Həllin tərcüməsi:

6.1 $c_0 = c_A + c_B + c_C + c_D = 28.2 + 7.8 + 8.3 + 1.8 = 46.1 \text{ mmol dm}^{-3}$

6.2 $k = \dfrac{1}{0.4343\,t}\log\left(\dfrac{c_0}{c_A}\right) = \dfrac{1}{0.4343 \times 5}\log\left(\dfrac{46.1}{28.2}\right) = 0.0983 \text{ s}^{-1}$

6.3 $t = \tau_{1/2} = \dfrac{1}{0.4343\,k}\log\dfrac{\frac{c_0}{2}}{c_0} = \dfrac{1}{0.4343 \times 0.0983}\log 2 = 7.05 \text{ s}$

6.4

$v_1 = \dfrac{\Delta c_B}{\Delta t} = k_1\, c_A$

$v_2 = \dfrac{\Delta c_C}{\Delta t} = k_2\, c_A$

$v_3 = \dfrac{\Delta c_D}{\Delta t} = k_3\, c_A$

$v = v_1 + v_2 + v_3 = k\, c_A$

(1) $k_1 + k_2 + k_3 = k = 0.0983 \text{ s}^{-1}$

(2) $\dfrac{\Delta c_B}{\Delta c_C} = \dfrac{c_B - 0}{c_C - 0} = \dfrac{c_B}{c_C} = \dfrac{k_1}{k_2} = \dfrac{7.8}{8.3} = 0.940$

(3) $\dfrac{\Delta c_B}{\Delta c_D} = \dfrac{c_B - 0}{c_D - 0} = \dfrac{c_B}{c_D} = \dfrac{k_1}{k_3} = \dfrac{7.8}{1.8} = 4.33$

From equations (1) – (3):

$k_1 = 0.0428 \text{ s}^{-1}$

$k_2 = 0.0455 \text{ s}^{-1}$

$k_3 = 0.00988 \text{ s}^{-1}$

6.5 At $t = \tau_{1/2} = 7.05 \text{ s}$

(4) $c_A = \dfrac{c_0}{2} = c_B + c_C + c_D = 23.05 \text{ mmol dm}^{-3}$

From equations (2) – (4):

$c_B = 10.0 \text{ mmol dm}^{-3}$

$c_C = 10.7 \text{ mmol dm}^{-3}$

$c_D = 2.32 \text{ mmol dm}^{-3}$

Tərcüməçinin öz həlli:

1) $c_0 = [A] + [C_0] + [C_c] + [C_0] = 28,2 + 7,8 +$
$$+ 8,3 + 1,8 = 46,1 \text{ mmol } dm^{-3}$$

2) $t = 5 \text{ san}$ $\quad [A] = 28,2 \text{ mmol}/dm^3$
$$C_0 = 46,1 \text{ mmol}/dm^3$$

$$\ln \frac{C_0}{[A]} = \kappa t \quad \ln \frac{46,1}{28,2} = \kappa \cdot 5$$

$$\kappa = 0,0983 \text{ } s^{-1}$$

3) $\ln \dfrac{C_0}{\frac{C_0}{2}} = \kappa \cdot t_{\frac{1}{2}} \quad \ln 2 = \kappa \cdot t_{\frac{1}{2}}$

$$t_{\frac{1}{2}} = \frac{\ln 2}{\kappa} = \frac{\ln 2}{0,0983} = 7,0515 \text{ san}$$

4) $-\dfrac{dA}{dt} = \kappa_1 [A] + \kappa_2 \cdot [A] + \kappa_3 \cdot [A] =$
$$= (\kappa_1 + \kappa_2 + \kappa_3) \cdot [A]$$

$$\kappa_1 + \kappa_2 + \kappa_3 = 0,0983 \text{ } s^{-1}$$

Sürət sabitləri nisbəti
qatılıqları nisbətinə bərabərdir

$$\frac{\kappa_1}{\kappa_2} = \frac{[C_c]}{[C_0]} = \frac{8,3}{7,8} = 1,0641$$
$$\kappa_1 = 1,0641 \cdot \kappa_2$$

$$\frac{\kappa_3}{\kappa_2} = \frac{[C_0]}{[C_0]} = \frac{1,8}{7,8} = 0,23077$$
$$\kappa_3 = 0,23077 \cdot \kappa_2$$

$$\kappa_1 + \kappa_2 + \kappa_3 = 1,0641 \kappa_2 + \kappa_2 + 0,23077 \kappa_2 = 0,0983$$
$$2,295 \kappa_2 = 0,0983 \text{ } s^{-1}$$

$K_2 = 0,043 \, s^{-1}$

$K_1 = 1,0641 \cdot K_2 = 0,0456 \, s^{-1}$

$K_3 = 0,23077 \cdot K_2 = 9,323 \cdot 10^{-3} \, s^{-1}$

5) $t_{\frac{1}{2}}$ zamanı $c_A = \frac{c_0}{2}$ olur

$[C_A] + [C_B] + [C_C] + [C_D] = 46,1 \, mmol/dm^3$

$[C_A] = \frac{46,1}{2} = 23,05 \, mmol/dm^3$

$[C_B] + [C_C] + [C_D] = c_0 - c_A = 46,1 - 23,05 = 23,05 \, mmol/dm^3$

Yuxarıda dediyimiz kimi maddələrin qatılıqlara nisbəti sürət sabitləri nisbətinə bərabərdir.

$\frac{[C_C]}{[C_B]} = \frac{K_1}{K_2} = \frac{0,0456}{0,043} = 1,0641$ $[C_C] = 1,0641 [C_B]$

$\frac{[C_D]}{[C_B]} = \frac{C_3}{K_1} = \frac{9,923 \cdot 10^{-3}}{0,043} = 0,23077$ $[C_D] = 0,23077 [C_B]$

$$[_B] + [_C] + [_D] = [_B] + 1.0641[\ ] + 0.23077 [_B] =$$

$$= 2.295 [_B] = 23.05 \text{ mmol/dm}^3$$

$$[_B] = \frac{23.05}{2.285} = 10.0436 \text{ mmol/dm}^3$$

$$[_C] = 1.0641 \cdot [_D] = 1.0641 \cdot 10.0436 = 10.687 \text{ mmol/dm}^3$$

$$[_D] = 0.23077 \cdot [_B] = 0.23077 \cdot 10.0436 = 2.3178 \text{ mmol/dm}^3$$

1	$c_0 = 46.1 \text{ mmol/dm}^3$
2	$k = 0.0983 \text{ s}^{-1}$
3	$\tau_{1/2} = 7.0515 \text{ зан}$
4	$k_1 = 0.0456 \text{ s}^{-1}$
	$k_2 = 0.043 \text{ s}^{-1}$
	$k_3 = 9.923 \cdot 10^{-3} \text{ s}^{-1}$
5	$c_B = 10.0436 \text{ mmol/dm}^3$
	$c_C = 10.687 \text{ mmol/dm}^3$
	$c_D = 2.3178 \text{ mmol/dm}^3$

Translated, solved and complied by,
Nihad Hajizada