Jodometrie 1994/Aufgabe I

Ox: Sn^{2+} $\rightarrow$ Sn^{4+} $+2e^-$

Red: I_2 + $2e^-$ $\rightarrow$ $2J^-$

Redox: Sn^{2+} + I_2 $\rightarrow$ Sn^{4+} + $2J^-$

I.)

d.f. $n(I_2) = n(Sn^{2+}) = n(SnCl_2)$

Ox: $2\ S_2O_3^{\ 2-}$ $\rightarrow$ $S_4O_6^{\ 2-}$ + $2e^-$

Red: I_2 + $2e^-$ $\rightarrow$ $2J^-$

Redox: $2\ S_2O_3^{\ 2-}$ + I_2 $\rightarrow$ $S_4O_6^{\ 2-}$ + $2J^-$

II.)
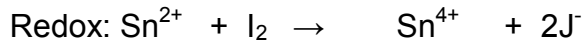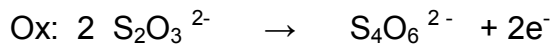
d.f: $n(J_2) = \frac{1}{2}\ S_2O_3^{\ 2-}$

$n_1(J_2) = 0{,}06l \cdot 1\ mol/l = 0{,}006\ mol$

$n_2(J_2) = 1/2 \cdot 0{,}05mol/l \cdot 0.0185\ l = 0{,}0004625\ mol$

$n_1 - n_2 = 0{,}0055375\ mol$

$n(Sn^{2+}) = n(SnCl_2) = n(J_2)$

$m(SnCl_2) = 0{,}0055375\ mol \cdot 188{,}68g/mol = 1{,}0448\ g$

m(Kristallwasser) = 1,25 g – 1042 g = 0,20 g

0,0055375 mol binden   0,02 g Kristallwasser

1mol binden   36,11 g Kristallwasser   d.f. 2mol Wasser d.f 1mol $SnCl_2$ bindet 2 mol Wasser

Formel der Verbindung $SnCl_2 \cdot 2\ H_2O$