

Часть 1

Олимпиада: **Химия 9 класс (1 часть)**

Шифр: **21300728**

ID профиля: **805394**

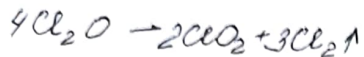
Вариант 1

Условие

1. $x = Cl$

A = Cl_2O кислотный оксид $M(Cl_2O) = 1,289$

B = ClO_2 несолеобразующий оксид $M(ClO_2)$



2.
$$\begin{cases} 560x + 246y = 192,6 \\ 94x + 48x + 34y + 16y = 1,134 \cdot 29 \end{cases}$$

$$\begin{cases} 560x + 246y = 192,6 \\ 82x + 50y = 32,886 \end{cases}$$

$$\begin{cases} x = 0,19674 \\ y = 0,3351 \end{cases}$$

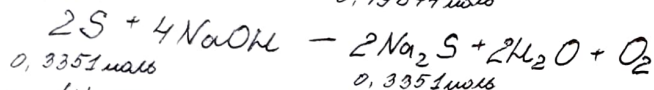
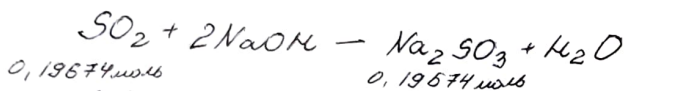
$$H_2S + 1,5O_2 \rightarrow SO_2 + H_2O$$

$$H_2S + 0,5O_2 \rightarrow S + H_2O$$

$n, V(H_2S) = (x+y) \cdot 34 = 18,082562 \neq 11,9 \text{ л}$

$n, V(O_2) = (1,5x + 0,5y) \cdot 32 = 14,805122 (10,36 \text{ л})$

$11,91 H_2S : 10,361 O_2$



$m(NaOH) = 125 \cdot 0,16 = 20 \text{ г}$

$n(NaOH) = 0,5 \text{ моль}$

по уравнениям реакций $n(NaOH)_r = 2 \cdot 0,19674 + 2 \cdot 0,3351 = 1,06 \text{ моль}$

Значит, не все SO_2 и S прореагировали

$2x + 2y = 0,5$

$m_{p-pa} = 125 + 0,19674 \cdot 64 + 0,3351 \cdot 64 = 138,26156 \text{ г}$

$x + y = 0,25$

$$\begin{cases} 0,19674 \cdot x + 0,3351 \cdot y = 0,25 \\ x + y = 1 \end{cases}$$

$0,13836y = 0,05326$

$y = 0,385 \text{ моль}$

$x = 0,815 \text{ моль}$

$n(Na_2SO_3) = 0,815 \cdot 0,19674 = 0,1603 \text{ моль}$

$n(Na_2S) = 0,385 \cdot 0,3351 = 0,129 \text{ моль}$

$n(SO_2) = 0,19674 \cdot (1 - 0,815) = 0,0364 \text{ моль}$

$n(S) = 0,3351 \cdot (1 - 0,385) = 0,206 \text{ моль}$

$\omega(Na_2SO_3) = 0,11027 \quad \omega(Na_2S) = 0,07278$

$\omega(SO_2) = 0,035 \quad \omega(S) = 0,04768$

Задача

3. CuCl_2

$$m = \frac{M \cdot t}{F_n}$$

$$t = \frac{m F_n}{M \cdot I} = \frac{0,025 \cdot 98500 \cdot 0,625}{5 \cdot 10} = 7,54 \text{ c.}$$

$$t = \frac{m F_n}{M \cdot I} = \frac{0,4 \cdot 98500 \cdot 1}{5 \cdot 135} = 57,18 \text{ c.}$$

Смп. 2 из 2

Черный

NaCl и XCl_2

I.F.M

$$\pm \frac{I \cdot F \cdot M}{t}$$

$$m = 500 \text{ g}$$

$$I = 5 \text{ A}$$

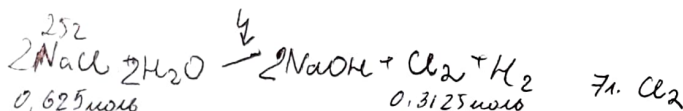
$$\omega(\text{NaCl}) = 5\%$$

на аноде 13,071 раза

на катоде 23,622

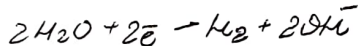
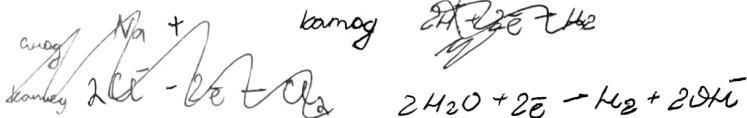
$$m(\text{NaCl}) = 252$$

$$M = \frac{I}{F} \cdot \frac{M}{n} \cdot t \cdot \epsilon$$

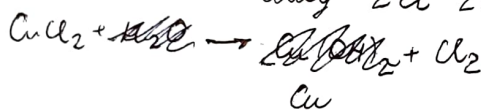


0,625 моль

0,3125 моль



анод $2\text{Cl}^- - 2e^- \rightarrow \text{Cl}_2$



Cu

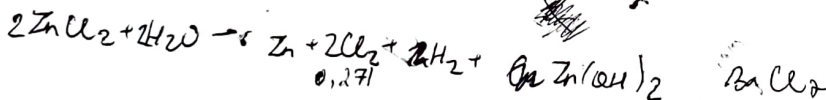
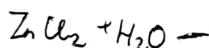
$$6,071 \cdot \text{Cl}_2 \quad 0,271 \text{ моль}$$

$$23,622 \text{ грамм} \quad M(\text{H}_2) = 2,016$$

$$m(\text{Cu}) - m(\text{CuCl}_2) = 23,622$$

$$0,271x - x(0,271 + 70,9) = 23,62$$

$$0,271x - 0,271x - 70,9x = 23,62$$



$$0,1355x + 0,1355(x + 34) - 0,271 \cdot (x + 70,9) = 23,62$$

$$x + x + 34 - 2x - 141,8 = 27,15267$$

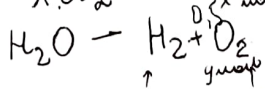
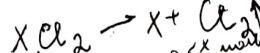
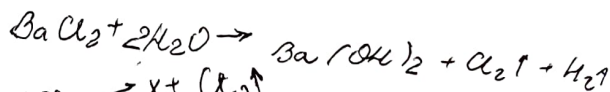
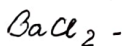
$$0,271(x + x + 34) = 23,62$$

$$2x + 34 = 174,3$$

$$2x = 140,3$$

$$0,1355 \cdot (x) = 23,62 \quad x = 70,15$$

$$x = 174,3$$



$$\begin{cases} x + 70,9x + 18y = 463,75 \\ x + 0,5y = 0,271 \end{cases}$$

$$\begin{cases} x + 0,5y = 0,271 \\ 23,62 + 70,9x + 18y = 463,75 \end{cases}$$

Часть 2

Олимпиада: **Химия 9 класс (2 часть)**

Шифр: **21300728**

ID профиля: **805394**

Вариант 1

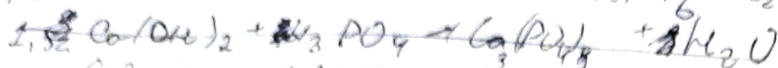
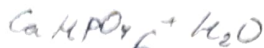
Черновик

21.32.



0,15 моль

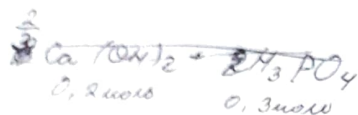
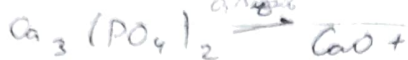
0,3 моль



0,2 моль

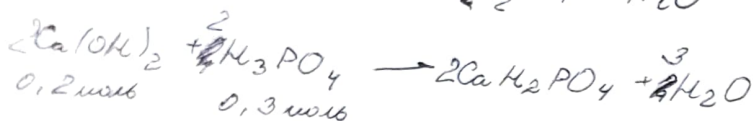
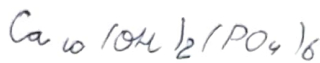
0,3 моль

0,15 моль



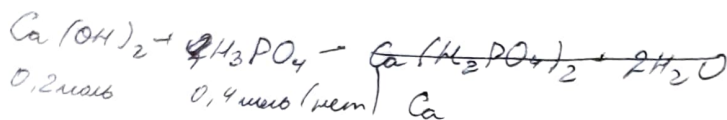
0,2 моль

0,3 моль



0,2 моль

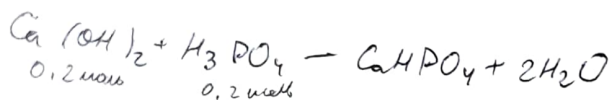
0,3 моль



0,2 моль

0,4 моль (нет)

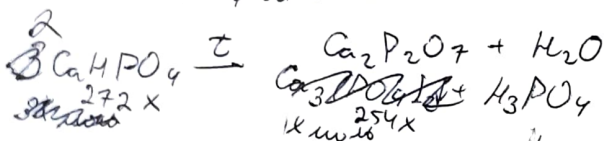
Ca



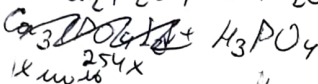
0,2 моль

0,2 моль

0,1 моль H_3PO_4 останется



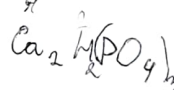
272 x



1 x моль 254 x

$$m = 3x \cdot 136 = 408x$$

$$m = 310x$$



381



250



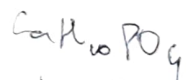
2 x моль

x моль

Ca

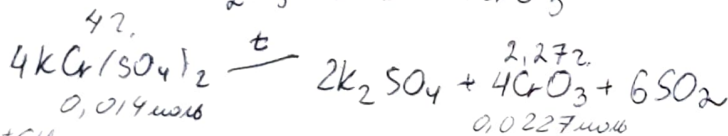
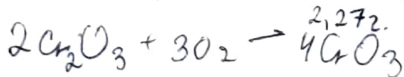
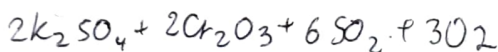
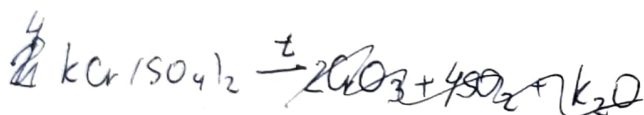
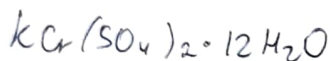
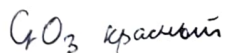
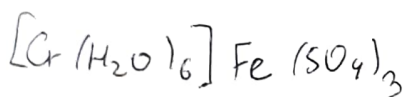
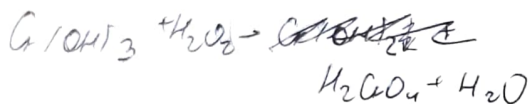
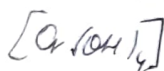
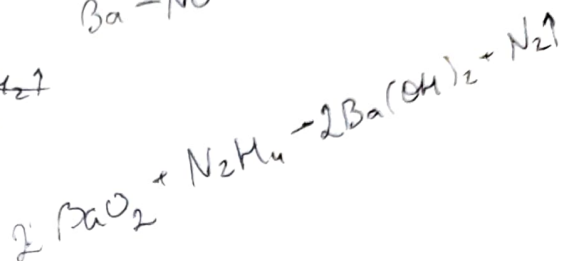
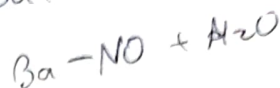
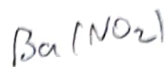
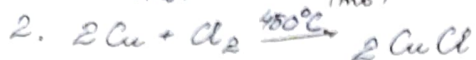
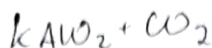
145 г/моль

$$136 \cdot 2x$$

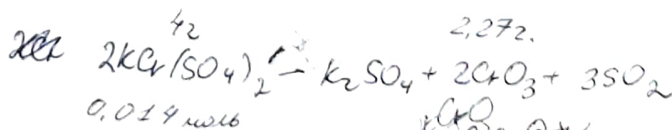


200 г/моль

Чернобук



32+64=



0,014 моль

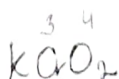
2,272

$M_r = 154 \text{ г/моль}$

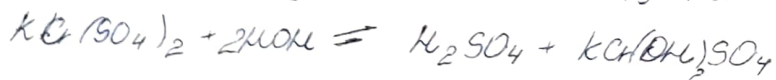
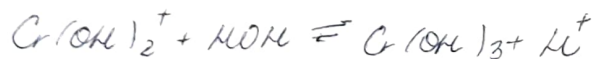
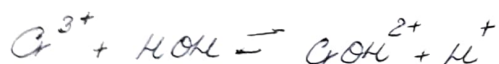
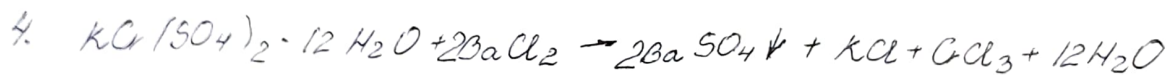
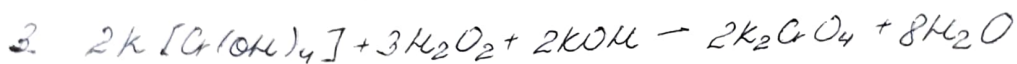
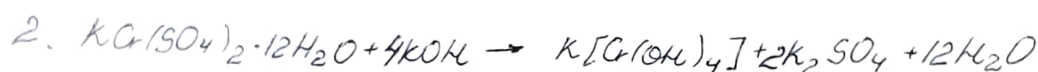
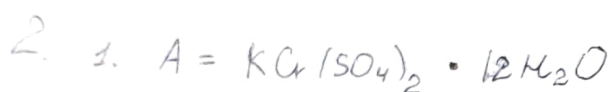
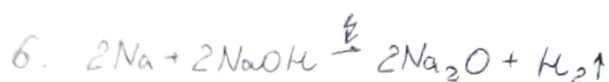
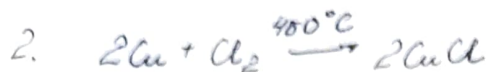


100

612/моль



Условие



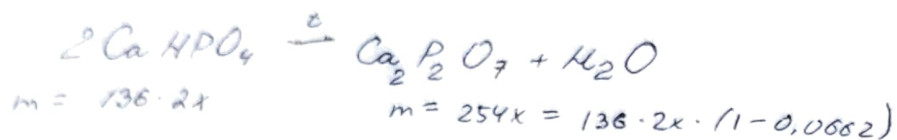
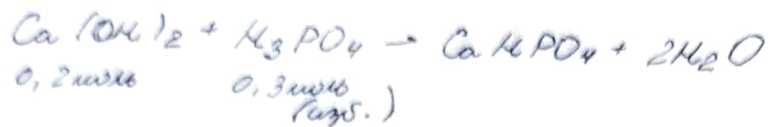
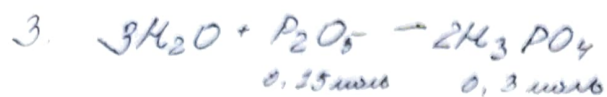
3. Выпадение осадка сначала не будет наблюдаться, т.к.

$K[Cr(OH)_4]$ образуется при избытке KOH , а при добавлении

раствора E к KOH , второй изначальным окажется в избытке

от 1 из 2

Задача



$$A = \text{CaHPO}_4$$

$$B = \text{H}_3\text{PO}_4 (\text{изб.})$$

$$B = \text{Ca}_2\text{P}_2\text{O}_7$$

$$\omega(B) = 0,049$$

Смп 2 из 2