

Часть 1

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

Шифр: **21300199**

ID профиля: **806801**

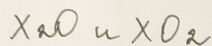
Вариант 1

Задача 1.

1) Кол-во $X = \text{кол. в. } O = n$

$$n + n = 2n$$

$$\frac{2n}{2} = 3 \Rightarrow n = 3$$



$$1,289 \text{ в } (A) = \frac{M(A)}{M(B)}$$

① $1,289(2x+16) = x+32$

$$2,578x + 20,624 = x + 32$$

$$1,578x = 11,376$$

$$x = 7 \text{ / не подходит}$$

Ответ: X - Cl, A - Cl_2O , B - ClO_2

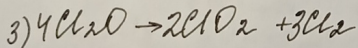
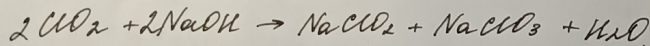
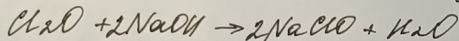
② $1,289(x+32) = 2x+16$

$$1,289x + 41,248 = 2x + 16$$

$$0,711x = 25,248$$

$$x = 35,5 - Cl$$

2) $Cl_2O \text{ и } ClO_2$ — кислотные оксиды

 Cl_2O и ClO_2 — кислотные оксидыЗадача 2

1) $M(\text{смеси}) = 1,134 \cdot 29 = 32,886 \text{ г/моль}$

$$34x + 32(1-x) = 32,886$$

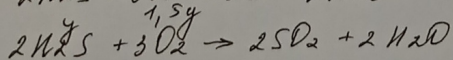
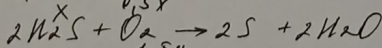
$$34x + 32 - 32x = 32,886$$

$$2x = 0,886$$

$$x = 0,443$$

$$\varphi(H_2S) = 0,443 \text{ или } 44,3\%$$

$$\varphi(O_2) = 0,557 \text{ или } 55,7\%$$



(1)

Задача 2. продолжение.

$$\begin{cases} 246x + 560y = 192,6 \\ \frac{x+y}{0,443} = \frac{0,5x + 1,5y}{0,557} \end{cases} \Leftrightarrow \begin{cases} 246x + 560y = 192,6 \\ 0,557x + 0,557y = 0,2215x + 0,6645y \end{cases} \Leftrightarrow$$

$$\begin{cases} 246x + 560y = 192,6 \\ 0,3355x = 0,1075 \end{cases} \Leftrightarrow \begin{cases} 246x + 1747,72x = 192,6 \\ y = 3,121x \end{cases} \Leftrightarrow$$

$$x = 0,0966$$

$$y = 0,3015$$

$$n(\text{H}_2\text{S}) = 0,3981 \text{ моль}$$

$$V(\text{H}_2\text{S}) = 0,3981 \cdot 22,4 = 8,91744 \text{ л}$$

$$n(\text{O}_2) = 0,50055 \text{ моль}$$

$$V(\text{O}_2) = 0,50055 \cdot 22,4 = 11,21232 \text{ л}$$

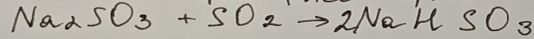


$$n(\text{NaOH}) = \frac{125 \cdot 0,16}{40} = 0,5 \text{ моль}$$

$$n(\text{SO}_2) = 0,3015 \text{ моль}$$

$$n(\text{S}) = 0,0966$$

$$0,0515 + \text{H}_2\text{O} \quad 0,103$$



$$n_{\text{ост}}(\text{Na}_2\text{SO}_3) = 0,1985 \text{ моль}$$

$$M_{\text{p-pa}} = 132,1658 + 125 = 132,1658$$

$$w(\text{Na}_2\text{SO}_3) = \frac{25,011}{132,1658} = 0,1892 \text{ или } 18,92\%$$

$$w(\text{NaHSO}_3) = \frac{10,712}{132,1658} = 0,08105 \text{ или } 8,105\%$$

Часть 2

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

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Вариант 1

Задача 4

- 1) $Al_2O_3 + K_2CO_3 \xrightarrow{t} 2KAlO_2 + CO_2 \uparrow$ (смавление)
- 2) $CuCl_2 + Cu \rightarrow 2CuCl \downarrow$ (в золье)
- 3) $6FeO + 3Cl_2 \rightarrow 2Fe_2O_3 + 2FeCl_3$
- 4) $Ca_3P_2 + 6H_2O \rightarrow 3Ca(OH)_2 + 2PH_3$
- 5)
- 6) $2NaH + \frac{1}{2}O_2 \xrightarrow{t} Na_2O + H_2 \uparrow$
- 7)

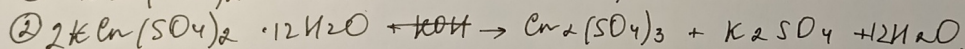
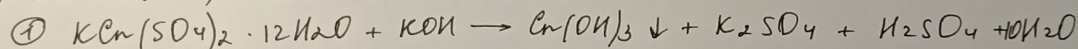
Задача 5

1) $KCr(SO_4)_2 \cdot 12H_2O - A$

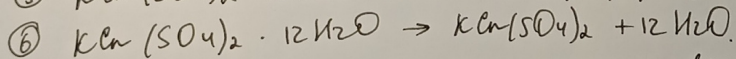
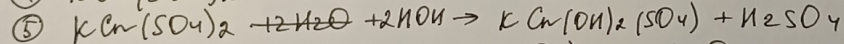
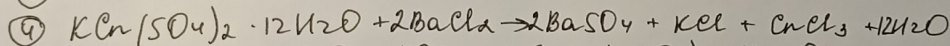
$KCr(SO_4)_2 - B$

$w(H_2O) = \frac{12 \cdot 18}{499} = 0,4325$ или 43,25%

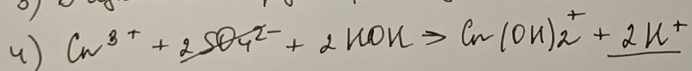
2) ~~$2KCr(SO_4)_2 \cdot 12H_2O + KOH \rightarrow 2Cr(OH)_3 + K_2SO_4 + H_2O + 3H_2SO_4$~~



③

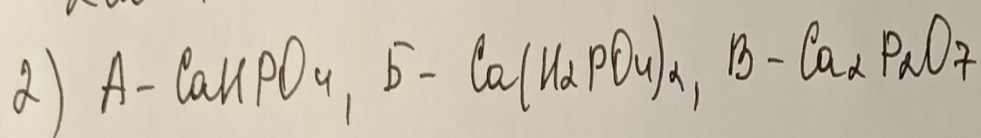
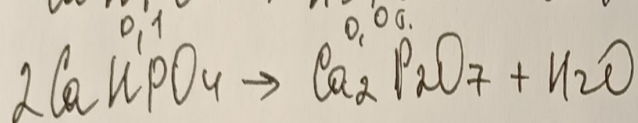
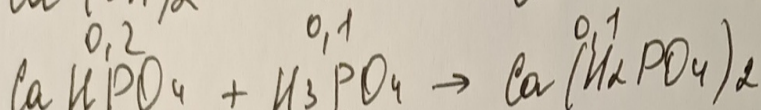
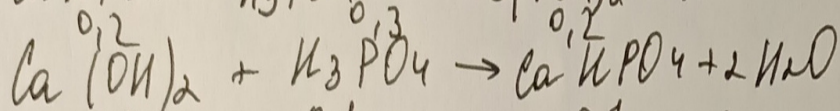
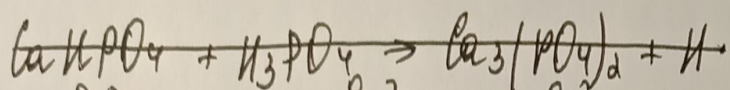
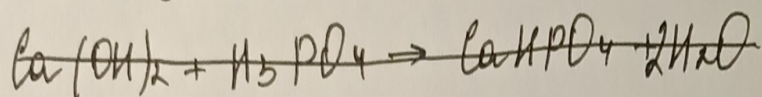
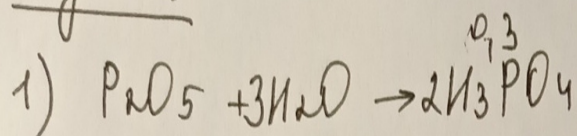


3) В щелочной среде происходит разложение кванцов



Задача 6

Чистовые.



$$n(\text{P}_2\text{O}_5) = 0,35 \text{ моль}$$

$$n(\text{Ca}(\text{OH})_2) = 0,2 \text{ моль}$$

$$w(\text{H}_2\text{O}) = \frac{18}{18 + 254} = 0,0662 \text{ или } 6,62\%$$

$$3) m(\text{Ca}(\text{H}_2\text{P}_2\text{O}_7)_2) = 0,1 \cdot 234 = 23,4 \text{ г}$$

$$m_{\text{р-ра}} = 200 + 21,3 + 14,8 - 13,6 = 222,5 \text{ г}$$

$$w(\text{Ca}(\text{H}_2\text{P}_2\text{O}_7)_2) = \frac{23,4}{222,5} = 0,1052 \text{ или } 10,52\%$$