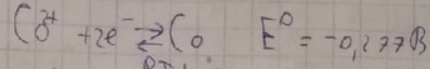
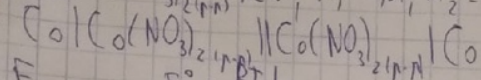
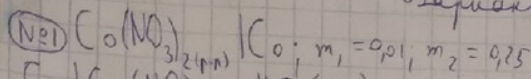


Компьютерная работа №2.

Сугров Сергей, КС-30

Вариант 15.



$E_{\text{Co}^{2+}|\text{Co}} = E^0 + \frac{RT}{F} \ln a_{\text{Ag}^+}$

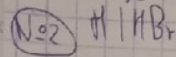
$E_{2,3} = E_m - E_{\text{ред}} = \frac{RT}{F} \ln \frac{a_2}{a_1}$

$a_{\pm} = m_{\pm} \gamma_{\pm}$

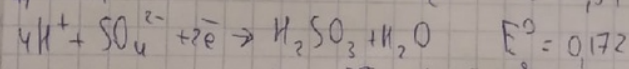
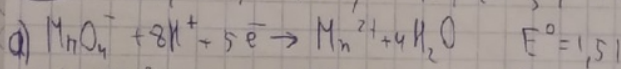
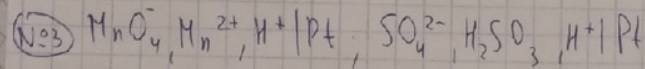
$a_{\pm 1} = 0,01 \cdot 1,133$

$a_{\pm 2} = 0,25 \cdot 0,455$

$E_{2,3} = 0,059 \lg \frac{0,25 \cdot 0,455}{0,01 \cdot 1,133} = 0,059 \text{ В}$

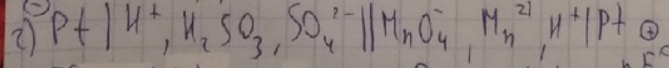
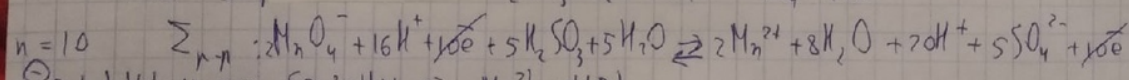
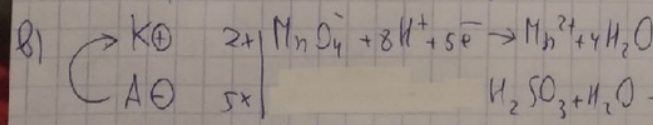


$m_1 = 2,0$



б) $E_{\text{MnO}_4^- / \text{Mn}^{2+}, \text{H}^+ | \text{Pt}} = E^0 - \frac{RT}{2F} \ln \frac{a_{\text{MnO}_4^-} \cdot a_{\text{H}^+}^8}{a_{\text{Mn}^{2+}} \cdot a_{\text{H}_2\text{O}}^4}$

$E_{\text{SO}_4^{2-}, \text{H}_2\text{SO}_3, \text{H}^+ | \text{Pt}} = E^0 - \frac{RT}{2F} \ln \frac{a_{\text{SO}_4^{2-}} \cdot a_{\text{H}^+}^2}{a_{\text{H}_2\text{SO}_3} \cdot a_{\text{H}_2\text{O}}}$



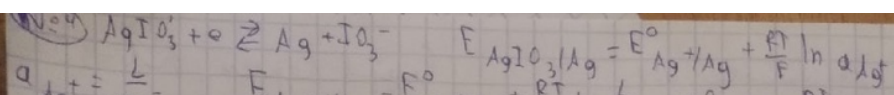
а) $E_{2,3}^0 = 1,51 - 0,172 = 1,338 \text{ В}$ $\lg K_a = \frac{n E^0}{0,059} = \frac{10 \cdot 1,338}{0,059} = 228,78$

$K_a = 2,35$

б) $1,51 - 0,0595 \cdot \ln \frac{0,1 \cdot 0,2^8}{0,02 \cdot 1^4} = 34,74 = E_{\text{MnO}_4^- / \text{Mn}^{2+}, \text{H}^+ | \text{Pt}}$

$0,172 - 0,0595 \cdot \ln \frac{0,01 \cdot 0,2^2}{0,01 \cdot 1} = 7,77 = E_{\text{SO}_4^{2-}, \text{H}_2\text{SO}_3, \text{H}^+ | \text{Pt}}$

1



$$a_{\text{Ag}^+} = \frac{L}{a_{\text{IO}_3^-}}$$

$$E_{\text{AgIO}_3/\text{Ag}} = E_{\text{Ag}^+/\text{Ag}} + \frac{RT}{F} \ln \frac{L}{a_{\text{IO}_3^-}} = E_{\text{Ag}^+/\text{Ag}} + \frac{RT}{F} \ln L - \frac{RT}{F} \ln a_{\text{IO}_3^-}$$

$$E_{\text{AgIO}_3/\text{Ag}} = E_{\text{Ag}^+/\text{Ag}} + \frac{RT}{F} \ln L$$

$$\ln L = \frac{(0,354 - 0,750) - 96785}{8,314 \cdot 298} = -17,330$$

2