

ПИСЬМЕННАЯ РАБОТА

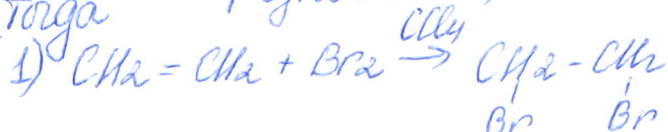
ШИФР

(заполняется секретарём)

Задание №1

Т.к. $D(H_2) = 14 \Rightarrow M(CO) = 28$ г/моль

Можно предположить, что этими газами могут быть C_2H_4 , CO , N_2 , тогда



Значит, А - C_2H_4 , В - CO , С - N_2

В реакции (2): $m(CuO) = 16$ г, $D(CuO) = \frac{16}{80} = 0,2$ (моль) $\Rightarrow D(CO) = 0,1$ моль
 $m(CO) = 28$ (г.)

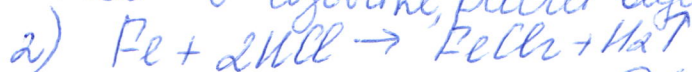
Задача №2



$$1. C = \frac{D}{V} \Rightarrow D(HCl) = 1 \text{ моль}$$

$$2. D(Fe_3O_4) = \frac{2314}{164 + 56 \cdot 3} = 0,1 \text{ (моль)} \Rightarrow D(HCl) = 0,8 \text{ моль} \Rightarrow D(HCl) = 0,2 \text{ моль}$$

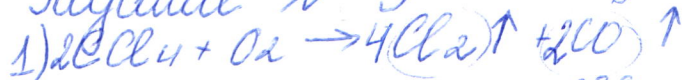
$\Rightarrow HCl$ в избытке, расчёт ведем по недостатку $D(HCl) = 0,2$ моль



$$1. D(HCl) = 0,2 \text{ моль} \Rightarrow D(Fe) = 0,1 \text{ моль} \Rightarrow \Delta m(Fe) = 15 - 0,1 \cdot 56 = 9,4 \text{ (г.)}$$

Ответ: 9,4 г.

Задание №3



5) осталась CO

Х: CCl_4

А: Cl_2

Б: CO

В: HCl

Код решения

1. Т.к. в результате реакции остался газ с $\rho = 1,25$ г/л $\Rightarrow M_{газа} = 28$ г/моль

Значит, это может быть CO , N_2 , NO

2. Т.к. $pH = 1$ в реакции (2) $\Rightarrow$ среда кислотная

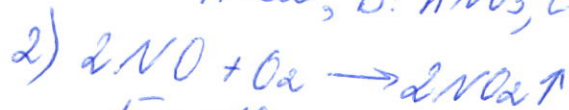
3. В ходе реакции 3 получен белый осадок $\Rightarrow$ скорее всего, это AgCl . Значит, в-во X содержало в себе хлор.
 4. Т.к. в реакции (4) было получено одно раств-е в-во, значит, реагирующим газом был CO . $\Rightarrow$ в-во X содержало в себе C.

Ответ: вещество X - CCl_4

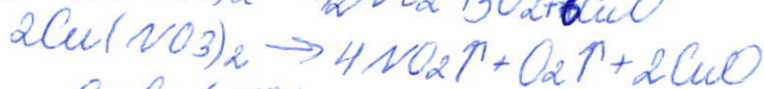
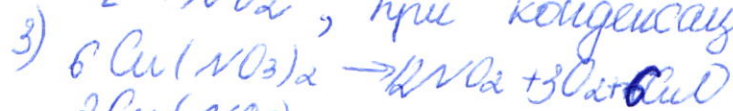
Задание №4



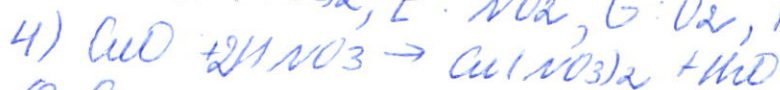
Т.к. $D(\text{H}_2) = 15 \Rightarrow M_{\text{газа}} = 30 \text{ г/моль}$,
 что соответствует NO (т.к. далее образ-ся бурый газ NO_2)
 А: Cu , В: HNO_3 , С: $\text{Cu}(\text{NO}_3)_2$, D: NO



Е: NO_2 , при конденсации образует В.



С: $\text{Cu}(\text{NO}_3)_2$, Е: NO_2 , G: O_2 , H: CuO



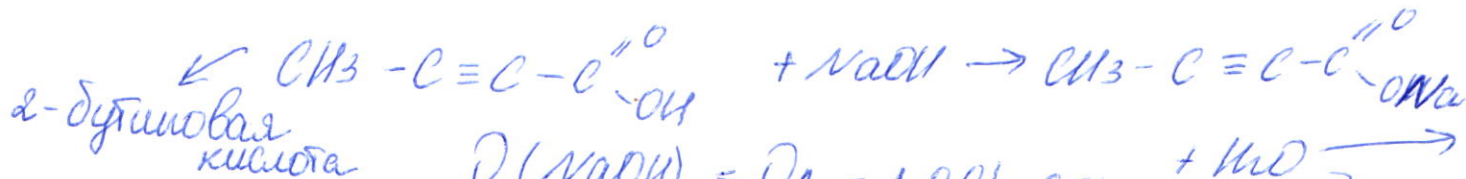
Ответ: А: Cu , В: HNO_3 , С: $\text{Cu}(\text{NO}_3)_2$, D: NO , Е: NO_2 , G: O_2 , H: CuO

Задание №6

Пусть $\text{C}_x\text{H}_y\text{O}_z$ - формула вещества А и его масса = 100г,
 тогда $x:y:z = \frac{m(\text{C})}{M(\text{C})} : \frac{m(\text{H})}{M(\text{H})} : \frac{m(\text{O})}{M(\text{O})} = \frac{57,14}{12} : \frac{4,76}{1} : \frac{8,10}{16} =$

$= 2:2:1$
 За Значит, можем представить в-во А, как $\text{C}_2\text{H}_2\text{O}$

Допустим, $n=2$, тогда



$D(\text{NaOH}) = D_A = 1,01 = 1,01 \text{ (моль)} \Rightarrow$
 $\Rightarrow M_A = \frac{84}{1,01} = 84 \text{ (г/моль)}$

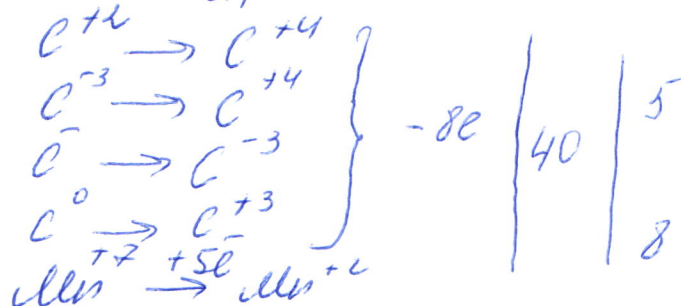
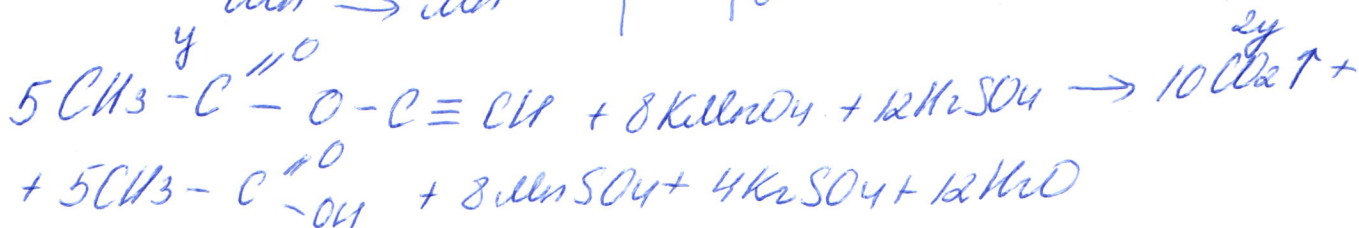
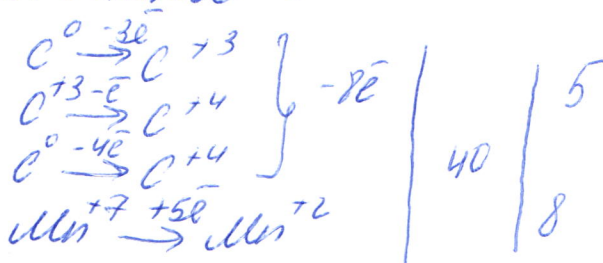
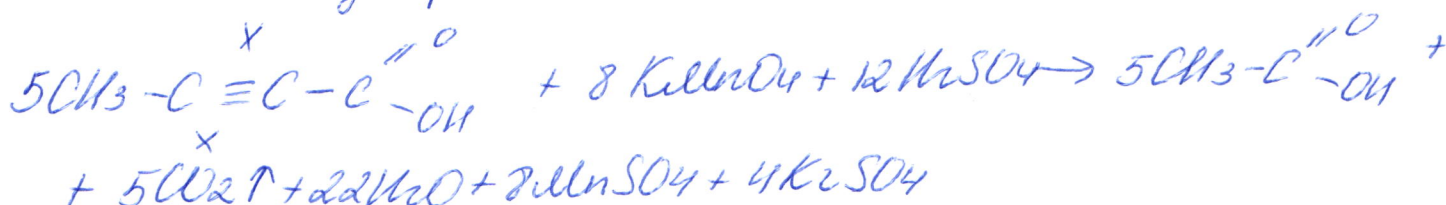
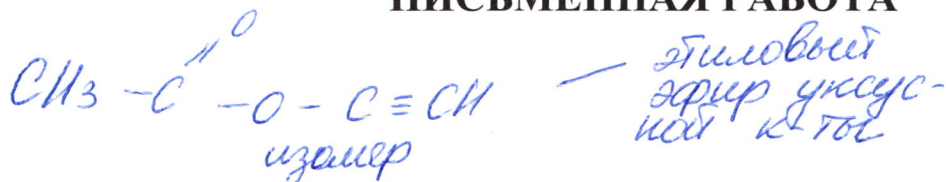
$24n + 4n + 16n = 84$

$n=2 \Rightarrow$ наше предположение верно $\text{C}_4\text{H}_4\text{O}_2$ - исконое в-во.

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(заполняется секретарём)



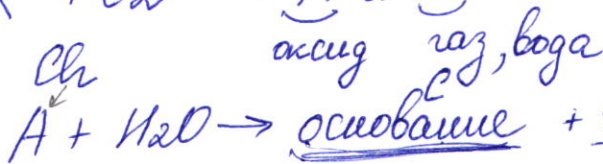
Пусть Ок-тое = x, Эдифа = y, тогда

$$x + y = \frac{42}{84} = 0,05 \text{ (моль)}$$

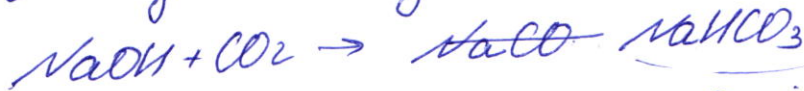
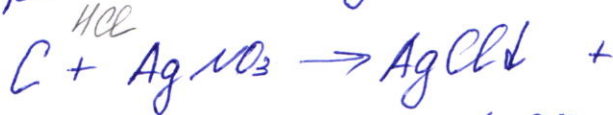
Тогда Эдифа = x + 2y



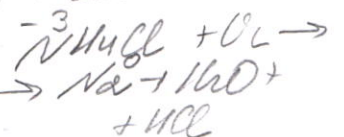
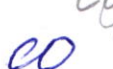
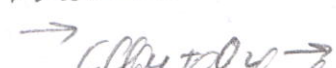
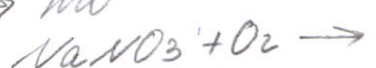
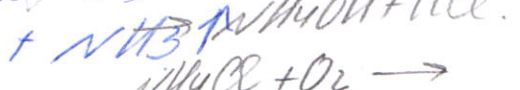
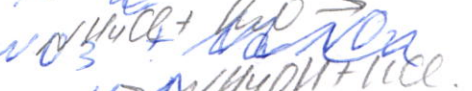
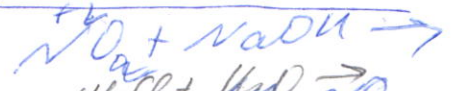
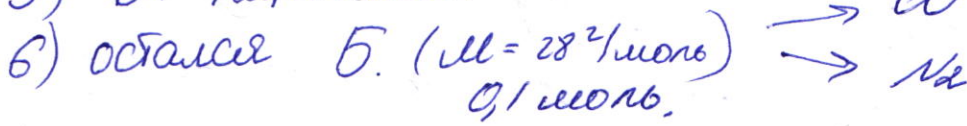
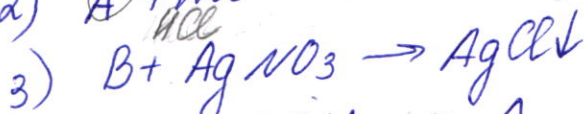
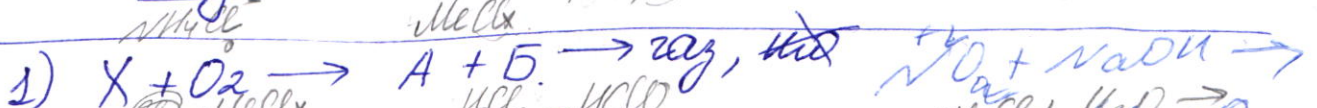
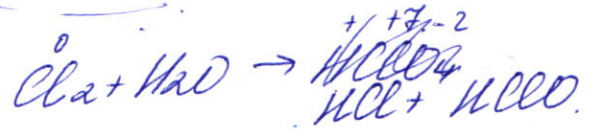
Вещество С
содержит
хлор.



$pH=1 \Rightarrow$ среда кислая.



газ - CO.



28^{г/моль}.

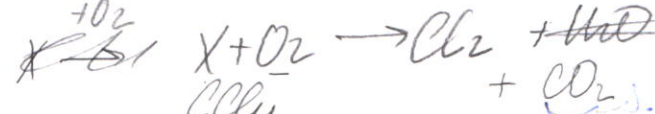
CO, Na, Ca

NaOH

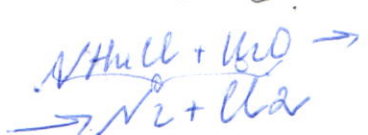
CH₄, C₂H₄, CH₂=CH₂

CO.

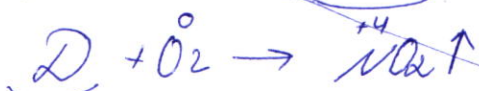
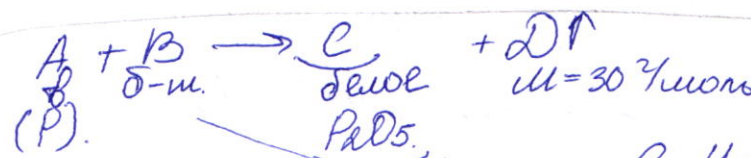
Na₂Cl, CaCl₂



NO₂

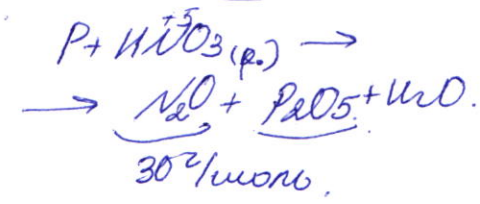
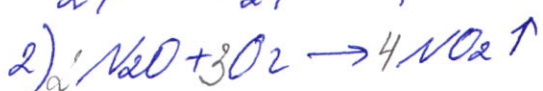
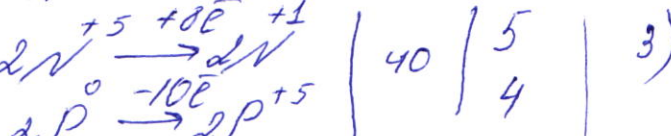
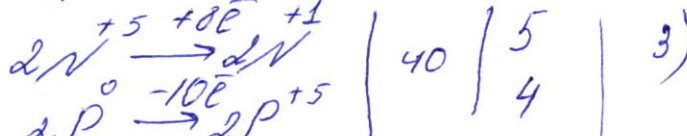


NO



CaH₂

NO₂

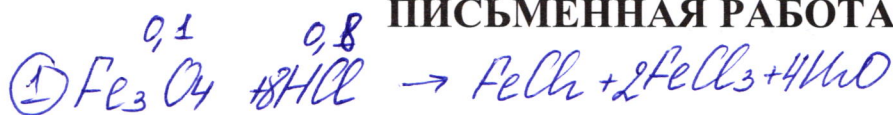


30^{г/моль}.

ПИСЬМЕННАЯ РАБОТА

ШИФР

(заполняется секретарём)



$$1) c = \frac{Q}{V} \Rightarrow Q = 1 \text{ моль}$$

$$2) Q(\text{Fe}_3\text{O}_4) = \frac{2314}{16 \cdot 4 + 56 \cdot 3} = \frac{2314}{64 + 168} = \frac{2314}{232} = 0,1 \text{ (моль)}$$

Значит, HCl в изд-ке.

$$m_{\text{р-ра}}(\text{HCl}) = 1040 \text{ г.}$$

$$w(\text{HCl}) = \frac{104 \cdot 36,5}{1040} = 0,4 \cdot \frac{36,5}{1040} = 3,5\% \Rightarrow$$

$\Rightarrow$ к-та не концен-я.



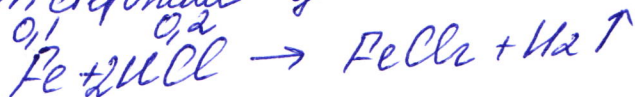
$$\Delta n_{\text{HCl}} = 0,2 \text{ моль.}$$

$$Q(\text{Fe}) = \frac{15}{56} = 0,27 \text{ (моль)}$$



$\Rightarrow$ Fe в изд-ке.

масса уменьшилась на

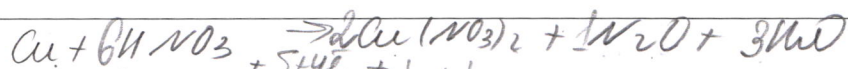


$$\Delta m(\text{Fe}) = 15 - 0,1 \cdot 56 = 9,4 \text{ (г.)}$$



В р-ре осталось: ~~HCl~~, FeCl_2 , FeCl_3 , Fe, H_2O .

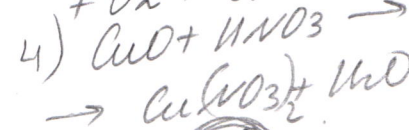
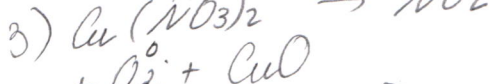
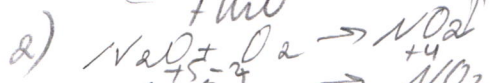
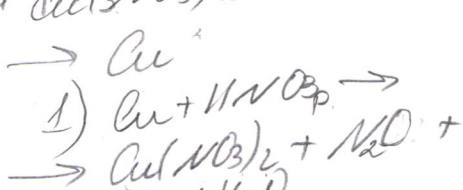
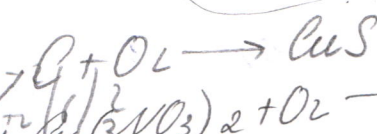
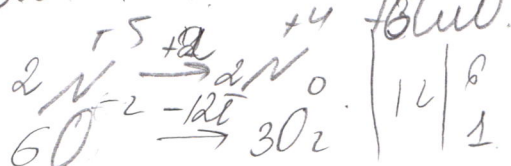
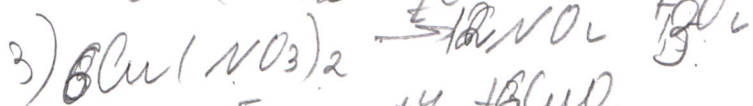
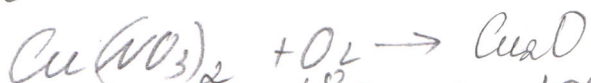
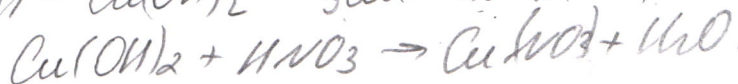
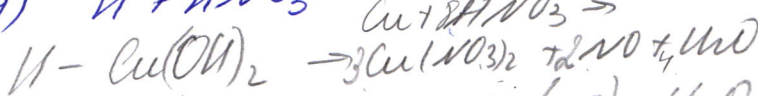
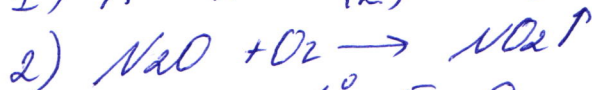
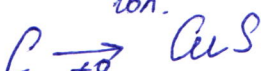
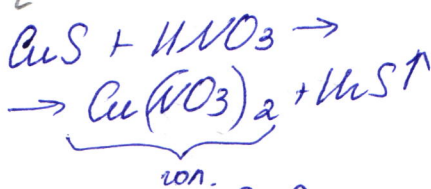
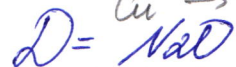
$$\boxed{c = \frac{Q}{V}} - ?$$



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Соединение А.

Пусть $m = 100\text{г}$.

$\text{Cu}_x\text{H}_y\text{O}_z$.

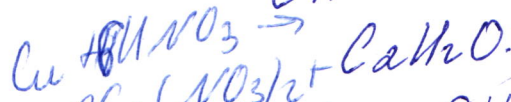
$$x:y:z = \frac{57,14}{12} : \frac{4,76}{1} : \frac{2,10}{16} = 4,762 : 4,76 : 2,1 =$$

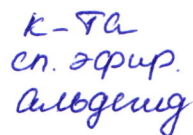
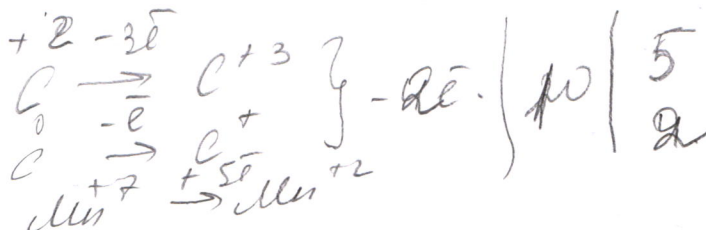
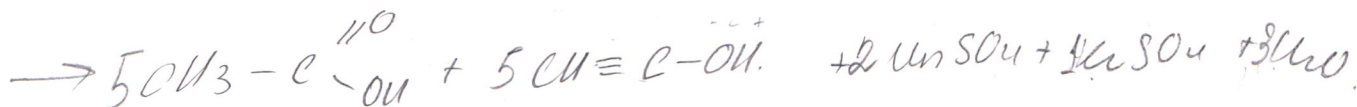
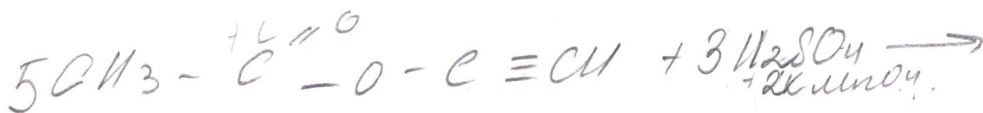
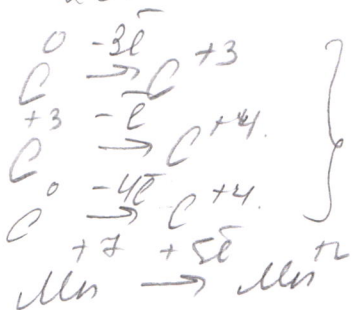
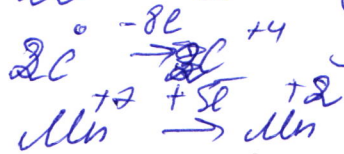
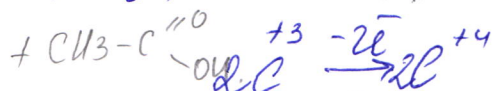
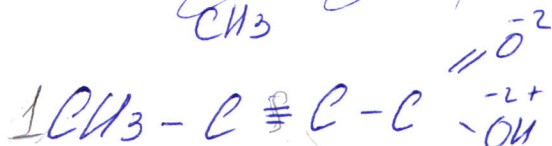
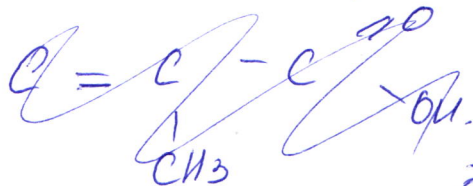
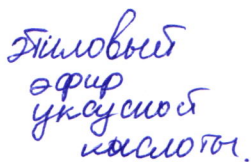
$\text{Cu}_n\text{H}_n\text{O}_{n-1}$.

$$C = \frac{D}{V} = 2:2:1$$

$$D = 1 \cdot 0,01 = 0,01 \text{ моль}$$

84 г/моль.

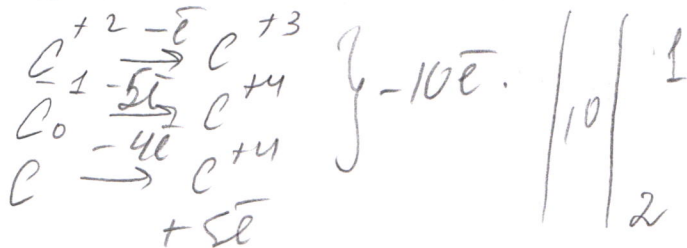
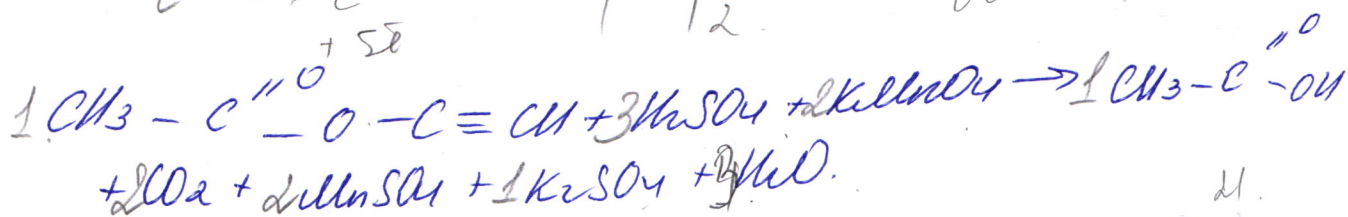
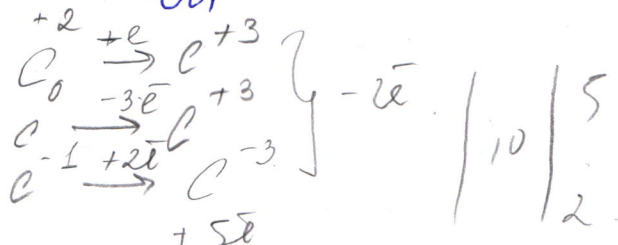
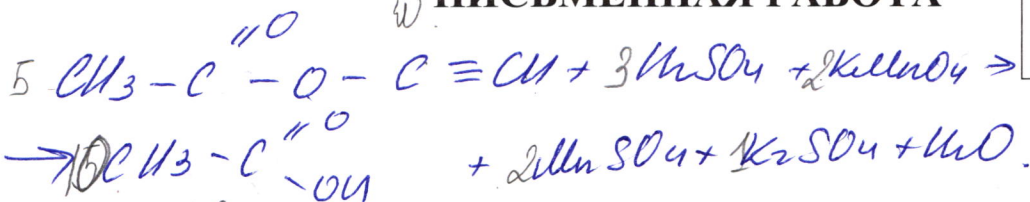



$$C_4H_4O_2$$


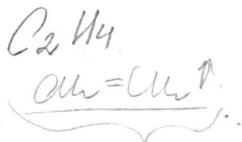
ПИСЬМЕННАЯ РАБОТА

ШИФР

(заполняется секретарём)

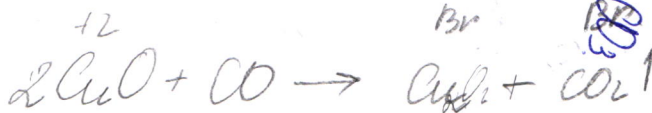
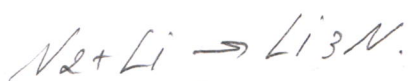


$M = 28 \text{ г/моль}$



$\rho = \frac{\rho_{\text{те}}}{\rho_{\text{см}}}$

$\rho_{\text{те}} = 7$



$\rho(\text{H}_2\text{O}) = 7$
 $V(\text{H}_2) + V(\text{CO}) = \frac{1}{2} V$

