of precipitate.

$$\% \text{ yield} = \frac{6.25 \text{g}}{13.562 \text{g}} \times 100 = 46.1 \%$$