

# Analytical chemistry (5th Edition)

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## 1 Chapter 8

1.

$$M = \frac{0.5000}{0.1000 * 23.36 * 10^{-3}} = 214.04$$
$$x = 3$$
$$KIO_3$$
(1)

2.

$$2 * n_{BaCl_2} + n_{NaCl} = 1.54 * 10^{-3}$$
$$M_{BaCl_2} * n_{BaCl_2} + M_{NaCl} * n_{NaCl} = 0.1036$$
$$n_{BaCl_2} = 1.48 * 10^{-4} mol$$
$$w_{BaCl_2} = \frac{n_{BaCl_2} * M_{BaCl_2}}{m_{sample}} = 29.94\%$$
(2)

3.

$$n_{AgCl} + n_{AgBr} = 2.98 * 10^{-3}$$
$$M_{AgCl} * n_{AgCl} + M_{AgBr} * n_{AgBr} = 0.5064$$
$$n_{AgCl} = 1.21 * 10^{-3} mol$$
$$n_{AgBr} = 1.77 * 10^{-3} mol$$
$$w_{NaCl} = \frac{n_{AgCl} * M_{NaCl}}{m_{sample}} = 11.27\%$$
$$w_{NaBr} = \frac{n_{AgBr} * M_{NaBr}}{m_{sample}} = 29.03\%$$
(3)

4.

$$\begin{aligned}
 n_{AgCl} &= \frac{m_{AgCl}}{M_{AgCl}} = 1.75 * 10^{-3} mol \\
 &So : \\
 n_{KCl} + n_{NaCl} &= 1.75 * 10^{-3} \\
 M_{KCl} * n_{KCl} + M_{NaCl} * n_{NaCl} &= 0.1208 \\
 n_{KCl} &= 1.15 * 10^{-3} mol \\
 n_{NaCl} &= 0.6 * 10^{-3} mol \\
 P_{K_2O} &= \frac{n_{KCl} * M_{K_2O}}{2 * m_{sample}} = 10.74\% \\
 P_{Na_2O} &= \frac{n_{NaCl} * M_{Na_2O}}{2 * m_{sample}} = 3.69\%
 \end{aligned} \tag{4}$$

5.

$$n_{CO_3^{2-}} = 0.5 * (c_{Ag} * V_{Ag} - c_{SCN} * V_{SCN}) = 9.37 * 10^{-4} mol \tag{5}$$

6.

$$\begin{aligned}
 n_{As} &= \frac{1}{3} * c_{Ag} * V_{Ag} = 1.515 * 10^{-3} mol \\
 P_{As} &= \frac{n_{As} * M_{As}}{m_{sample}} = 22.7\%
 \end{aligned} \tag{6}$$

7.

$$\begin{aligned}
 n_{AgCl} &= \frac{m_{AgCl}}{M_{AgCl}} = 9.93 * 10^{-3} mol \\
 M_{NaCl} &= \frac{m_{NaCl}}{n_{AgCl}} = 58.46 \\
 M_{Na} &= 23.0
 \end{aligned} \tag{7}$$

8.

$$\begin{aligned}
 Fe_xO_y &= 0.5343g \\
 Fe_x &= 0.3801g \\
 \frac{x}{y} &= \frac{2}{3} \\
 Fe_2O_3
 \end{aligned} \tag{8}$$