

Часть 1

Олимпиада: **Химия 11 класс (1 часть)**

Шифр: **21300973**

ID профиля: **266045**

Вариант 1

Задача 1

Умови.

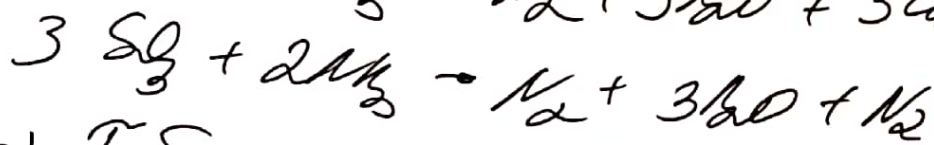
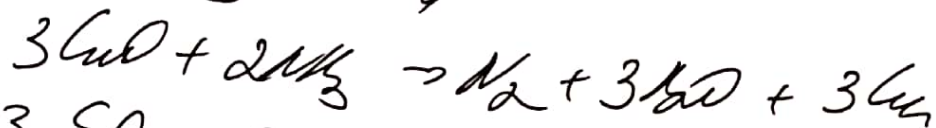
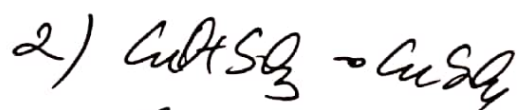
$$1) S O_3 - A \quad (\omega(O) = \frac{48}{80} = 0,6 (60\%))$$

$$Cu O - B \quad (\omega(O) = \frac{16}{80} = 0,2 (20\%))$$

B - $CuSO_4$

Г - SO_2

Д - Cu



3) Тауван за үрім бүрүзүмүз $[Cu(H_2O)_6]^{2+}$

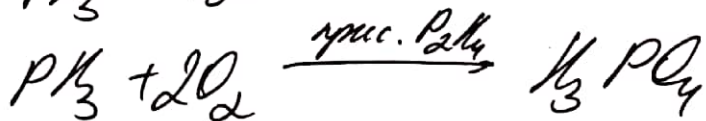
4) Ярко сизин.



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Задача 2

Гистован.



2) А - ALP - фосфат алкамин

Б - $Al(OH)_3$ - гидроксид алкамин

В - PH_3 - фосфин

Г - P_2H_4 - дигидрофосфин

Д - H_3PO_4 - ортофосфорная кислота

Х - Р - фосфор

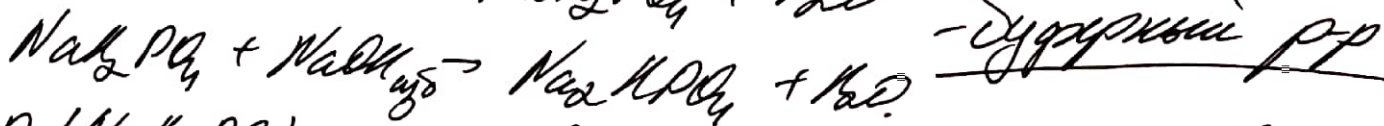
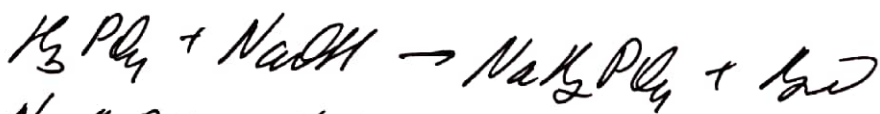
$n(PH_3) = \frac{2,24}{22,4} = 0,1$

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$M(A) = \frac{5,8}{0,1} = 58 - ALP$

3) $n(H_3PO_4) = \frac{0,01 \text{ моль/л} \cdot 0,15}{10} = 1,5 \cdot 10^{-3} \text{ моль}$

$n(NaOH) = \frac{0,04 \cdot 50}{1000} = 2 \cdot 10^{-3} \text{ моль}$

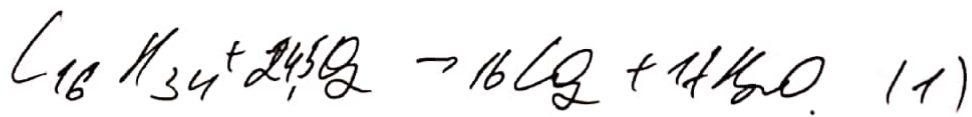
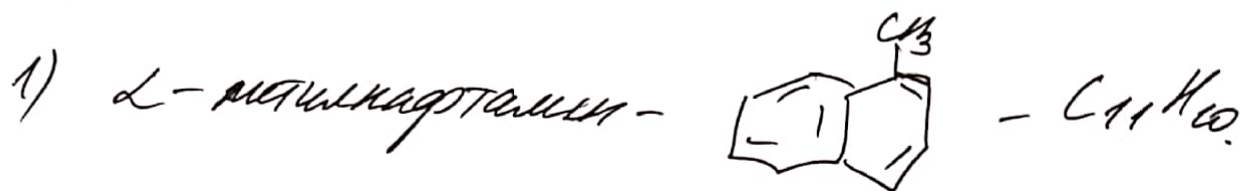


$n(NaH_2PO_4) = 1 \cdot 10^{-3} \text{ моль}; C(NaH_2PO_4) = 5 \cdot 10^{-3} M$

$n(Na_2HPO_4) = 5 \cdot 10^{-4} \text{ моль}; C(Na_2HPO_4) = 2,5 \cdot 10^{-3} M$

Задача 3.

Исходные



$$\begin{aligned} \Delta_r H(1) = Q_{(1)} &= 17 \cdot 285,8 + 16 \cdot 393,5 - 456 = \\ &= 10698,6 \text{ кДж/моль } C_{16}H_{14} = \frac{10698,6 \text{ кДж/моль}}{226} = \\ &= 47,34 \text{ кДж/г} = (47,34 \cdot 0,973)^8 \text{ кДж/л} = \\ &= 36,6. \end{aligned}$$

$$\begin{aligned} Q_{(2)} &= 11 \cdot 393,5 + 5 \cdot 285,8 - 45 = 5712,5 \text{ кДж/моль} \\ &= 40,23 \text{ кДж/г} = 41 \text{ кДж/л}. \end{aligned}$$

Пусть x - $\varphi \varphi$ ($C_{16}H_{14}$) в краешке
1- x - φ (2-метил) в середине.

$$\begin{aligned} 39,278 \text{ кДж/л} &= 36,6x + 41(1-x) \Rightarrow x = 0,44 \Rightarrow \\ &\Rightarrow \text{цетановое число} = 0,44 \cdot 40. \end{aligned}$$

$$2) V(H_2) = n(H_2) \cdot V_m = \frac{1000000 \text{ л} \cdot 39,278 \text{ кДж/л}}{285,8 \text{ кДж/моль}}.$$

$$\cdot 22,4 = \underline{3,08 \cdot 10^6 \text{ л}}.$$

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$$3) Q(H_2) = n \cdot 285,8 = \frac{pV}{RT} \cdot 285,8 = \frac{19,6 \cdot 10^3 \cdot 40}{8,314 \cdot 298} =$$

$$= 90438,2 \text{ Дж}$$

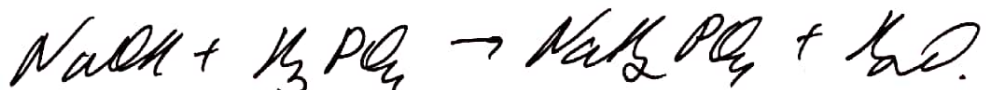
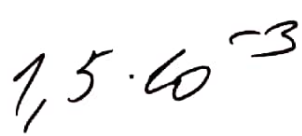
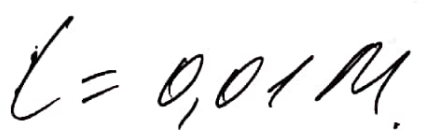
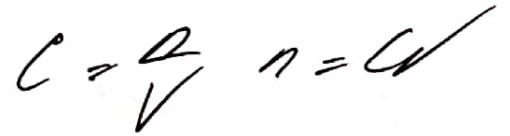
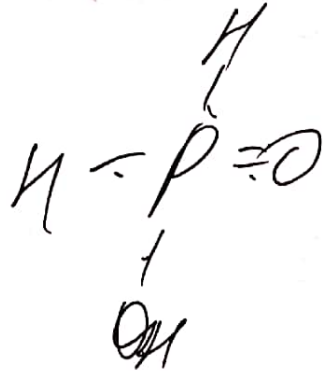
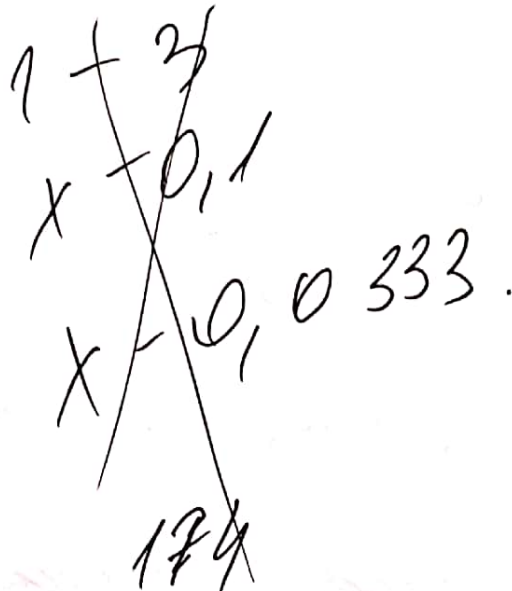
$$Q(\text{керосин}) = 40000 \text{ мл} \cdot 39,278 = 1571120 \text{ Дж}$$

не универсально.

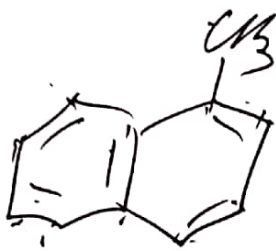
ср 4 уз

израбат

госпит ~~судит~~
судит



Чепуха.



$C_{11}H_{10}$

$$V = n V_m$$

$$m = 76.75, 84m$$

$$n(R) = 316, 43$$

$$n = \frac{pV}{R}$$

$$1.581120 \text{ kPa}$$

$$pV = nRT$$

$$9.0438 \text{ kPa}$$

$$-94x = -1,722 \text{ mol/mole} \cdot \frac{\text{mass}}{1}$$

$$\rho = 0,921^2$$

$$0,04(4\%)$$

$$\frac{\text{mol}}{r}$$

$$\frac{r}{\text{cm}^3}$$

$$V = \frac{m}{\rho} \quad \rho = \frac{m}{V}$$

$$1.60^6 r =$$

A - SO_3

Сурьма.

Б - CuO

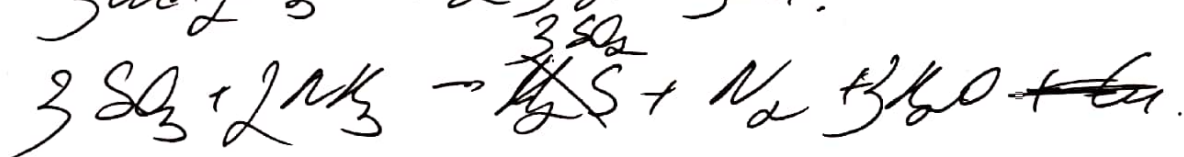
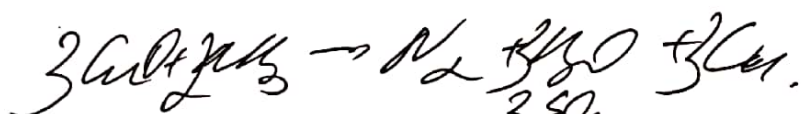
В - CuSO_4

$$24 + 4 \rightarrow 28$$

Г - ~~H_2SO_4~~

$$18 + 2 = 20 + 8$$

Д - Cu



3) Тауыдан за уст образван $[\text{Cu}(\text{H}_2\text{O})_6]^{2+}$

4) Ядро сикки.



№2. ~~Al_2S_3~~ A - AlP_3

Б - $\text{Al}(\text{OH})_3$

В - PH_3

Г - P_2H_4

Х - P.

Часть 2

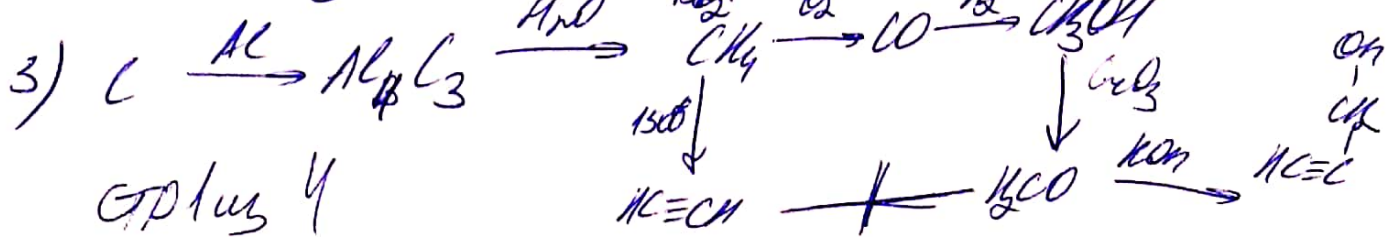
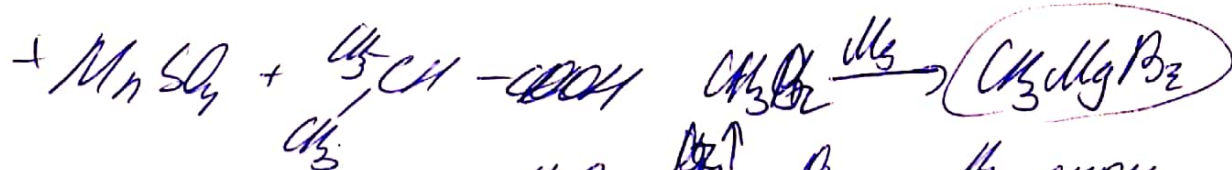
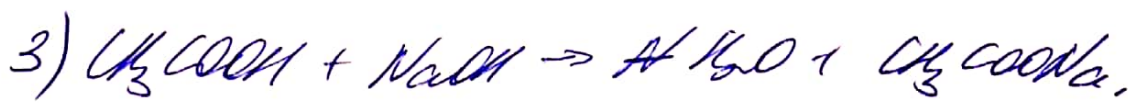
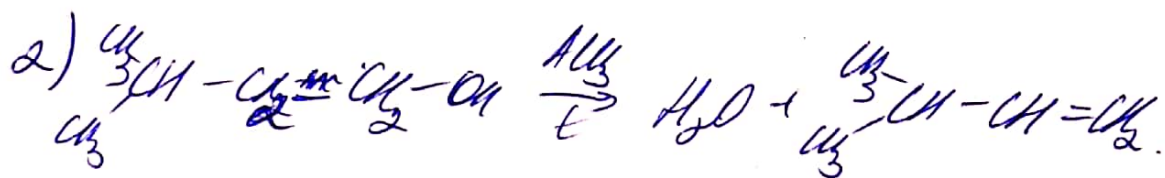
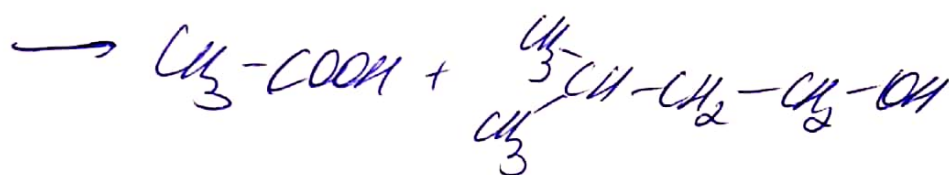
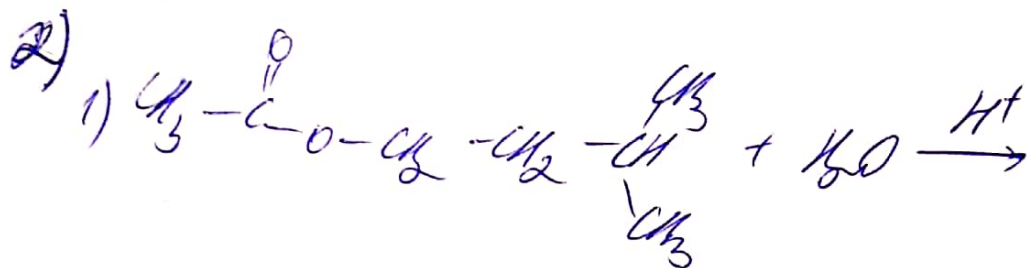
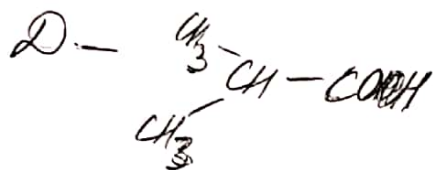
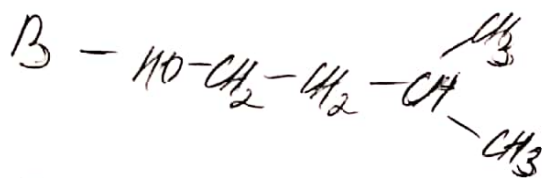
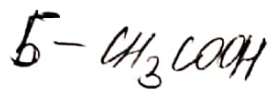
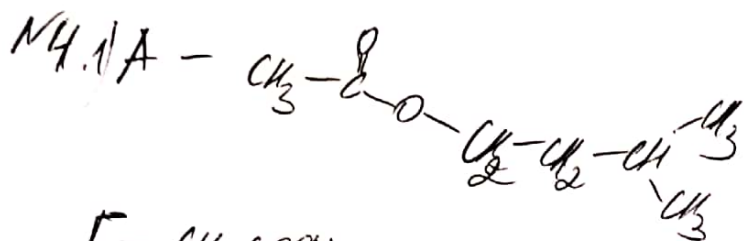
Олимпиада: **Химия 11 класс (2 часть)**

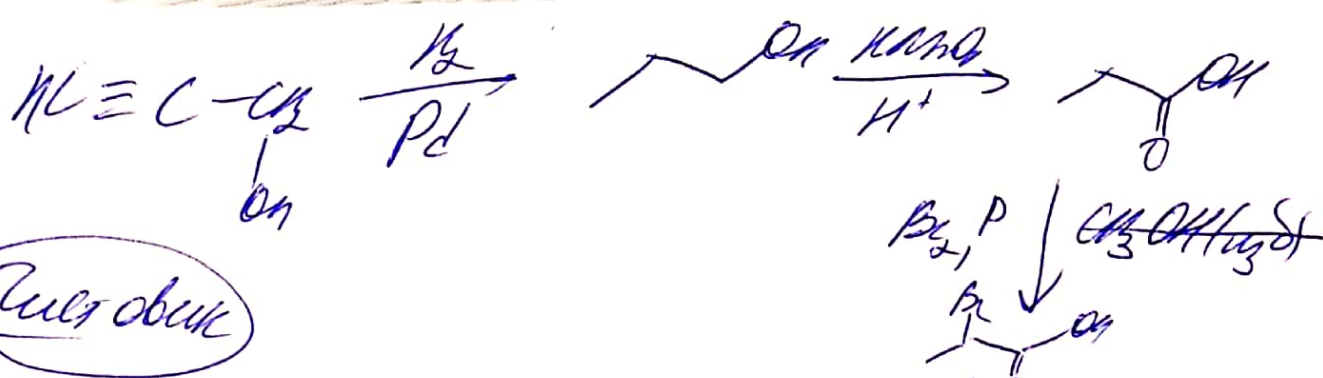
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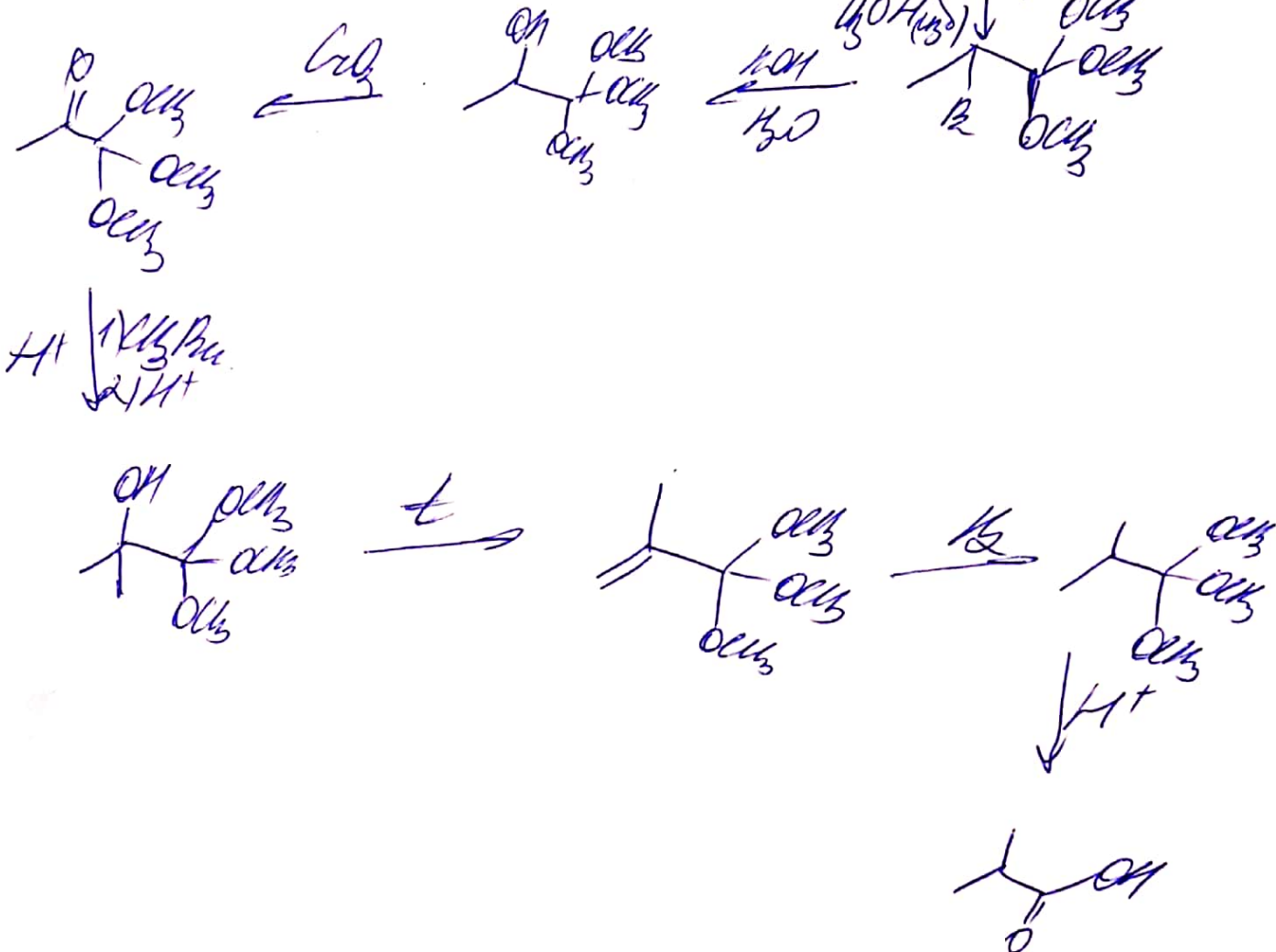
Вариант 1

Задача.





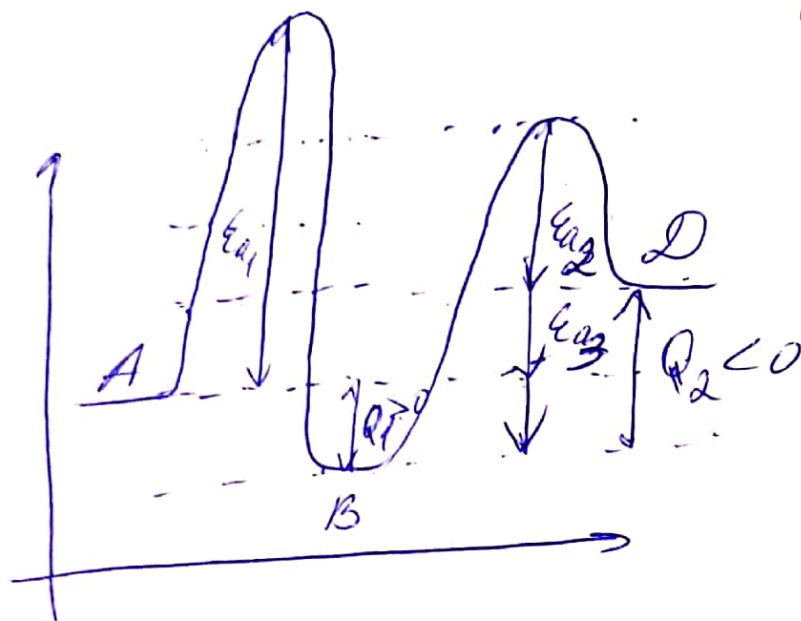
Здесь обратка



стр 2 мз 4

15

1)



2) $Q < 0$, т.к. - эндотермический процесс.

$A \rightarrow B$ $Q = 100 \text{ кДж}$

$B \rightarrow D$ $Q = -200 \text{ кДж}$ по условию.

$$Q_{\text{общ}} = -200 + 100 = -100 \text{ кДж}$$

$$3) \frac{E_a(B \rightarrow D)}{E_a(D \rightarrow B)} = \frac{4}{2} = 2$$

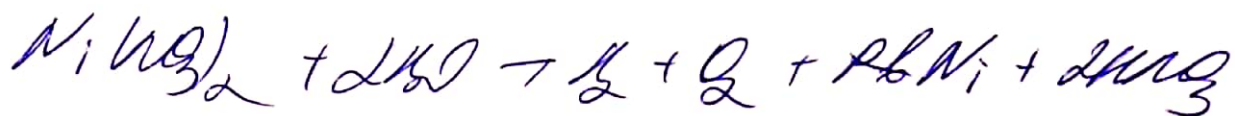
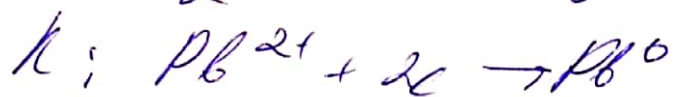
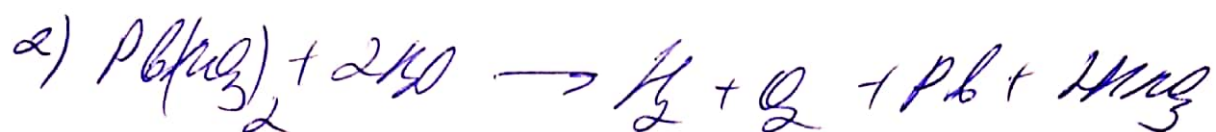
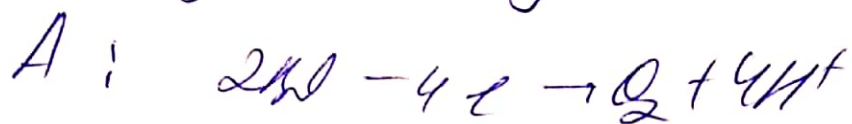
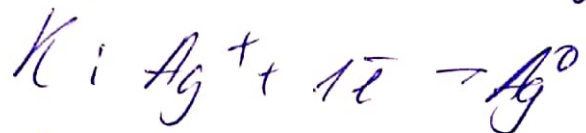
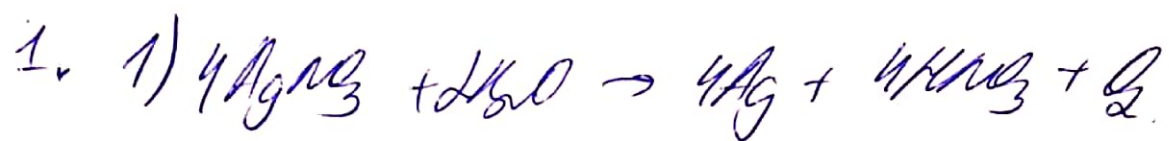
$$\frac{k_2}{k_3} = \frac{A \cdot e^{-\frac{E_a(B \rightarrow D)}{RT}}}{A \cdot e^{-\frac{E_a(D \rightarrow B)}{RT}}} = e^{\frac{E_a(B \rightarrow D) - E_a(D \rightarrow B)}{RT}}$$

$$= 1,36788$$

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исходн.

№.



сначала Ni, потом Pb, затем Ag - по активности металлов.

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