

Министерство сельского хозяйства
Российской Федерации.
ФГБОУ ВО Казанский государственный
аграрный университет
Факультет лесного хозяйства

ТЕТРАДЬ

для Контрольная работа по
дисциплине "Лесная"

учени _____ класса _____

_____ школы _____

55
Хел

Выполнил студент 2 курса
группы Б132-02
заочной формы обучения
заочная группа № А523080
Брахитов М.Т.
Преподаватель:
Каймулина З.М.



крупная клетка

1.2

Дано:

$$n(\text{H}_2) = 0,5 \text{ моль}$$

$$t = 273 \text{ K}$$

$$p = 10^3 \text{ Па}$$

$$p = ?$$

$$V(\text{H}_2) = ?$$

$$m(\text{H}_2) = ?$$

$$n(\text{H}_2) = ?$$

$$N(\text{H}_2) = ?$$

Решение:

$$pV = nRT$$

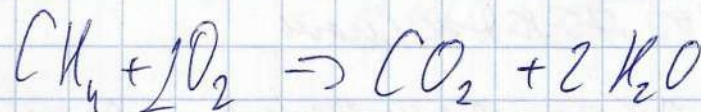
$$m(\text{H}_2) = 0,5 \cdot 2 = 1 \text{ г.}$$

$$V(\text{H}_2) = \frac{0,5 \cdot 273 \cdot 8,314}{10^3} = 1,13 \text{ л}^3$$

$$p_{\text{атм}} = \frac{10^3}{101325} = 0,00987 \text{ атм.}$$

$$N = n \cdot N_A = 0,5 \cdot 6,022 \cdot 10^{23} = 3,011 \cdot 10^{23}$$

2.2



$$\Delta H_f^\circ(\text{CH}_4) = -74,85 \text{ кДж/моль}$$

$$\Delta H_f^\circ(\text{CO}_2) = -393,5 \text{ кДж/моль}$$

$$\Delta H_f^\circ(\text{O}_2) = 0 \text{ кДж/моль}$$

$$\Delta H_f^\circ(\text{H}_2\text{O}) = -241,81 \text{ кДж/моль}$$

$$\Delta G_f^\circ(\text{CH}_4) = -50,85 \text{ кДж/моль}$$

$$\Delta G_f^\circ(\text{CO}) = -137,38 \text{ кДж/моль}$$

$$\Delta G_f^\circ(\text{O}_2) = 0 \text{ кДж/моль}$$

$$\Delta G_f^\circ(\text{H}_2\text{O}) = -228,61 \text{ кДж/моль}$$

$$\Delta S_f^\circ(\text{H}_2) = 186,27 \text{ Дж/моль}\cdot\text{К}$$

$$\Delta S_f^\circ(\text{CO}_2) = 213,67 \text{ Дж/моль}\cdot\text{К}$$

$$\Delta S_f^\circ(\text{O}_2) = 205,4 \text{ Дж/моль}\cdot\text{К}$$

$$\Delta S_f^\circ(\text{H}_2\text{O}) = 188,72 \text{ Дж/моль}\cdot\text{К}$$

Решение:

$$\Delta H_r^\circ = (1 \cdot -393,51) + 2(1 \cdot -241,81) - (2 \cdot 0) + (-74,85) = -802,28 \text{ кДж/моль}$$

$$\Delta S_r^\circ = (1 \cdot 213,67 + 2 \cdot 188,72) - (2 \cdot 205,4 + 186,27) = -9,96 \text{ Дж/моль}\cdot\text{К}$$

$$\Delta G_r^\circ = (1 \cdot -394,38) + 2(1 \cdot -228,61) + (2 \cdot 0 + (-50,85)) = -800,75 \text{ кДж/моль}$$

Ответ: экзотермическая реакция самопроизвольное протекание реакции.

5.4

Дано:

$$W_{\text{пра}} = 0,96\%$$

$$\Delta t_{\text{замерз}} = 0,312$$

$$M_{(\text{молек})} = ?$$

$$P_{(\text{осн})} = ?$$

Решение:

$$\Delta T = K_f \cdot C_m \quad K_f(\text{H}_2\text{O}) = 1,86$$

$$C_m = \frac{m_{\text{в-ва}}}{M \cdot m_{\text{р-ра}}}$$

$$W = \frac{m_{\text{в-ва}}}{m_{\text{в-ва}} + m_{\text{р-ра}}}$$

$$\Delta t_{\text{зам}} = K_f \cdot \frac{m_{\text{в-ва}}}{M \cdot m_{\text{р-ра}}} \Rightarrow$$

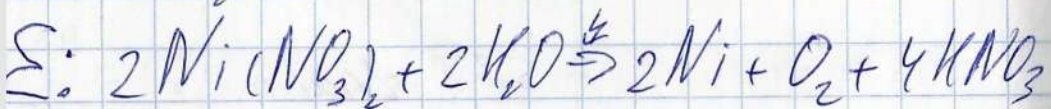
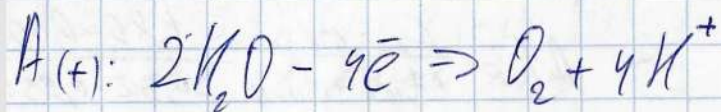
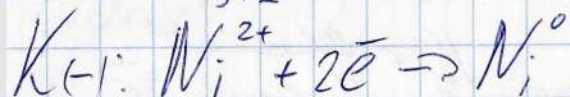
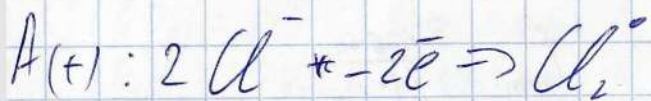
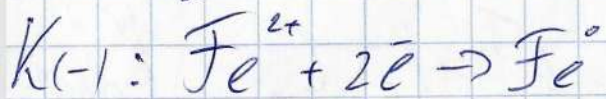
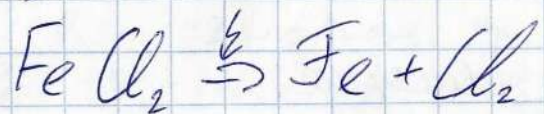
$$\Rightarrow M = \frac{K_f \cdot m_{\text{в-ва}}}{\Delta t_{\text{зам}} \cdot m_{\text{р-ра}}} = \frac{1,86 \cdot 0,0096}{0,312 \cdot 0,9904} =$$

$$= 57,8 \text{ г/моль}$$

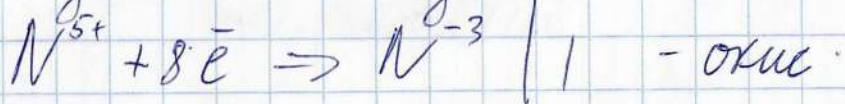
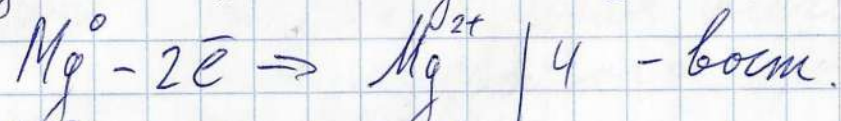
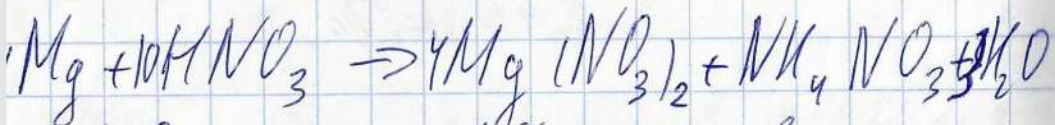
$$P_{(\text{осн})} = \frac{m_{\text{в-ва}} \cdot R \cdot T}{M \cdot V} = \frac{0,0096 \cdot 8,314 \cdot 298}{57,8 \cdot 1} =$$

$$= 0,411 \text{ кПа}$$

6.3 ^{корр}

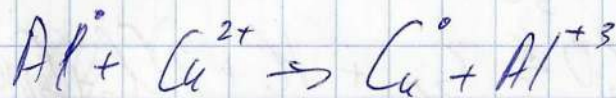
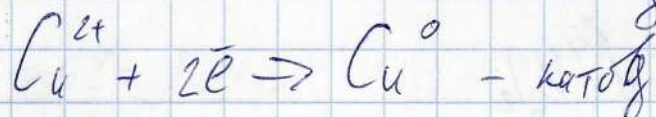
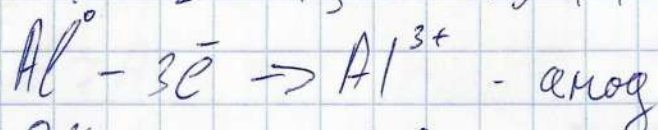
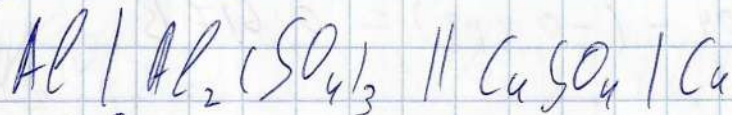


5.4



Контрольная работа 2.

10.1.2

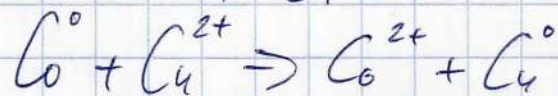
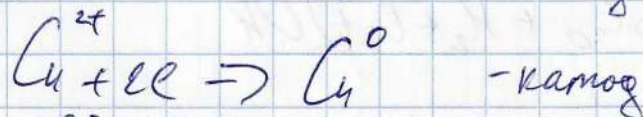
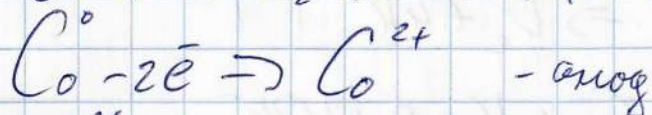


$$\varphi_{\text{Al}^{3+}/\text{Al}} = -1,67 + \frac{0,059}{3} \cdot \lg 0,1 = -1,689 \text{ В}$$

$$\varphi_{\text{Cu}^{2+}/\text{Cu}} = 0,34 + \frac{0,059}{2} \cdot \lg 0,1 = 0,31 \text{ В}$$

$$\Sigma = \varphi_{\text{катод}} - \varphi_{\text{анод}} = 0,31 - (-1,689) = 1,999 \text{ В}$$

10.1.29

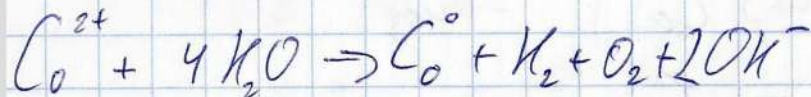
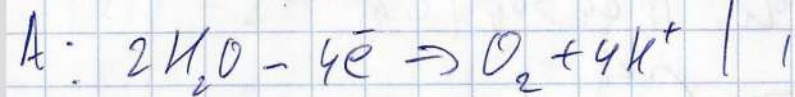
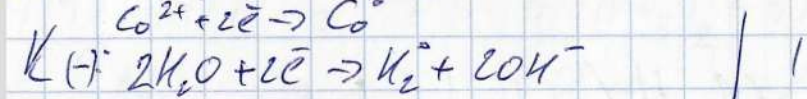
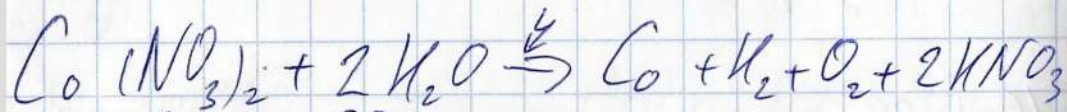
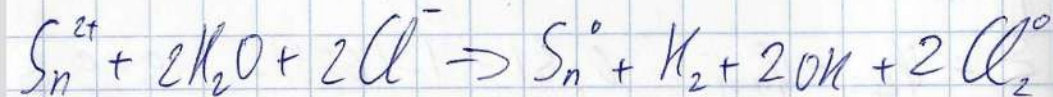
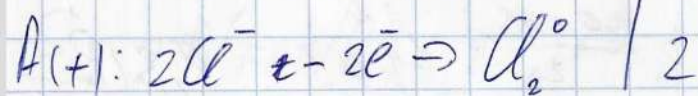
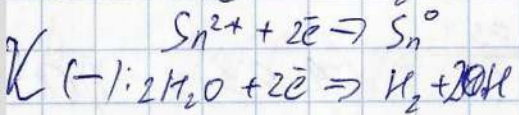


$$y_{Co^{2+}/Co} = -0,277 + \frac{0,059}{2} \cdot \log 0,06 = -0,313$$

$$y_{Cu^{2+}/Cu} = 0,34 + \frac{0,059}{2} \cdot \log 0,06 = 0,304$$

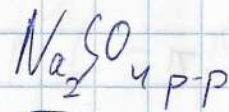
$$\Sigma = 0,304 - (-0,313) = 0,617 B.$$

10. 2. 83



10.4

Dano:

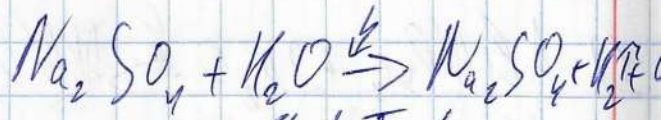


$$I = 7 A$$

$$t = 52 = 18000 C.$$

$$m(H_2O) = ?$$

Temperatura



$$m(H_2O) = \frac{M_{H_2O} \cdot I \cdot t}{F}$$

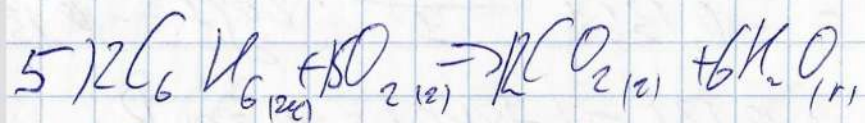
$$= \frac{18 \cdot 7 \cdot 18000}{96500} = 11,75 g.$$

$$E_{\text{Cd}^{2+}/\text{Cd}} = -0,400 + \frac{0,059}{1} \cdot \log 1 = -0,400 \text{ В}$$

$$E_{\text{Ag}^+/\text{Ag}} = 0,799 + \frac{0,059}{2} \cdot \log 1 = 0,799 \text{ В}$$

$$\Delta E = 0,799 - (-0,400) = 1,199 \text{ В}$$

$$\Sigma = 6.$$



$$\Delta H_f^\circ = -285,8 \text{ кДж/моль}$$

$$\Delta S_f^\circ = 69,9 \text{ Дж/(моль} \cdot \text{К)}$$

$$\Delta G_f^\circ = -237,1 \text{ кДж/моль}$$

$$\Delta H_{298}^\circ = 12 \cdot (-393,5) + 6 \cdot (-285,8) -$$

$$2 \cdot 49 = -653 \text{ кДж/моль}$$

$$\Delta S_{298}^\circ = (12 \cdot 213,8 + 6 \cdot 69,9) - (2 \cdot 173,0 + 15 \cdot 2)$$

$$= -436 \text{ Дж/(моль} \cdot \text{К)}$$

$$\Delta G_{298}^\circ = -6534,8 - 298 \cdot \left(-\frac{436}{1000}\right) = -6405,432 \text{ кДж/моль}$$

Омбем: реакция экзотермическая

