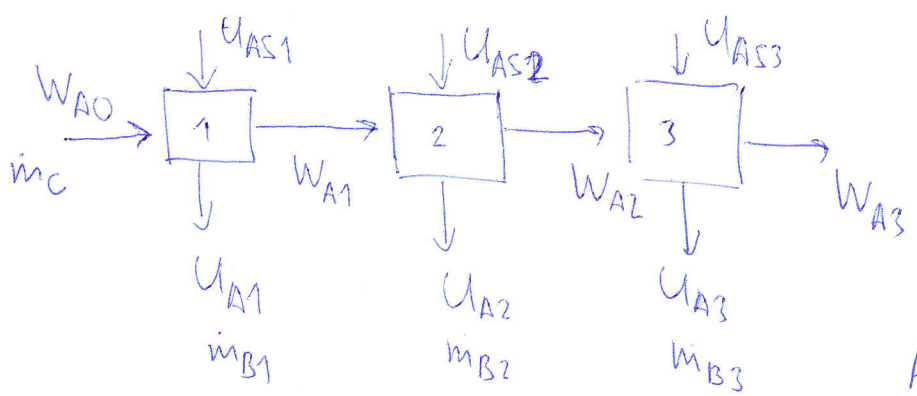
12-5a

Numericky



A – aceton

B – voda

C – oxylen

$W_{AS1} = W_{AS2} = W_{AS3} = W_{AS123} = 0$

$m_{B1} = m_{B2} = m_{B3} = m_{B123} = ?$

Proměnné: m_C, m_{B123}, W_{AS123}

W_{A0}, W_{A1}, W_{A2}, W_{A1}, U_{A2}, U_{A3}, W_{A3}

$$W_{A0} = \frac{0,11}{1-0,11} = 0,1236$$

$$m_C = 20 \cdot (1-0,11) = 17,8\ kg$$

$$W_{A3} = \frac{0,02}{1-0,02} = 0,0204$$

$$m_C W_{A0} + m_{B123} W_{AS123} = m_C W_{A1} + m_{B123} U_{A1} \qquad U_{A1} = k \cdot W_{A1}$$

$$m_C W_{A1} + m_{B123} W_{AS123} = m_C W_{A2} + m_{B123} U_{A2} \qquad U_{A2} = k\, W_{A2}$$

$$m_C W_{A2} + m_{B123} W_{AS123} = m_C W_{A3} + m_{B123} U_{A3} \qquad U_{A3} = k\, W_{A3}$$

$$m_C W_{A0} = m_C W_{A1} + m_{B123} k W_{A1}$$

$$m_C W_{A1} = m_C W_{A2} + m_{B123} k W_{A2}$$

$$m_C W_{A2} = m_C W_{A3} + m_{B123} k W_{A3}$$

$$W_{A0} = \left(1 + \frac{m_{B123} k}{m_C}\right) W_{A1} = \left(1 + \frac{m_{B123}}{m_C} k\right)^3 W_{A3}$$

$$W_{A1} = \left(1 + \frac{m_{B123} k}{m_C}\right) W_{A2} = \left(1 + \frac{m_{B123}}{m_C} k\right)^2 W_{A3}$$

$$W_{A2} = \left(1 + \frac{m_{B123} k}{m_C}\right) W_{A3}$$

$$W_{A1} = \left(1 + \frac{m_{B123} k}{m_C}\right)^2 W_{A3}$$

$$\boxed{W_{A0} = \left(1 + \frac{m_{B123} k}{m_C}\right)^3 W_{A3}}$$

$$\left(1 + \frac{m_{B123} k}{m_C}\right)^3 = \frac{W_{A0}}{W_{A3}}$$

$$1 + \frac{m_{B123} k}{m_C} = \left(\frac{W_{A0}}{W_{A3}}\right)^{1/3}$$

$$\boxed{m_{B123} = \left[\left(\frac{W_{A0}}{W_{A3}}\right)^{1/3} - 1\right] \frac{m_C}{k}}$$

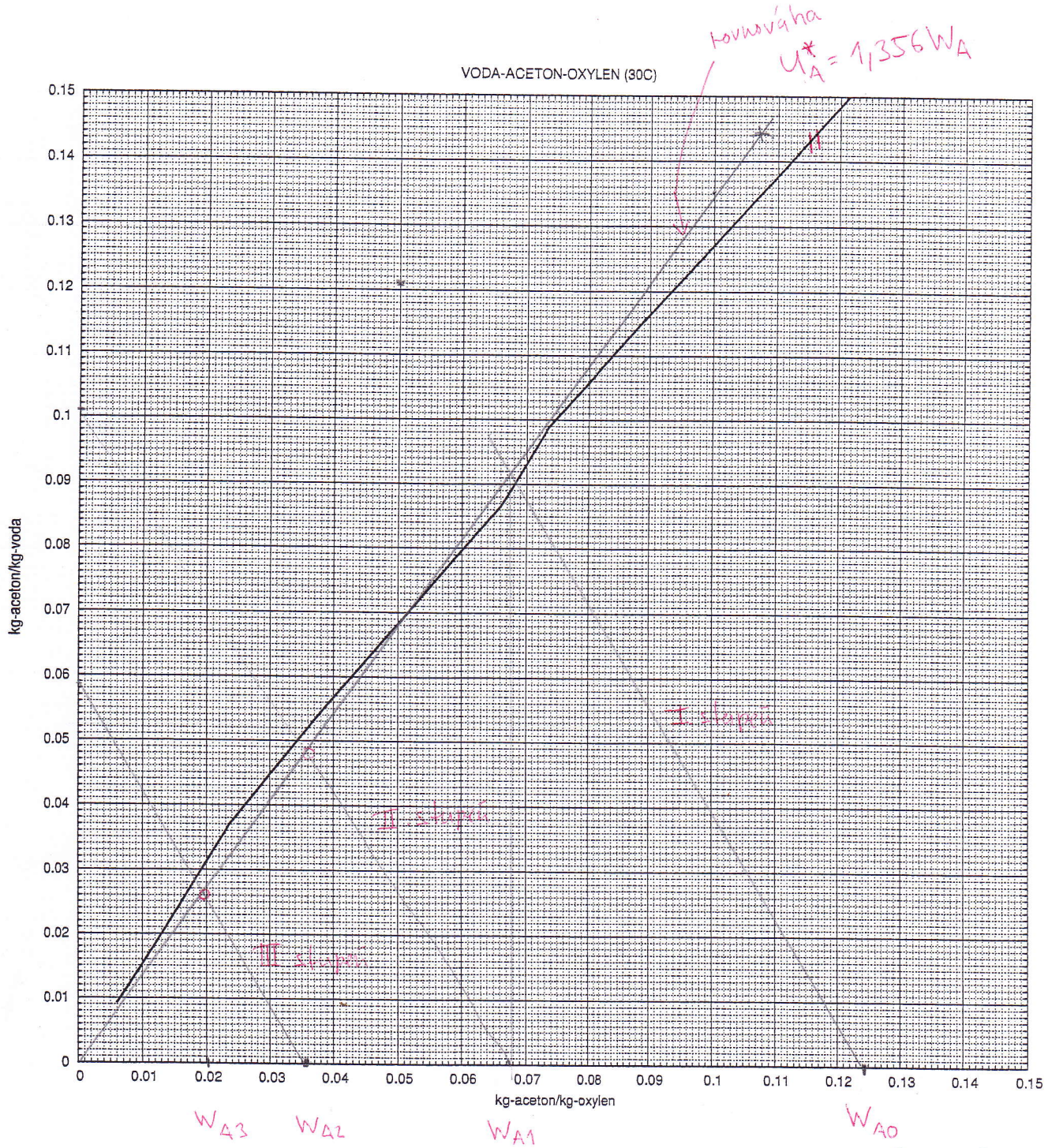
$$m_{B123} = \left[\left(\frac{0,1236}{0,0204}\right)^{1/3} - 1\right] \frac{17,8}{1,356}$$

$$\boxed{m_{B123} = 10,80\ kg}$$

$m_{B,celkem} = 3 \cdot 10,80 = 32,4\ kg$

12-5a

Graf. řešení



20 kg 11% aceton+oxylen → $W_{A0} = 0{,}1236$ $m_C = 17{,}8$ kg

čist. voda $Y_{A5} = 0$

max 2% aceton v raf. $W_{AN,max} = 0{,}0204$

směrnice $\frac{m_C}{m_B} = 1{,}648$

3x stejným množstvím

Řešení a)

$m_B = 10{,}8$ kg

3x