

CHEM 201 Self Quiz – 3 (Gravimetric Analysis)

1. A sample consisting of only KCl and $KClO_3$ contains 35.97 % Cl. Calculate the per cent KCl and $KClO_3$ in the sample.

2. A 0.1028 g sample of the salt $Na_2S_xO_6$ gives 0.3570 g of $BaSO_4$. Calculate the value of x.

3. A series of samples known to contain sulfate in the range between 20.0 and 48.0 % is to be analyzed gravimetrically by a CHEM 201 student by precipitation with $BaSO_4$.

a. What is the minimum sample weight that must be taken in order to assure $BaSO_4$ precipitate that weighs at least 0.3125 g?

b. What will the maximum weight of $BaSO_4$ be which can be obtained from the above amount of sample?

4. Calculate the gravimetric factors for the following conversions.

a. Fe_3O_4 to Fe

b. BaSO_4 to SO_3

c. AgCl to As ($\text{As} \rightarrow \text{Ag}_3\text{AsO}_4 \rightarrow 3 \text{AgCl}$)

5. What size sample which contains 20.0% Br^- must be taken for analysis so as to obtain a precipitate of AgBr weighing 0.3876?

6. A 2.200 gram sample of a mixture containing the hydrate $\text{BaCl}_2 \cdot 2 \text{H}_2\text{O}$ and NaCl was heated until all the water was driven off. After heating, the mixture had a mass of 1.973g.

a. Show the balanced equation for this reaction

b. Determine the % of hydrate in the mixture.

7. 284.45 g of stable precipitate is collected and left to dry in the oven. After an hour and a half, constant weights of 222.45 g were recorded. Calculate the % H_2O in the sample.

8. Discuss the main factors that determine the success of obtaining a good precipitate in a gravimetric analysis.