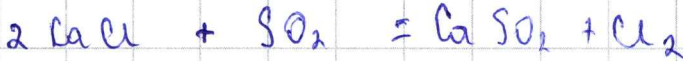


4- тапсырма

н.1



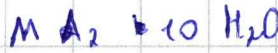
реакциялар тек



1- тапсырма

1.1

1.2



$$M = 505,45 \text{ г/мол}$$

$$M_{H_2O} = 3 \cdot 18 = 54 \text{ г/мол}$$

25°C темп-ға 100г суға 55,2 г

10°C темп-ға 100г суға 29,3 г

$$\frac{25 \cdot 100}{10 \cdot 400} = 2,5$$

$$\frac{55,2}{29,3} \cdot 100\% = 188,3$$

$$\frac{55,2}{29,3} = 1,88$$

$$\frac{10 H_2O}{505,45} =$$

бастапқы ерітіндіні алу үшін 10 H<sub>2</sub>O қосса

$$= \frac{180}{505,45} = 0,35$$

2- тапсырма

$$V_1 = 15,93$$

$$m = 2,72$$

$$V_2 = 2,576$$

$$\rho = 12/мл$$

$$\frac{15,93 \cdot 2,576}{27} = 1,5$$

$$2) \rho = \frac{m}{V} = \frac{21}{234} = 0,9$$

1) қоспаға қосуды тек ісін бағары,  
көме ауа әрі қоспаға бағары.

3- тапсырма

п - (C<sub>8</sub>H<sub>14</sub>) 8,28 г 40 г қоспа

н (C<sub>8</sub>H<sub>18</sub>) 4200 қоспа/мол 5500 қоспа

$$\rho = \frac{m}{M_m} = \frac{80}{114} = 0,75$$

$$\frac{5500}{401} = 13,7$$

$$\frac{8,28}{22,4} = 0,30$$

$$\cdot 0,75 = 0,225$$

$$\frac{4200}{22,4} = 187,5$$

$$\frac{841}{22,4} = 3,75$$

$$\frac{67,5}{3,75} \cdot 0,75 = 13,5$$

№ 1.

1.1. X заттың: Пруссия көгі -  $Fe_4[Fe(CN)_6]_3$  - (темірдің гексацианоферраты)

Y заттың:  $K[Fe(CN)]$

A заттың:  $FeCl_2$

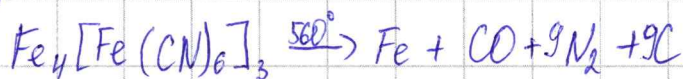
B заттың:  $H_2$

C заттың:  $PH_3$  - өте токсинді, отқа қауіпті

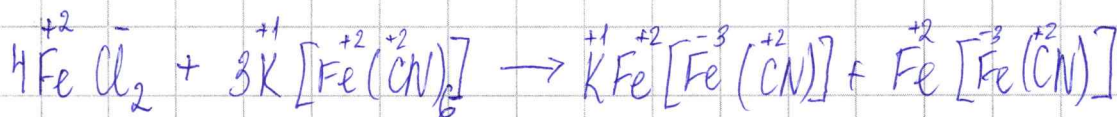
E заттың: цинкпен қызғын  $KCN$

D заттың:  $P_2O_3$  - қара көмір.

1.2.

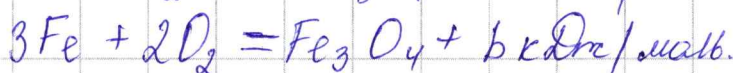
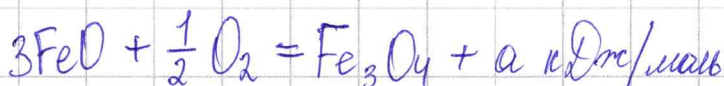


1.3.



№ 2.

2.1.



$$m(FeO) = \frac{m}{M} = \frac{24 \text{ г}}{72 \frac{\text{г}}{\text{моль}}} \approx 0,33 \text{ г}$$

$$Q_{(FeO)} = \frac{33,55 \text{ кДж}}{0,33 \text{ г}} = 101,66 \text{ кДж/моль}$$

$$m(Fe) = \frac{m}{M} = \frac{112 \text{ г}}{56 \frac{\text{г}}{\text{моль}}} \approx 0,2 \text{ г}$$

$$Q(Fe) = \frac{74,91 \text{ кДж}}{0,2 \text{ г}} = 374,55 \text{ кДж/моль}$$

$$\Delta H^{\circ}_{\text{реак.}} = 3 \cdot \Delta H^{\circ}_{FeO} + \Delta H^{\circ}_{O_2}$$

$$\Delta H^{\circ}_{Fe} + 2 \cdot \Delta H^{\circ}_{O_2} = \Delta H^{\circ}_{FeO}$$

№ 3.

3.1. А затта:  $H_2$  - сутегі

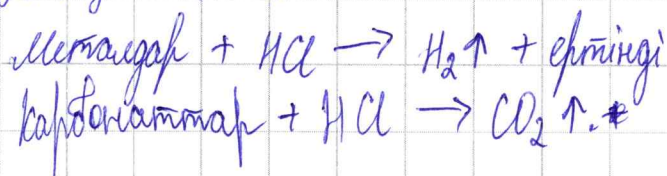
В затта:  $CO_2$  - көмірқышқыл газы

Г затта:  $Fe_2O_3$

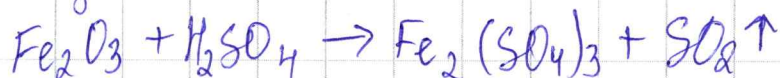
Б затта:  $SO_2$

3.2.

Реакция 1 және 2:



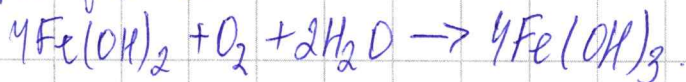
Реакция 3:



Реакция 4 және 5:



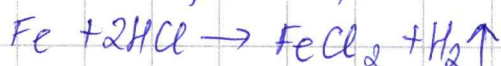
Реакция 6:



3.3.  $m_{\text{металдар}} = 469,6 \text{ г} - 464 \text{ г} = 45,6 \text{ г}$

$$n(CO_2) = \frac{V}{V_{г.н}} = \frac{16,8}{22,4} = 0,75 \text{ моль}$$

$$a) n(H_2) = \frac{V}{V_{г.н}} = \frac{1}{22,4} \approx 0,0446 \text{ моль}$$



$$n(Fe) = n(H_2) = 0,0446 \text{ моль}$$

$$m(Fe) = n \cdot M = 0,0446 \cdot 55,85 = 2,49 \text{ г}$$



$$n(MCO_3) = n(CO_2) = 0,75 \text{ моль}$$

$$m(MCO_3) = n \cdot M = 0,75 \cdot 123,5 = 92,6 \text{ г}$$

$$m(M) = 92,6 \cdot \frac{63,5}{123,5} \approx 47,6 \text{ г}$$

$$m_{Fe+M} = 2,49 + 47,6 = 50,09 \text{ г}$$

3.3. нәтижесі:

$$w(\text{Fe}) = \frac{m(\text{Fe})}{m_{\text{металл}}} \cdot 100\% = \frac{2,49}{45,6} \cdot 100\% = 5,46\%$$

$$w(\text{Cu}) = \frac{m(\text{Cu})}{m_{\text{металл}}} \cdot 100\% = \frac{47,6}{45,6} \cdot 100\% = 104,4\%$$

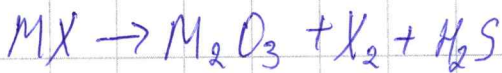
№ 4

4.1.

$r_1$  - сүйері ( $\text{H}_2\text{S}$ )

$$M(r_1) = 23 \cdot 2 = 46 \text{ г/моль } (\text{H}_2\text{S})$$

$$V = n \cdot V_{\text{г.н}} \Rightarrow V = \frac{m \cdot V_{\text{г.н}}}{M} = \frac{2,7 \cdot 22,4}{34} = \frac{60,48}{34} = 1,7788 \text{ л.}$$



$$m(\text{түзі}) = 4,1 \text{ г}$$

$$m(\text{M}_2\text{O}_3) = 1,4 \text{ г}$$

$$4,1 \text{ г} - 1,4 \text{ г} = 2,7 \text{ г}$$

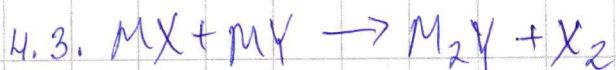
4.2.

$$\text{Газ 1} = 2 (\text{CO}_2)$$

$$\text{Газ 2} = 1 (\text{SO}_2)$$

$$\text{Газ 3} = 1 (\text{H}_2\text{O})$$

$$M_{\text{орт}} = \frac{2m_1 + m_2 + m_3}{2+1+1}$$



$$\text{түзі 3} = \text{CaCO}_3$$

4.4.

$$m = \frac{K_{sp}}{V} = \frac{4,65 \cdot 10^{-9}}{10} = 4,65 \cdot 10^{-10} \text{ г}$$

$$K_{sp} = 4,65 \cdot 10^{-9} \quad V = 10 \mu$$

4.5.

$$P = 1 \text{ атм}$$

$$\Gamma_1 = \Gamma_2$$

$$\eta = 15\%$$

$$\text{const} = ?$$

1-маршрул

Берілгені:

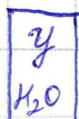
B-түссіз, қарапайым газ

X-көк зат

C-қатты жасылменшігісі бар өте

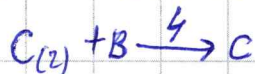
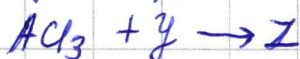
Y-сары тұз

токсикді және отқа қауіпті



D-қара карбон кристалдары  $w(C)=6,6\%$

E-ұлы тұз



п.1.1 X-

A-

C-

E-

Y-

B-

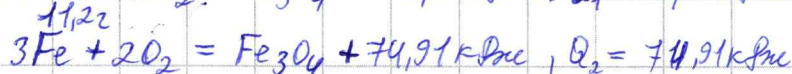
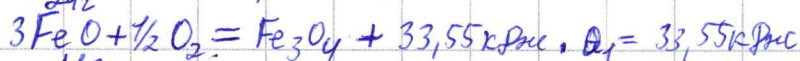
D-

п.1.2



п.1.3 Z-

2-маршрул Берілгені:



$$\Delta H^\circ = \sum \Delta H^\circ_{\text{өнім}} - \sum \Delta H^\circ_{\text{реагент}} \quad \Delta H_1^\circ = \Delta H_1 + \Delta H_2$$

$$Q = -\Delta H$$

$$\Delta H_1 = \Delta H_1^\circ - \Delta H_2$$

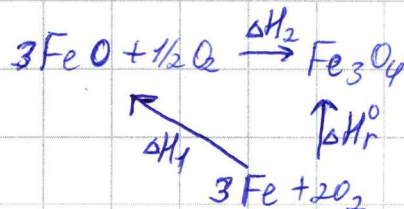
$$\Delta H_2 = -33550 \text{ Дж}$$

$$\Delta H_1^\circ = -74910 \text{ Дж}$$

$$\Delta H_1 = 3 \cdot (-74910) - (3 \cdot (-33550)) = -224730 + 100650 = -124080 \text{ Дж}$$

$$\text{жауабы: } \Delta H_1 = -124,08 \text{ кДж}$$

$$= -124,08 \text{ кДж}$$



3-маңсұрлық

Берілгені:

Медаль - X

461,62



п 3,1 А -

В -

Б -

Г -

п 3,2 1)

4)

2)

5)

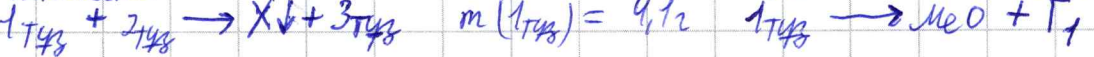
3)

6)

п 3,3

4-маңсұрлық

Берілгені:



$$D_{H_2}(\Gamma_1) = \frac{M(\Gamma_1)}{M(H_2)} = \frac{M(\Gamma_1)}{2 \text{ г/моль}} = 23 \Rightarrow M(\Gamma_1) = 2 \text{ г/моль} \cdot 23 = 46 \text{ г/моль}(\Gamma_1)$$

$M(\Gamma_1) = 46 \text{ г/моль}$

п 4,1  $1T_{43}$  -

~~(V)~~ V = ?

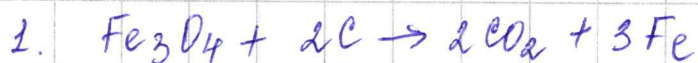
п 4,2  $2T_{43}$  -

### 1.1. Талқылау



A заттар -  $\text{MgCO}_3$  B-қиматты  $\text{BaCO}_3$ .

### 2.1. Талқылау.



$$D(\text{H}_2) = 2 \cdot 1 \cdot 2 = 42 \text{ г/моль} \quad m(\text{Fe}_3\text{O}_4) = 12,47 \text{ г}$$

$$K_{\text{ГТ}} = \frac{[\text{CO}_2]^2}{[\text{Fe}_3\text{O}_4]}$$

### 3. Талқылау



### 4. Талқылау

X заттар -  $\text{MgCl}_2$  (көшірмесі тотықтар реакциялер арқылы берілген)