

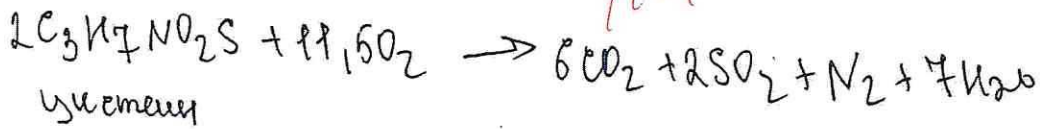
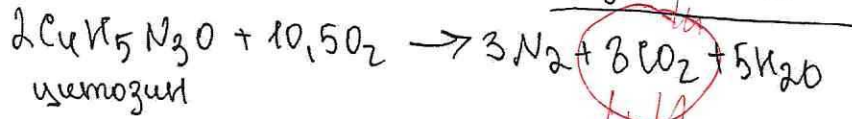
1	2	3	4	5	6	7	8	9	10
2	5	3	5	4	7	10	10	8	8

**ЧИСТОВИК**  
Лист № 1

$\Sigma = 62$

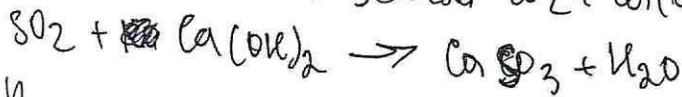
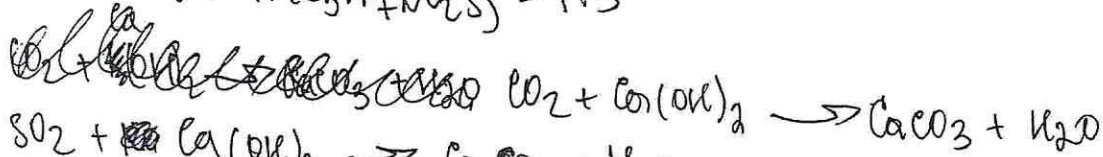
**ВСОШ ХИМИЯ**

Задание 9.1



Кепошлязеливый газ -  $N_2$

$$n(C_4H_5N_3O) : n(C_3H_7NO_2S) = 1 : 3$$



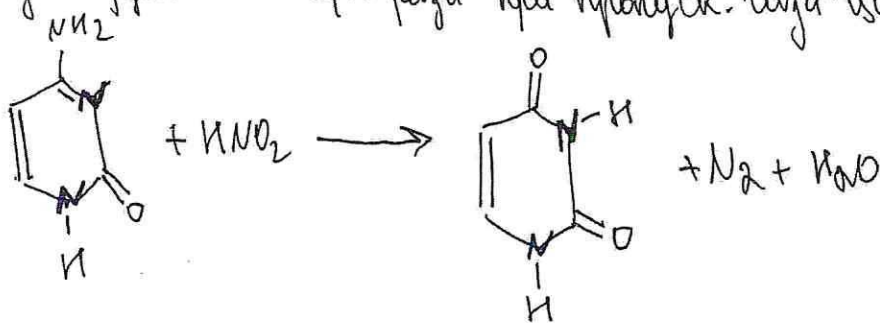
Пусть у нас 1 моль  $C_4H_5N_3O$  и 3 моль  $C_3H_7NO_2S \Rightarrow$

$$m_1(CaCO_3) = 1 \text{ моль} \cdot 4 \cdot 100 = 400 \text{ г (молет. целозина)}$$

$$m_2(\text{осадка}) = 3 \text{ моль} \cdot (3 \cdot 100 \text{ г/моль} + 1 \cdot 120 \text{ г/моль}) = 1260 \text{ г}$$

$\nearrow$   $CaCO_3$                        $\nearrow$   $CaSO_3$

М осадк. будет  $\approx 6,315$  раз при пропуск. газа <sup>от</sup> цистеина.



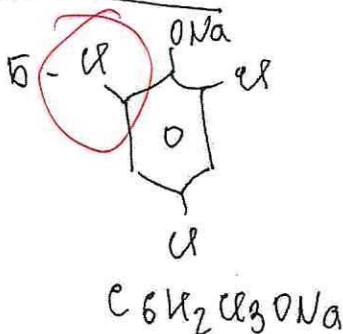
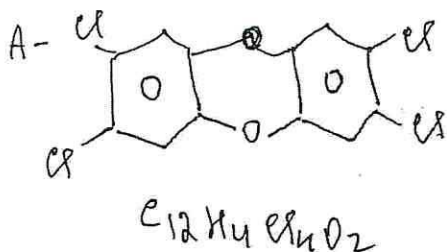
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$$n(C_4H_5N_3O) = \frac{400 \text{ г}}{111 \text{ г/моль}} = 0,217 \text{ моль}$$

$$V(N_2) = 0,217 \cdot 22,4 = 4,86 \text{ л}$$

Задача 1.1



2,45

$$\begin{cases} x_1 + x_2 = 1 \\ 3x_1 + 2x_2 = 2,7273 \end{cases}$$

$$\begin{cases} x_1 = 0,7273 \\ x_2 = 0,2727 \end{cases}$$

$$n(C) : n(Cl) = 2,7273$$

$$A: \frac{n(C)}{n(Cl)} = 3$$

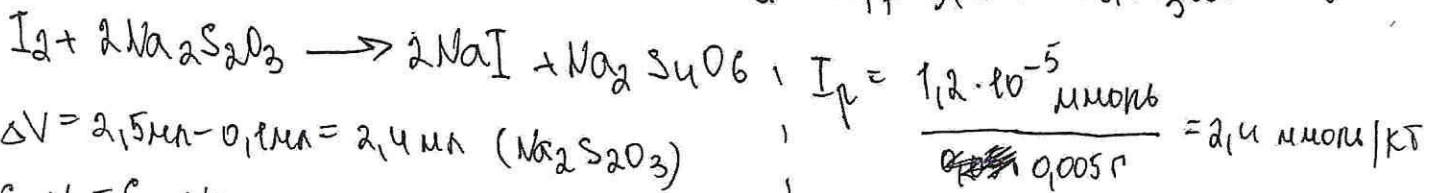
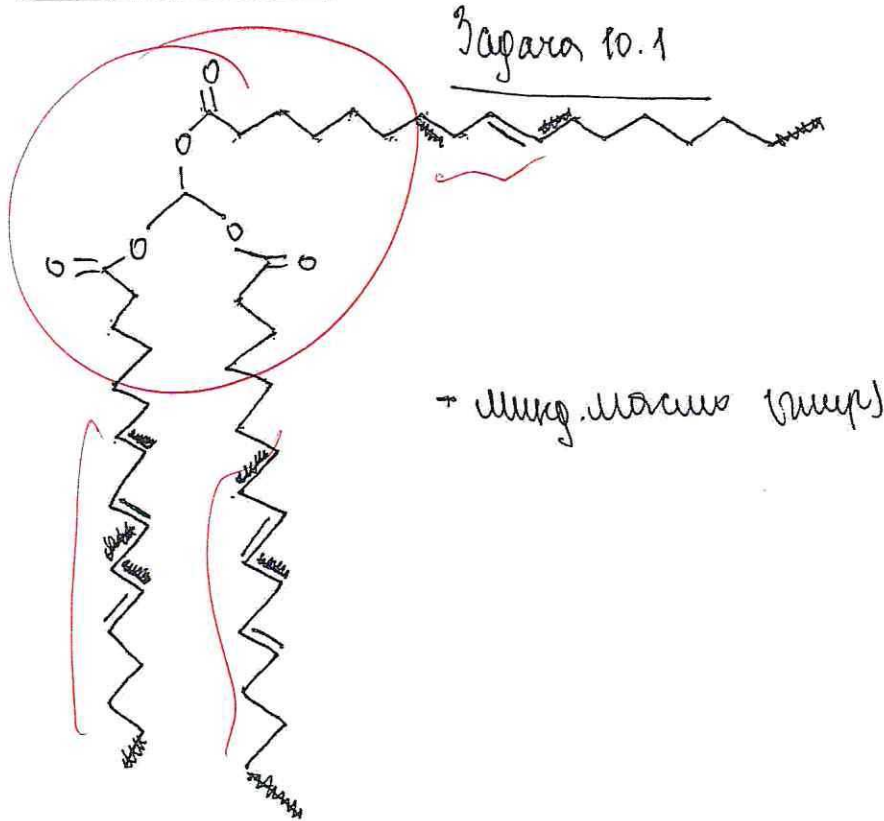
$$B: \frac{n(C)}{n(Cl)} = 2$$

Пусть смесь взята в кол-ве смеси, тогда  $n(A) = 0,7273$  смеси,  $n(B) = 0,2727$  смеси

$$W(A) = \frac{0,7273 \cdot 322}{0,7273 \cdot 322 + 0,2727 \cdot 219,5} = 0,797 \text{ или } 79,7\%$$

$$M(A) = 322 \text{ г/моль}$$

$$M(B) = 219,5 \text{ г/моль}$$



$$\Delta V = 2,5 \text{ мл} - 0,1 \text{ мл} = 2,4 \text{ мл (Na}_2\text{S}_2\text{O}_3)$$

$$C_1 \cdot V_1 = C_2 \cdot V_2$$

$$C_1 \cdot V_1 = \frac{n(I_2)}{2}$$

$$n(I_2) = \frac{2 \text{ мл} \cdot 0,1 \text{ М}}{2} = 0,112 \text{ моль}$$

$\frac{1,2 \cdot 10^{-5}}{1000}$

$$n(I_2) = n(C_{17}H_{31}COOH) = \frac{1,2 \cdot 10^{-5}}{1000} \text{ моль} = n(O)$$

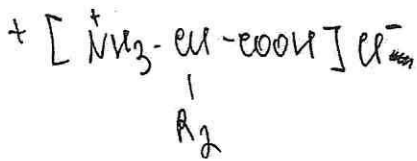
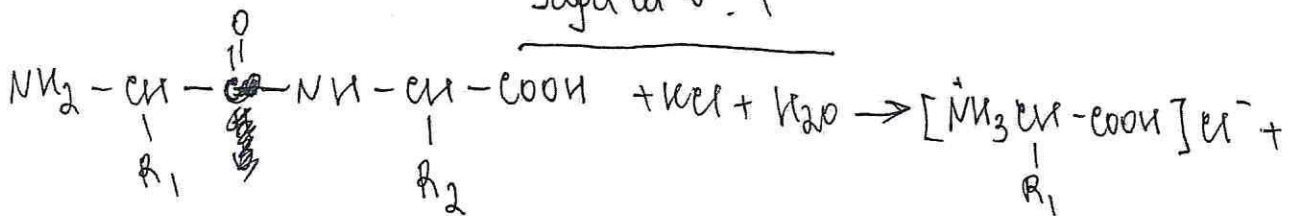
$2,4 < 2,5 \Rightarrow$  доброкачественный

$$w(O) = \left( \frac{16 \cdot 1,2 \cdot 10^{-5}}{100 \cdot 0,005 \text{ г}} \right) \cdot 100\% = 3,84 \cdot 10^{-3} \%$$

↑  
кислород



Задача 6.1

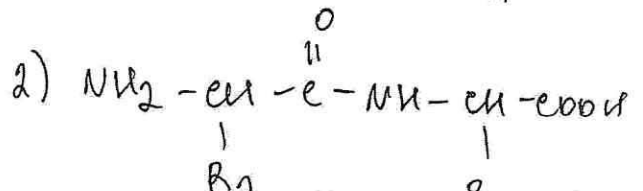
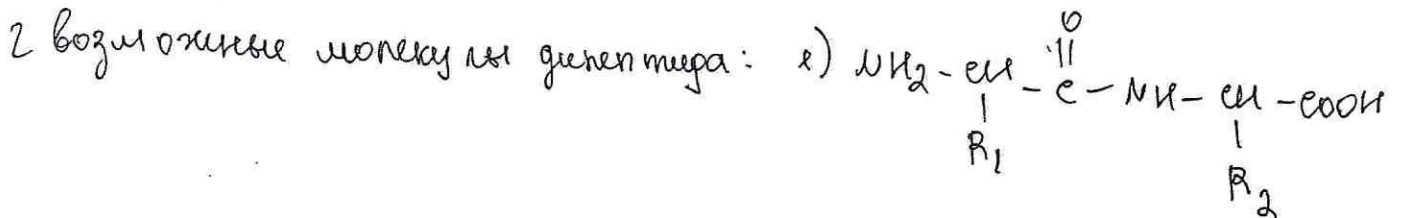
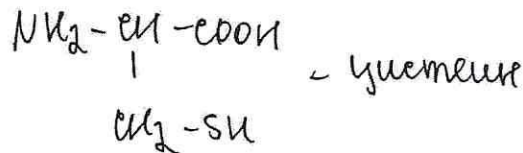
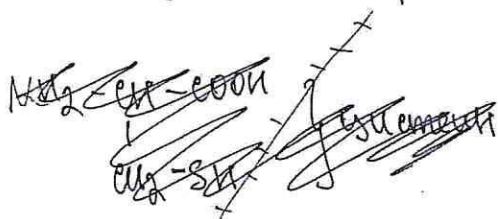


$$M(\text{соли}) = \frac{35,5}{0,2254} = 157,5 \text{ г/моль} \Rightarrow M(\text{кисл.1}) = 121 \text{ г/моль} \Rightarrow \text{учетены}$$



$$M(\text{соли}) = \frac{35,5}{0,105493} = 336,5 \text{ г/моль}$$

$$M(\text{кисл.2}) = 336,5 - 36,5 - 121 + 13 = 197 \text{ г/моль}$$





Задача 3.1

$$V_{\text{цилиндра}} = \pi \cdot \underbrace{(0,49 \text{ см})^2}_{S = \pi R^2} \cdot \underbrace{2 \text{ см}}_H = 1,508 \text{ л}$$

$$V(\text{H}_2\text{O}) = 0,6 \cdot 1,508 = 0,905 \text{ л}$$

$$C(\text{NH}_3) = 0,692 \text{ моль/л}$$

$$n(\text{NH}_3) = \frac{0,905 \cdot 15,5}{22,4} = 0,626 \text{ моль}$$

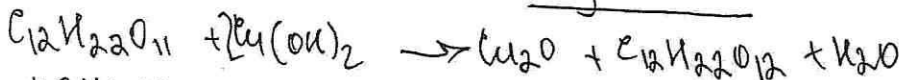
$$K_B = \frac{[\text{NH}_4^+][\text{OH}^-]}{[\text{NH}_3]} \Rightarrow 10^{-4,76} = \frac{x^2}{0,692 - x}$$

$$x = 0,00346 \text{ моль/л}$$

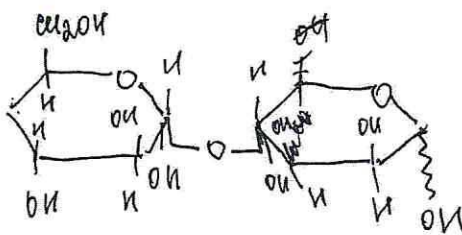
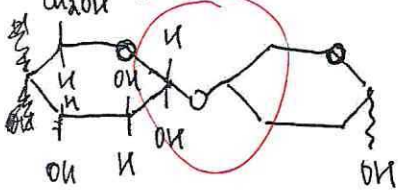
$$p\text{OH} = 2,46$$

$$p\text{H} = 11,54$$

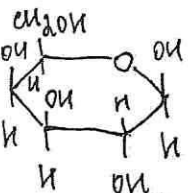
Задача 4.1



мальтоза

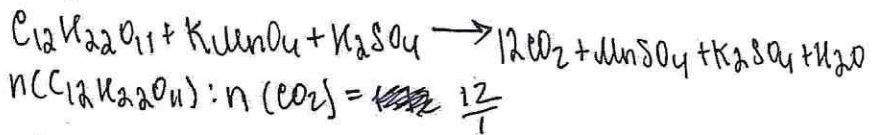


мальтоза

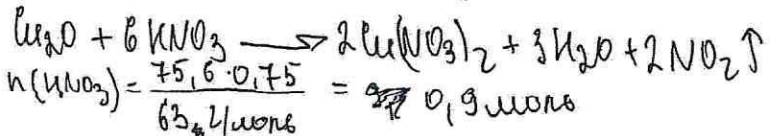


глюкоза

мальтоза



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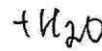
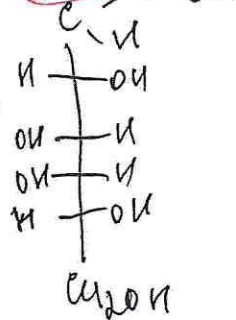
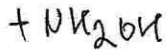
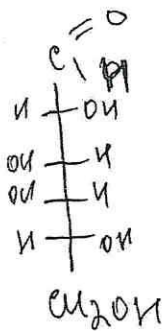


$$\frac{n(\text{C}_6\text{H}_{12}\text{O}_6)}{n(\text{CO}_2)} = 1,5$$

$$n(\text{CO}_2) = 1,5 \text{ моль}$$

$$\begin{cases} x + y = 0,15 \\ 12x + 6y = 1,313 \end{cases} \quad \begin{cases} x = 0,0688 \text{ моль} \\ y = 0,0812 \text{ моль} \end{cases}$$

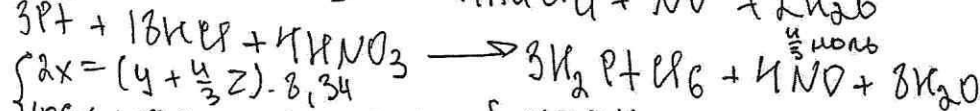
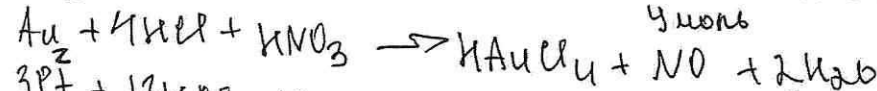
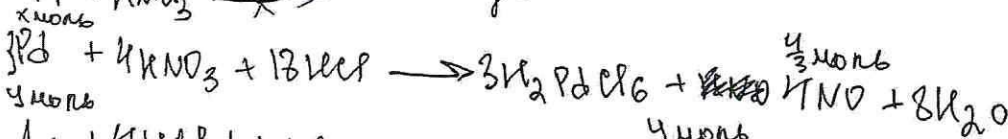
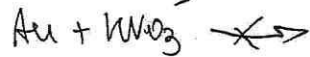
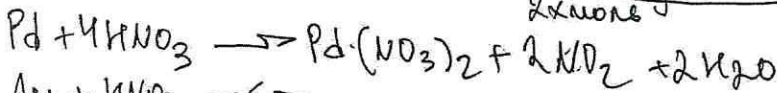
$$m(\text{смеси}) = 0,0688 \cdot 342 + 0,0812 \cdot 180 = 38,14 \text{ г}$$



$$0,0812 \text{ моль}$$

$$m(\text{продукт.}) = 0,0812 \cdot 0,75 \cdot 195 = 11,876 \text{ г}$$

Задача 5.1  
2 моль

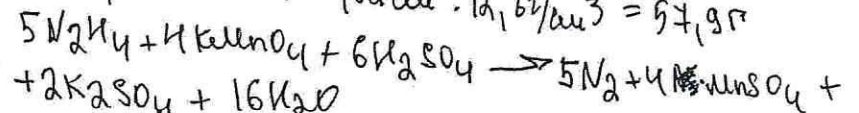


$$\begin{cases} 2x = (y + \frac{4}{3}z) \cdot 8,34 \\ 106x + 197y + 195z = 57,9 \\ 0,7 = 2x \end{cases} \quad \begin{cases} x = 0,1 \text{ моль} \\ y = 0,029 \text{ моль} \\ z = 0,05 \text{ моль} \end{cases}$$

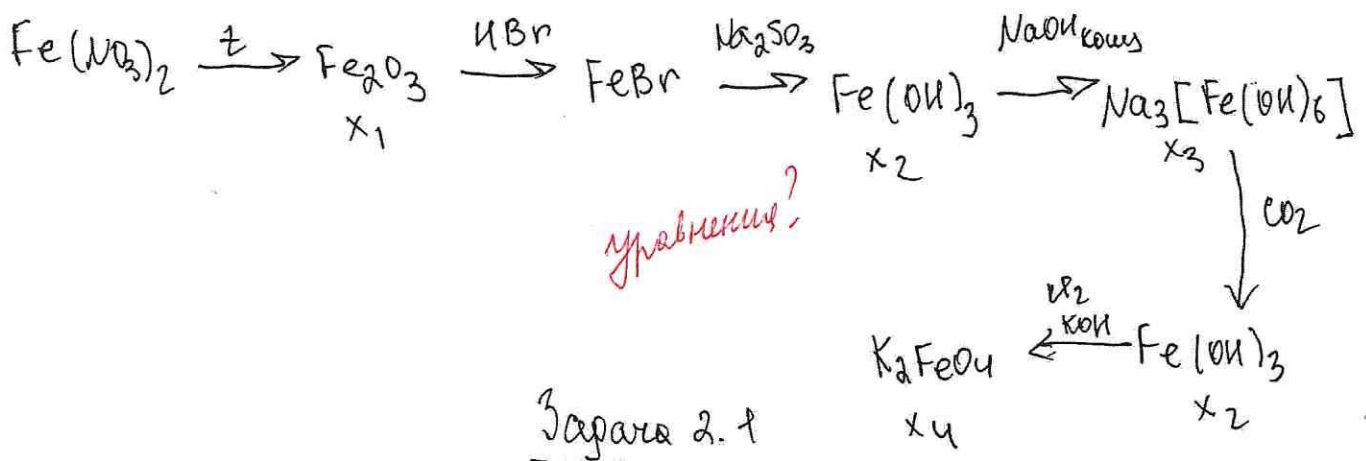
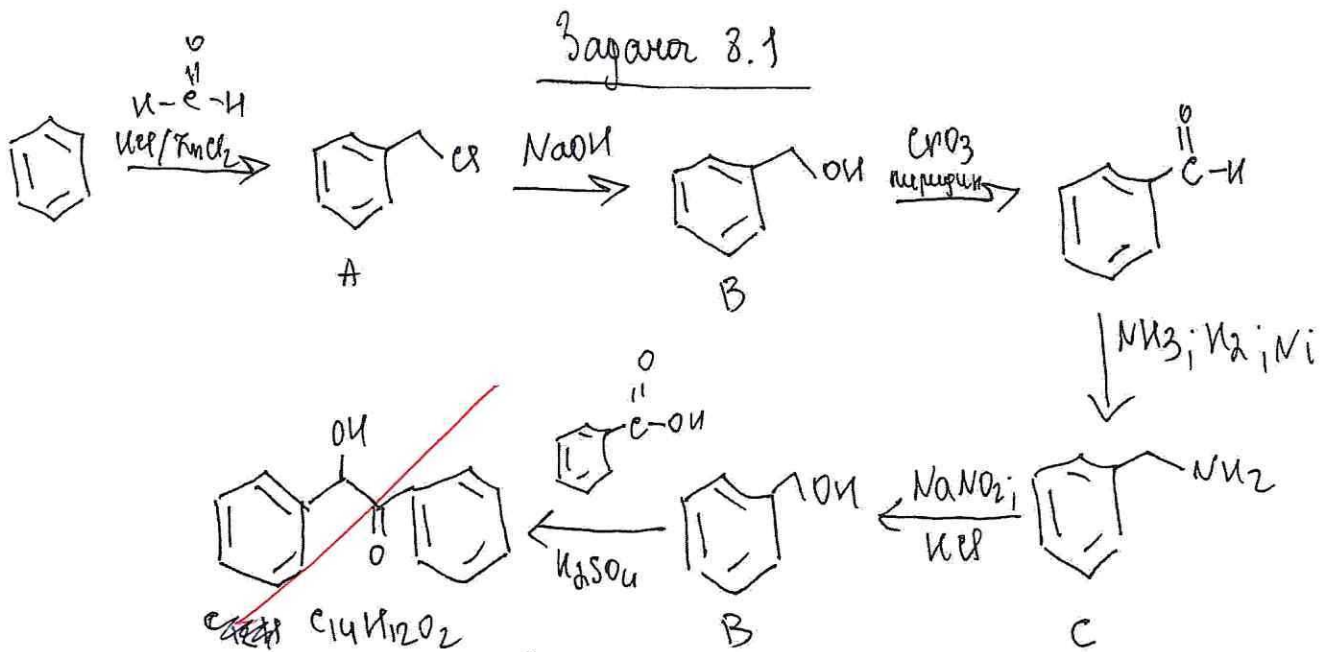
$$V_{\text{коша}} = \frac{1}{3}\pi R^2 \cdot h = \frac{1}{3}\pi \cdot 1,2^2 \cdot 3 = 4,52 \text{ см}^3; m(\text{коша}) = 4,52 \text{ см}^3 \cdot 12,76 \text{ г/см}^3 = 57,9 \text{ г}$$



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$$\frac{m(\text{Na}_2\text{H}_4)}{m(\text{Na})} = 1 \Rightarrow n(\text{Na}) = 0,8 \text{ моль}$$



$$\frac{n(\text{C})}{n(\text{H})} = \frac{n(\text{CO}_2)}{n(\text{H}_2\text{O}) \cdot 2} = \frac{0,14}{0,15 \cdot 2} = 2:5$$

$$n(\text{O}_2) = \frac{7,4 - 12 \cdot 0,14 - 0,15 \cdot 2 \cdot 1}{16} = 0,15 \text{ моль} \Rightarrow n(\text{H}_2) : n(\text{O}_2) : n(\text{CO}_2) = 10 : 1 : 4 \Rightarrow \text{C}_4\text{H}_{10}\text{O} \Rightarrow \text{X} - \text{C}_2\text{H}_5 - \text{O} - \text{C}_2\text{H}_5, \text{т.к.}$$

