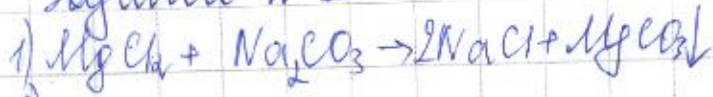


Тапсырма № 1



2)

3)

4)

5)

$$142 - 100\%$$

$$x_1 - 15,41\%$$

$$x = 2,162$$

$$m = 142 - 2,162 = 11,842$$

$$11,842 - 100\%$$

$$x_2 - 3,86\%$$

$$x = 0,462$$

$$m = 11,84 - 0,462 = 11,382$$

$$11,382 - 100\%$$

$$x - 37,77\%$$

$$x = 4,32$$

$$m = 11,382 - 4,32 = 7,082$$

Задача №2

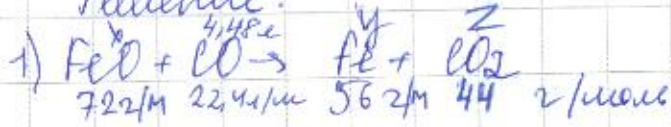
Дано:

$$m(\text{Fe}_3\text{O}_4) = 12,472$$

$$V(\text{CO}) = 4,48 \text{ л}$$

$$D(\text{H}_2) = 9 \text{ г/л}$$

Решение:



$$2) X = \frac{720 \text{ г} \cdot 4,48 \text{ л}}{22,4 \text{ л/моль}} = 14,42$$

$$n = 0,2 \text{ моль} \leftarrow$$

$$y = \frac{56 \text{ г} \cdot 4,48 \text{ л}}{22,4 \text{ л/моль}} = 11,22$$

$$n(\text{Fe}_3\text{O}_4) = \frac{12,472}{232 \text{ г/моль}} = 0,053 \text{ моль}$$

$$m(\text{CO}) = \frac{4,48 \text{ л}}{22,4 \text{ л/моль}} = 0,2 \text{ моль}$$

$$z = \frac{22,4 \text{ л/моль} \cdot 4,48 \text{ л}}{22,4 \text{ л/моль}} = 4,48 \text{ л}$$

$$n = 0,2 \text{ моль} \leftarrow$$

$$z = \frac{44 \text{ г/моль} \cdot 4,48 \text{ л}}{22,4 \text{ л/моль}} = 8,96$$

$$\eta = \frac{m_{\text{реакт}}}{m_{\text{исх}}} \cdot 100\%$$

$$3) \eta = \frac{m_{\text{реакт}}}{m_{\text{исх}}} \cdot 100\% \rightarrow \text{~~11,22~~}$$

Бағамше №3



3.3 $w(\text{CO}_2) = \frac{44}{100} \cdot 100\%$

$w(\text{CO}_2) = 68\%$

Бағамше №4

A - FeC

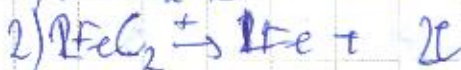
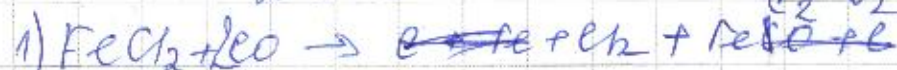
B - FeCl₂

B - Cl₂

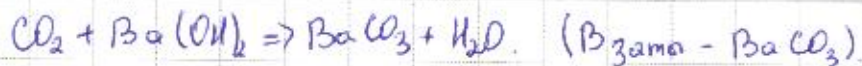
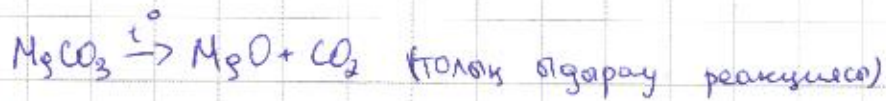
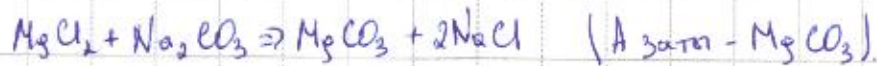
Г - FeH₂

$w = \frac{m}{M} \cdot 100\% = 45,65\% = \frac{x}{355+x} \cdot 100\%$

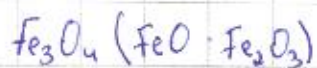
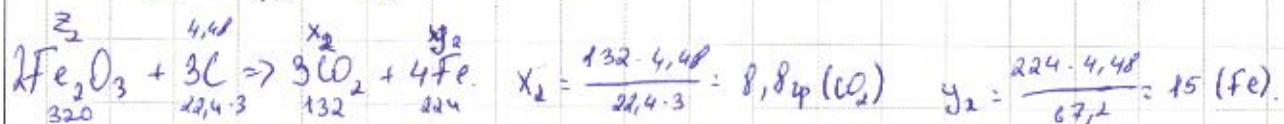
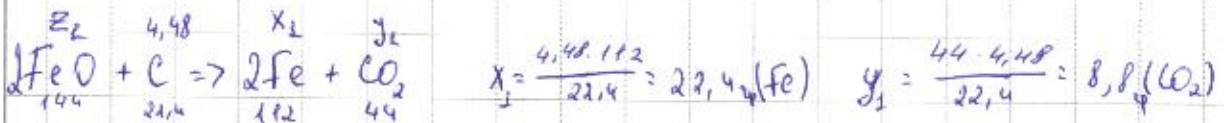
$x \approx 562$



N1



N2.



$$z_1 = \frac{144 \cdot 4,48}{22,4} = 28,8 \text{ (FeO)}$$

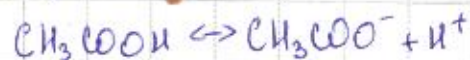
$$z_2 = \frac{320 \cdot 4,48}{3 \cdot 22,4} = 21,3 \text{ (Fe}_2O_3)$$

$$Fe_3O_4 = 50,1 \text{ г}$$

$$W = \frac{12,47}{50,1} \cdot 100\% \approx 25\%$$

N3

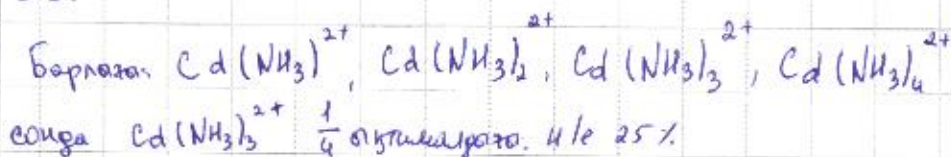
3.1



3.2

$$[H^+]_{pK_a} = 5 \cdot 10^{-6} \cdot 4,76 = 23,8 \cdot 10^{-6}$$

3.3.



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N4

A - $AlCl_3$

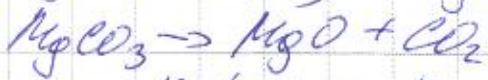
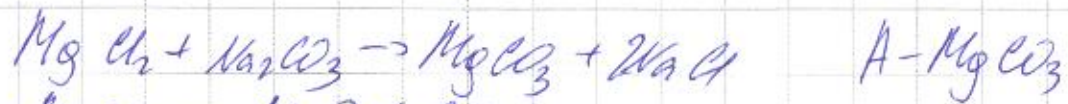
X - Al.

B - $AlCl_3$

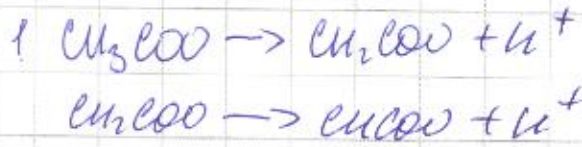
B - Cl_2

F -

Задача 1.

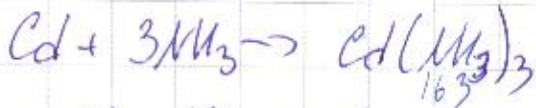


Задача 3



д.

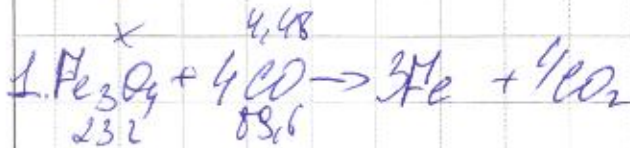
3. Cd - II период.



$$w_{\text{Cd}} = \frac{112}{163} = \frac{112}{163} \cdot 100\% = 68,71\%$$

$$w_{\text{Mg}} = \frac{51}{163} = \frac{51}{163} \cdot 100\% = 31,29\%$$

Задача 2



$$x = 11,6 \text{ г}$$

$$2) m(\text{не прореагир}) - 12,47 - 11,6 = 0,87 \text{ г} - \text{Fe}_3\text{O}_4$$

$$n = \frac{4,48}{89,6} = 0,05 \text{ моль} - \text{CO}$$

$$3) \eta = \frac{11,6}{12,47} \cdot 100\% = 93\%$$

$$4) c = \frac{n}{V} = \frac{0,05}{4,48} = 0,1 \text{ М}$$

Задача 4.



мезам X - Mn

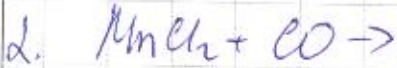
Б - $MnCl_2$



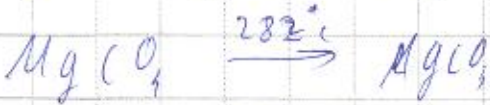
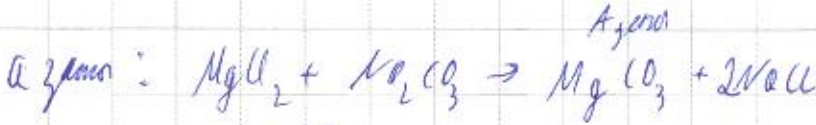
Б - Cl_2

$$x = 43,65\%$$

$$71 - 56,35 \quad x = 55. - Mn$$

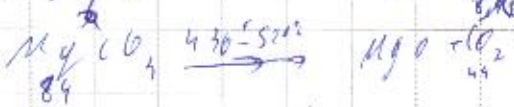
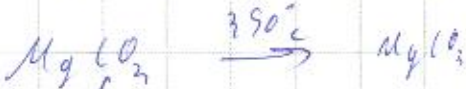


магний



$3,86 + 15,41 + 34,77 = 54,04\%$

санына кала: $100 - 54,04\% = 45,96\%$



$x = \frac{6 \cdot 44}{84} = 3,15$

$x = \frac{8,93 \cdot 84}{44} = 17,05$



$x = \frac{3,15 \cdot 141}{44} = 12,24$

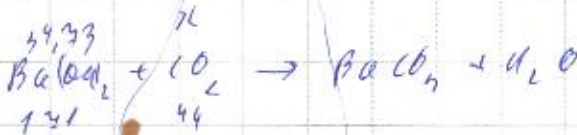


$171(x + 5,28) = 193x$

$171x + 902,88 = 193x$

$22x = 902,88$

$x = 39,33$



$x = \frac{39,33 - 44}{171} = 8,93$

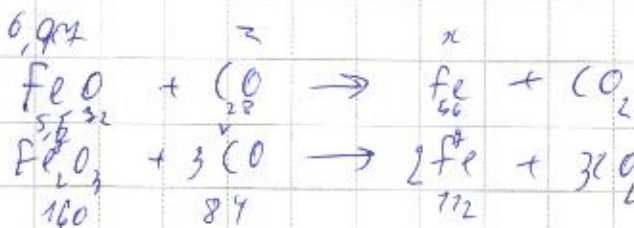
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Бер:

$m(\text{Fe}_2\text{O}_3) = 12,4\text{г}$

$v(\text{CO}) = 4,48\text{л}$

$D_{\text{H}_2\text{O}} = 21$



$x = \frac{6,9 \cdot 56}{72} = 5,41$
 $y = \frac{5,5 \cdot 112}{160} = 3,85$

9,96Fe

Бұрыдан қысылып қалғанын таппыңыз, ұат жасайтын бағысы?

$n(\text{CO}) = \frac{4,48}{22,4} = 0,2$

нүсұрә қылу үшін Мәселенің

$m(\text{FeO}) = 56 + 16 = 72$

$m(\text{Fe}_2\text{O}_3) = 56 \cdot 2 + 16 \cdot 3 = 160$

нүсұрә:

$n(\text{CO}) = \frac{6,9 \cdot 28 \cdot 2}{72} = 2,41$
 $v(\text{CO}) = \frac{5,5 \cdot 28}{160} = 2,89$

5,62CO

$\begin{cases} 72x + 160y = 12,4\text{г} \\ 7x + 3y = 0,2 \end{cases}$

$7x + 3y = 0,2 \quad | \cdot 7$

жәні тапқызыңыз

$\begin{cases} 72x + 160y = 12,4\text{г} \\ 49x + 21y = 1,4 \end{cases}$

қылып

$23x + 139y = 11,0$

$56y = 1,93$

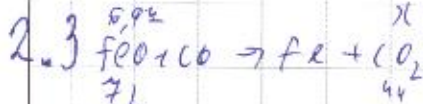
$y = \frac{1,93}{56} = 0,0345$

$m(\text{Fe}_2\text{O}_3) = 0,0345 \cdot 160 = 5,5$

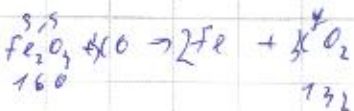
FeO қысылып табылуын берілген Fe₂O₃ мәліметімен Fe₂O₃ азғанын

$m(\text{FeO}) = 12,4\text{г} - 5,5 = 6,9\text{г}$

пропорция қылып қалғанын таппыңыз



$x = \frac{6,9 \cdot 56}{72} = 9,62$



$x = \frac{5,5 \cdot 112}{160} = 3,85$

$9,6 + 3,85 = 14,1$

$\eta = \frac{14,1}{41} \cdot 100\% = 21,36\%$

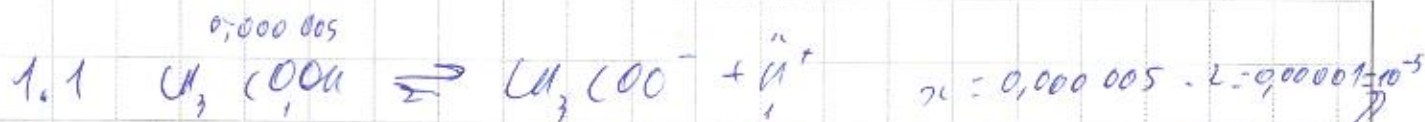
$M(\text{Fe}_2\text{O}_3) = 21 \cdot 2 = 42$

$K_{\text{min}} = \frac{C_{\text{нәтиже}}}{C_{\text{бастапқы}}}$

$n(\text{CO}_1) = \frac{5,6}{28} = 0,2$

$n(\text{CO}_2) = \frac{14,1}{44} = 0,32$

$K_{\text{min}} = \frac{0,32}{0,2} = 1,6 \checkmark$



$$K_b = \frac{[\text{CH}_3\text{COO}][\text{H}]}{[\text{CH}_3\text{COOH}]}$$

Осы реакцияның итін қатынастың пайызы $[\text{H}]$ обшарн формуланың қалдығы

4,76 = $\frac{[\text{CH}_3\text{COO}][\text{H}]}{5 \cdot 10^{-6}}$ ← формулага саламыз
← белгілер енгізіп беріміз мәлім.

Белгілерді x деп аламыз,

$$4,76 = \frac{x \cdot x}{5 \cdot 10^{-6}} \text{ сонда:}$$

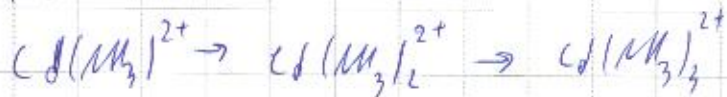
$$x^2 = 2,38 \cdot 10^{-5}$$

$$x = \sqrt{2,38 \cdot 10^{-5}} = 4,88 \cdot 10^{-3}$$

$$\text{pH} = -\lg[\text{H}^+] \quad \text{pH} = -\lg 10^{-5}$$

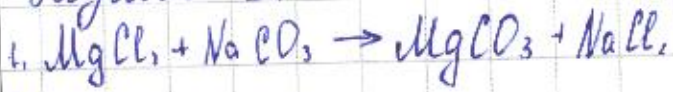
$$\text{pH} = -\lg 10^{-5} = 5 \quad \text{сонда пухтi: } 5$$

3.3:



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Задача 1.



2.

Задача 2

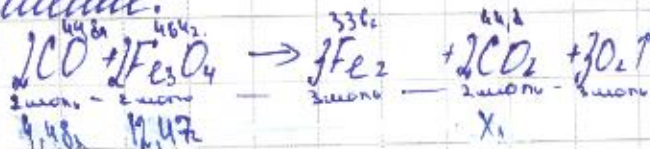
Дано:

$$m \text{Fe}_3\text{O}_4 = 12,472$$

$$V \text{CO} = 4,48 \text{ л (н.у.)}$$

$$w = ?$$

Решение:



$$x = 4,48 \text{ (CO)}$$

$$12,47$$

$$K_{\text{Dox}} = 1000$$

$$M(\text{Fe}_3\text{O}_4) = 56 \cdot 3 + 16 \cdot 4 =$$

$$168 + 64 = 232 \text{ г/моль}$$

$$w = \frac{m(X)_{\text{век}}}{m(X)_{\text{исх}}} \cdot 100\% = \frac{12,472}{336} \cdot 100\% = 3,71\%$$

Задача 3

CH_3COOH - күреке кшшота



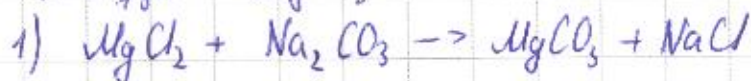
$$1. \text{CH}_3\text{COOH} \quad 5 \cdot 10^{-6} \text{ M}$$

$$K_b [\text{HA}], \quad pK_a = 4,76.$$

Задача 4.

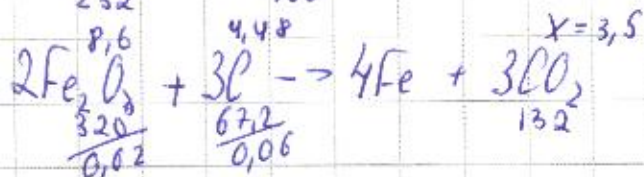
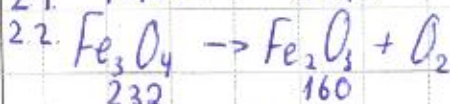
№1 Спортшы магнезия

А мұзға - $MgCO_3$



№2. Темір оксидімен зертханалық тәжірибе

2.1. $12,472 \quad x=8,6$



$$M = \frac{x}{H_2} = 21 \cdot \frac{x}{2} = 42$$

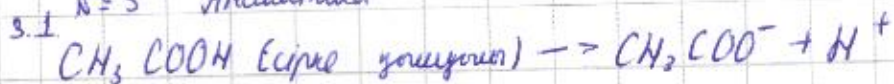
2.3.

$$\frac{m(X)_{\text{реакт}}}{m(X)_{\text{полн}}} \cdot 100\% = \frac{8,6}{12,47} \cdot 100\% = 69\%$$

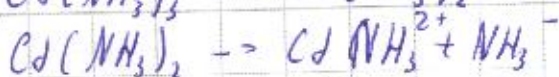
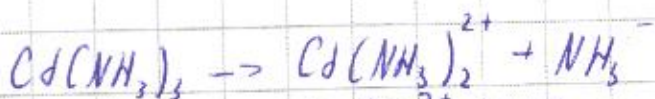
2.4.

$$K = \frac{[A] \cdot [B]}{[C] \cdot [D]}$$

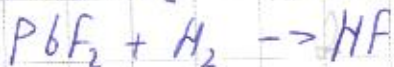
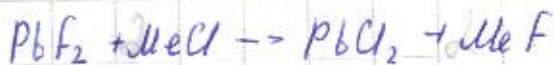
№3 Аналитика



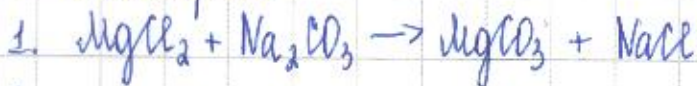
3.3



№4. Сөз бүлкіл ауыспаса?



1- тапсырма



А тұзы - MgCl_2
В заты -

2.

3.

4.

2- тапсырма

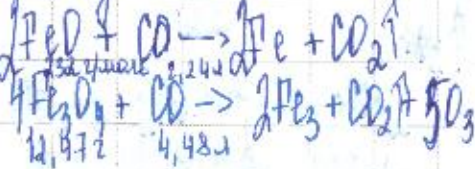
Берілгені:

$$m(\text{Fe}_3\text{O}_4) = 12,472$$

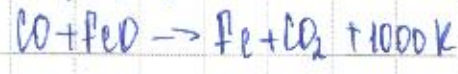
$$m(\text{CO}) = 4,481 \quad Q = 1000$$

$$w = ?$$

Шешуі:



$$M_r(\text{Fe}_3\text{O}_4) = 56 \cdot 3 + 16 \cdot 4 = 232 \text{ г/моль}$$



$$w = \frac{m(x)_{\text{ннн}}}{m(x)_{\text{сх}}} \cdot 100\%$$

$$w = \frac{12,472}{232} = 0,05 \cdot 100\% = 5$$

3- тапсырма.

Берілгені:

CH_3COOH - қышқыл

CH_3COO^- - сабақтамас негізі

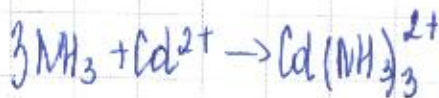
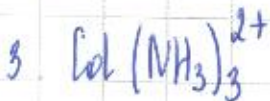


2. $\text{CH}_3\text{COOH} = 5 \cdot 10^{-6} \text{ M}$ ацетат ион.

$[\text{HA}] \text{ pK}_a = 4,76$.

Табу керек: pH, Kb.

Шешуі:



4- тапсырма

12.1.1

13.1 міндеті



$$2.2 \quad n(\text{Fe}_3\text{O}_4) = \frac{13.41}{232} = 0,05375 \text{ моль}$$

$$\cdot \quad n(\text{Fe}) = 0,05375 \cdot 6 \cdot 56 = 9,032$$

$$n(\text{CO}_2) = 0,05375 \cdot 2 \cdot 44 = 4,73$$

$$n(\text{O}_2) = 0,05375 \cdot 2 = 7,721$$

$$n(\text{CO}) = (0,2 - 0,05375 \cdot 2) = 21 = 2,542$$

Берілгені

$$m(\text{Fe}_3\text{O}_4) = 13,41$$

$$v(\text{CO}) = 4487$$

$$V_{\text{CO}_2} = 21$$

2.3

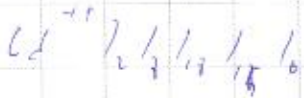
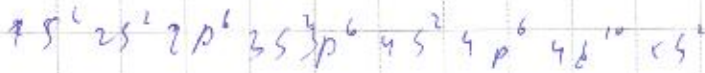
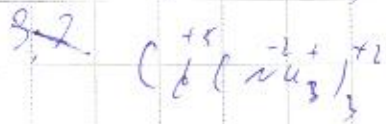
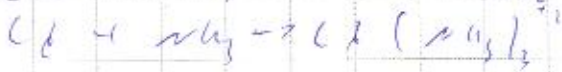
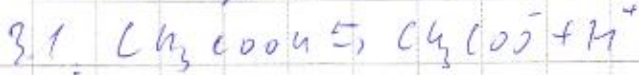
$$\eta = \frac{15.41}{13.02} \cdot 100 = 85,7$$

2.4.

$$K = [\text{Fe}_3\text{O}_4] + [\text{CO}] = 3[\text{Fe}] + 2[\text{CO}_2] + [\text{O}_2]$$

$$K = (56 \cdot 3) / (44 \cdot 2) = 1,905$$

3 минерал



3.2.

$\log_{10} (5 \cdot 10^{-6}) = 6,0$

$pH = 6,0$ $\text{CH}_3\text{COOH} - \text{мың қышқыл}$

Қысқашы

1) Берілгені

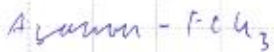
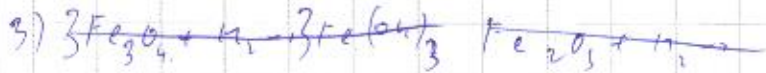
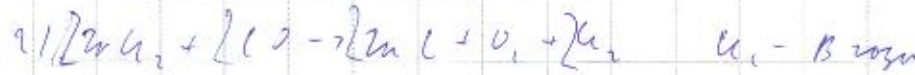
Меншігі



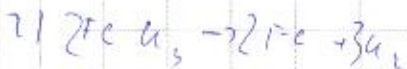
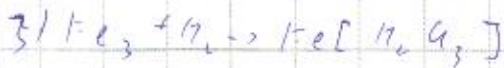
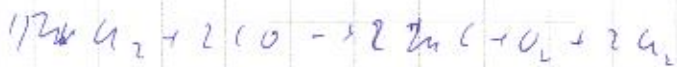
$\omega(Fe) = 43,65\%$

$\frac{71}{93,65} = \frac{x}{56,35}$

$x = \frac{27 \cdot 56,35}{93,65} = 16,1 \text{ Fe} \text{ зертт.} = 2x$



7.2



Қатысушының шешімдерін толтыруға арналған өріс / Поле для заполнения решений участника Парақ / Страница № 4

21 мемлекеттік
қорық

№ (А) - 142

100000

ДАНО:

$$m(\text{Fe}_3\text{O}_4) = 12,472$$

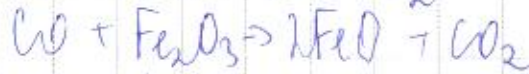
$$V(\text{CO}) = 4,48 \text{ л}$$

2.

Решение:



Танша сарабермбер
уравнения в раздмеленн
CO + FeO → Fe + CO₂ Қызм



$$2) D = \frac{x}{M_{\text{Fe}_2\text{O}_3}}, \quad d1 = \frac{x}{2}, \quad x = 422 \text{ г/моль.}$$

қажо - CO₂ н CO (снманон)

$$n(\text{Fe}_3\text{O}_4) = \frac{12,472}{232} = 0,05 \text{ моль - шжрлмман}$$

$$n(\text{CO}) = \frac{4,48}{28,4} = 0,2 \text{ моль}$$

$$n(\text{CO}_2) = 0,1 \text{ моль} \Rightarrow V(\text{CO}_2) = 2,24 \text{ л}$$

V(CO) - шжрлмман:

$$V(\text{CO}) = 0,1 \cdot 22,4 = 2,24 \text{ л}$$

$$V_{\text{снм.}}(\text{CO}) = 4,48 - 2,24 = 2,24 \text{ л}$$

шжрлмман: $m(\text{Fe}_3\text{O}_4) = 12,472$

$$m(\text{CO})_{\text{шжрлмман}} = 0,1 \cdot 28 = 2,82$$

$$m(\text{CO})_{\text{снманон}} = 5,6 - 2,8 = 2,82$$

$$m(\text{CO}_2) = 0,1 \cdot 44 = 4,42$$

$$m(\text{Fe}) = 0,05 \cdot 56 = 2,82$$

$$m(\text{FeO}) = 0,1 \cdot 72 = 7,22$$

3) шжрлмман шжрлмман шжрлмман шжрлмман

жағдай пайым қалыптасуына
маму

дәлел зерттеу:

$$21 = \frac{x}{2} \quad \left(Q = \frac{M}{M_0} \right), \quad M(\text{смен}) = 42 \text{ г/маму}$$

Омисоға сымтанысама мамму:

$$\begin{cases} 28x + 44y = 42 \\ x + y = 1 \end{cases}$$

$$x = 1 - y$$

$$28(1 - y) + 44y = 42$$

$$28 - 28y + 44y = 42$$

$$y = 0,975$$

$$x = 0,125$$

$$\%(\text{CO}) = 0,125$$

$$M(\text{CO}) = 3,5$$

$$3,5 - 42$$

$$x = 22,9$$

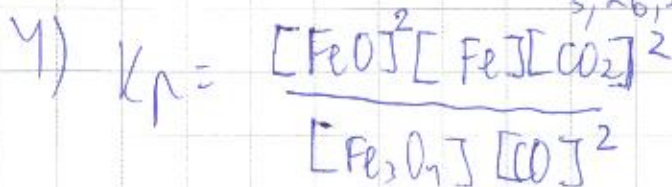
$$V(\text{CO}) = 1,87 \text{ л}$$

$$m = 2,3375 \text{ г}$$

$$m(\text{CO})_{\text{м}} = 5,6 - 2,3375 = 3,2625 \text{ г}$$

$$\rho = 2,3375$$

$$\frac{3,2625 \text{ г}}{3,2625} \cdot 100 = 85,8\%$$



4.

ДАНО:

A - x. примитив

B - Me ал, 43,65%

B - газ

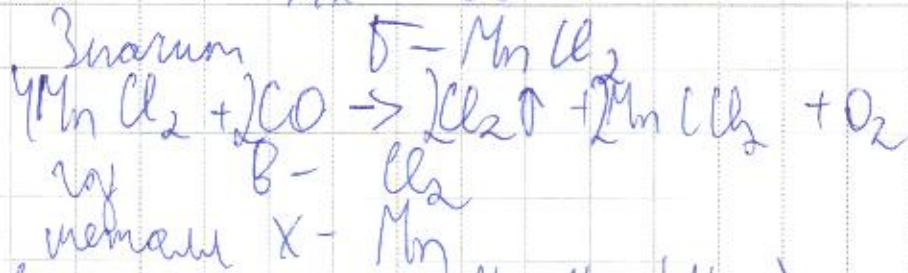
$$m(A) = 15,162$$

РЕШЕНИЕ:

суда по мамму, это
 $w(\text{Me}) = 43,65\%$

$$w = \frac{M_x \cdot \text{Cl}_y}{M_x + 35,5y}$$

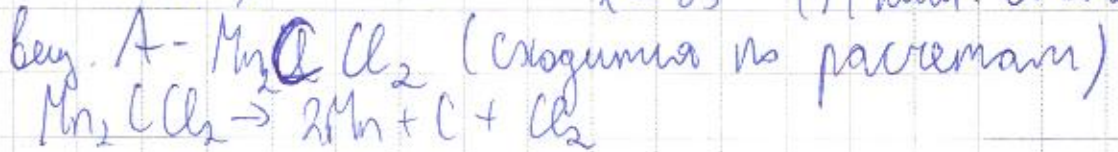
Решение путем подбора и вычисления
на $M_x = 55$



• Так как связь X-X, знаком Mn-Mn (Mn_2) и или
 рассмотрим вещество A (Mn_2 ким. ом) 15,6 и образует
 4,4 металла Mn_2 , то:

$$\frac{15,6}{110+x} = \frac{4,4}{55} \Rightarrow 374 = 4,4x$$

$$x = 85 - (\text{M ким. остаток})$$



ДАНО:

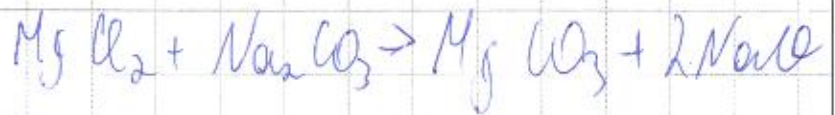
$m(\text{навески}) = 142$
 соль A ↑

$\Delta m(\text{навески}) = 5,282$

1.

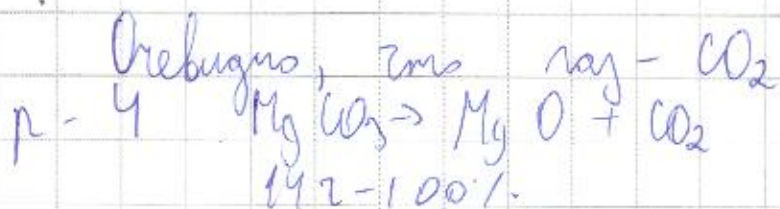
РЕШЕНИЕ:

Судя по условиям задачи,
 можно составить уравнение



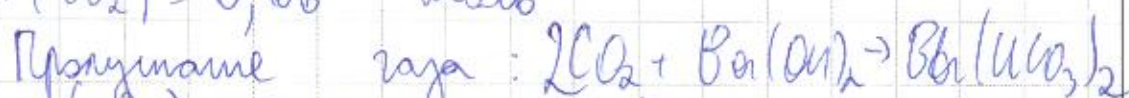
Далее, судя по задаче

m MgCO_3 , t $m(\text{MgCO}_3) = 142$.
 282°C 350°C Вейг. А. $430^\circ - 520^\circ\text{C}$
 $15,41\%$ $3,86\%$ $37,77\%$
 $\text{газ} \uparrow$



$X = 37,77\%$, $m \text{ преог.} = 5,28782$.
 $n(\text{MgCO}_3) = \frac{5,2878}{84} = 0,06 \text{ моль}$

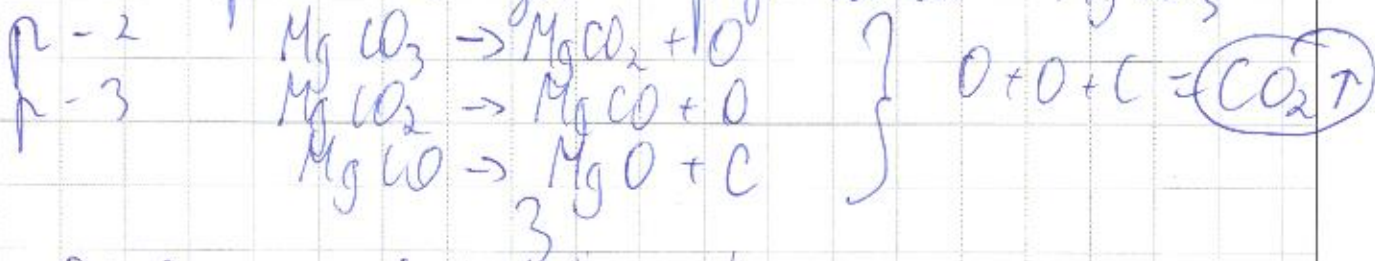
$n(\text{CO}_2) = 0,06 \text{ моль}$



$m(\text{CO}_2) = 0,06 \cdot 44 = 5,282$

Отверстиям соответствующим реакциям. \downarrow вещество В.

• Три стадии разложения MgCO_3



№2

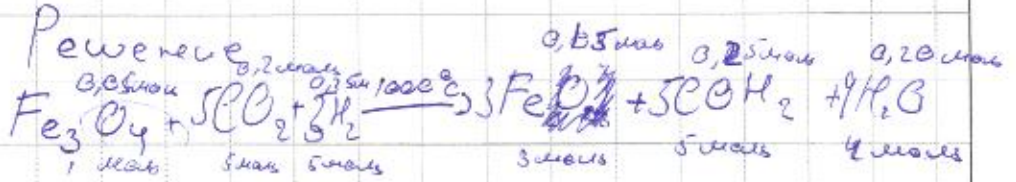
Дане:

$$m(\text{Fe}_3\text{O}_4) = 12,472$$

$$V(\text{CO}_2) = 4,48 \text{ л}$$

$$D_{\text{H}_2} = 29$$

Көрсету:



$$n(\text{Fe}_3\text{O}_4) = \frac{12,47}{232} = 0,0537 \text{ моль}$$

$$n(\text{CO}_2) \frac{V}{V_m} = \frac{4,48}{22,4} = 0,2 \text{ моль}$$

$$m(\text{CO}_2) = n \cdot V_m = 0,2 \cdot 22,4 = 4,48 \text{ г}$$

$$m(\text{H}_2) = n \cdot M = 0,25 \cdot 2 = 0,5 \text{ г}$$

$$m(\text{FeO}) = n \cdot M = 0,15 \cdot 72 = 10,8 \text{ г}$$

$$m(\text{COH}_2) = n \cdot M = 0,25 \cdot 30 = 7,5 \text{ г}$$

$$m(\text{H}_2\text{O}) = n \cdot M = 0,20 \cdot 18 = 3,6 \text{ г}$$

$$\omega_{\text{теор}} = \frac{16,95}{10,8} \cdot 100 = 156,92 \%$$

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№3

3.1



3.2 —

3.3 —

№4

4.1 —

№4

4.1 —

4.2 —