FACITLISTE 1.runde Kemi-OL 2000/2001

Opgave 1

1a $C_5H_{10}O_2$

1b M(**D**) = 3,4 $M(C_2H_6)$ = 102 g/mol $C_5H_{10}O_2$

1c C_3H_6

1d 2-propanol propanon ethansyre

Opgave 2

2a $CaCO_3(s) \rightarrow Ca^{2+}(aq) + CO_3^{2-}(aq)$

$CO_3^{2-} + H_2O \rightarrow HCO_3^- + OH^-$

2b Opløseligheden 0,000127 M

Opgave 3

2c $K_O = 4{,}8 \cdot 10^{-9}$ M^2.

3a $Ba^{2+}(aq) + SO^{2-}_4(aq) \rightarrow BaSO_4(s)$

3b $4\ Zn + NO_3^- + 3\ OH^- + 6\ H_2O \rightarrow 4\ Zn(OH)_3^- + NH_3$

3c $NH_4^+ + OH^- \rightarrow NH_3 + H_2O$

$NH_3 + H_3O^+ \rightarrow NH_4^+ + H_2O$

$OH^- + H_3O^+ \rightarrow 2\ H_2O$

3d m($(NH_4)_2SO_4$) = 0,330 g (0,00250 mol)

m(NH_4NO_3) = 0,080 g (0,00100 mol)

$m(\ NH_4Cl\ )$ = 0,439 g (0,00820 mol)

Opgave 4

4a $p(SbCl_3) \bullet p(Cl_2) \bullet p(SbCl_5)^{-1}$

4b $n_{LIGEVÆGT} = n_o\ (1-\alpha\ ) + 2\ \alpha\ n_o = n_o\ (1+\alpha\ )$ og $n_o\ M_o = n_{LIGEVÆGT} M$

$\Rightarrow M_o = M + \alpha\ M$ eller $\alpha = (\ M_o - M\ ) / M$ α = 0,917

4c $p_{LIGEVÆGT} = 1{,}917\ p_o \Rightarrow p_o$ = 0,03365 bar

4d $p(SbCl_3) = (R\ T / V)\ n_o(\ M_o - M\ ) / M = p_o\ (\ M_o - M\ ) / M$

$p(Cl_2) = (R\ T / V)\ n_o(\ M_o - M\ ) / M = p_o\ (\ M_o - M\ ) / M$

$p(SbCl_5) = (R\ T / V)\ n_o(\ 1-\ (\ M_o - M\ ) / M\ )\ ) = p_o\ (\ 2M_o - M\ ) / M$

K_p = 0,34 bar