① $\frac{43\,g\ zout}{75\,g\ water}$ → grafiek = 100 g

$\Rightarrow 75 \cdot \frac{4}{3} = 100$

$43 \cdot \frac{4}{3} = \frac{172}{3} \approx 57{,}3\,g$ } ⇒ 60 °C

NH_4Cl → blauwe grafiek

D

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② K_3 → $^{75}_{33}As$ → $n = 75 - 33 = 42$ (75 − p + n; 33 − p)

A) $^{42}_{20}Ca$ → $42 - 20 = 22$

B) $^{61}_{28}Ni$ → $61 - 28 = 33$

C) $^{76}_{34}Se$ → $76 - 34 = 42$

C

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③ 1 streepje = $2e^-$ → 4 streepjes / atoom

a en d → D

④ X 160 g 27°C 1000 hPa → V = 75 l

A) NH_3 → M = 14 + 3.1 = 17 g/mol

B) Ar → M = 39,9 g/mol

C) Cl_2 → M = 2.35,5 = 71 g/mol

D) SO_2 → M = 32,1 + 2.16 = 64,1 g/mol

27°C ~> 300 K

$p.V = n.RT$

$$\Rightarrow n = \frac{p.V}{RT} = \frac{1000.10^2 . 75.10^{-3}}{8,31 . 300}$$

$$\cong 3 \text{ mol}$$

$$M = \frac{120 \text{ g}}{3 \text{ mol}} = 40 \text{ g/mol} \rightarrow Ar$$

B

(5)

I) $n_{HCl} = c \cdot V = 6\ ^{mol}/_{\ell} \cdot 0{,}2\ \ell = 1{,}2\ mol$

$$Fe + 2HCl \rightarrow FeCl_2 + H_2$$

0,05	1,2	0	0
−0,05	−0,1	0,05	0,05
0	1,1	0,05	0,05

} mol

II) $n_{HCl} = c \cdot V = 6\ ^{mol}/_{\ell} \cdot 0{,}1\ \ell = 0{,}6\ mol$

0,1	0,2	0,1	0,1

III) $n_{HCl} = c \cdot V = 6\ ^{mol}/_{\ell} \cdot 0{,}05\ \ell = 0{,}3\ mol$

0,2	0,3	0	0
−0,15	0,1	0,15	0,15 ←

IV) $n_{HCl} = c \cdot V = 6\ ^{mol}/_{\ell} \cdot 0{,}025 = 0{,}15\ mol$

0,4	0,15		
−0,075	−0,15	0,075	0,075

C

⑥ $2A + B \rightarrow C + 2D$

$$V_{qm} = -\frac{\Delta[A]}{2\Delta t}$$

1° minuut : D : $0 \rightarrow 0{,}05$ mol/l

2) $\frac{0{,}05}{2.1} = 0{,}025$ mol/l.min (B)

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⑦ $I_2 + Cl_2 \rightleftharpoons 2ICl$

? welke zal geen evenwicht ?

$$K_z = \frac{[ICl]^2}{[I_2][Cl_2]}$$

I) $\frac{1{,}5^2}{0{,}5 \cdot 0{,}5} = \frac{15^2}{5^2} = \frac{15.15}{5.5} = 9$

II) $\frac{3^2}{1.1} = 9$

III) $\frac{6^2}{4.1} = \frac{36}{4} = 9$

IV) $\frac{9^2}{0{,}5.2} = 81$ ← (D)

(8) K bij 25 °C ?

$$NO_2^- + HCOOH \rightleftharpoons HNO_2 + HCOO^-$$

$$K_2 \frac{[HNO_2][HCOO^-]}{[NO_2^-][HCOOH]}$$

1) $HCOOH \rightarrow H^+ + HCOO^-$

$$K_1 = \frac{[H^+][HCOO^-]}{[HCOOH]} = 1{,}8 \cdot 10^{-4}$$

2) $HNO_2 \rightarrow H^+ + NO_2^-$

$$K_2 = \frac{[H^+][NO_2^-]}{[HNO_2]} = 5 \cdot 10^{-4}$$

$$\Rightarrow K_2 \frac{K_1}{K_2} = \frac{1{,}8}{5} = 0{,}36$$

C

(9) A) $NH_4MnO_4 \rightarrow 1+4(-2)+x=0$

$\Rightarrow x=7$ VII

B) $K_3MnO_4 \rightarrow 3.1+4(-2)+x=0$

$\Rightarrow x=5$ V

C) $Cs_2Mn(SO_4)_2 \rightarrow 1+2(-2)+x=0$

$\Rightarrow x=3$ III

(C)

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(10) (B) ?