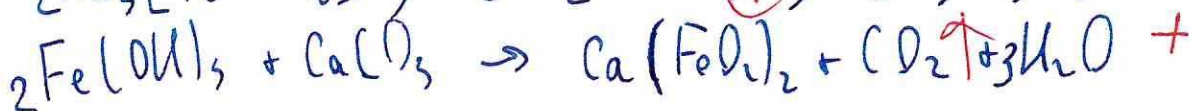
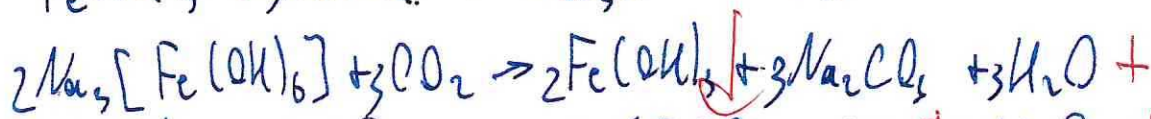
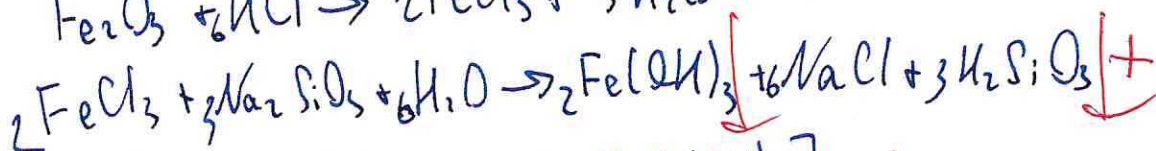
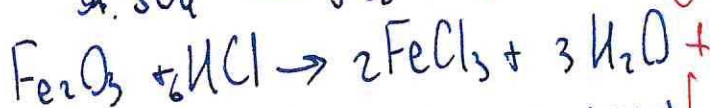
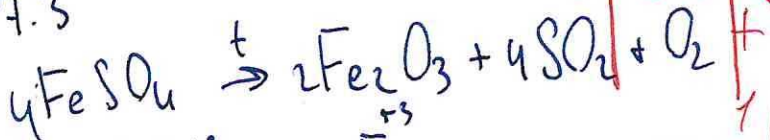


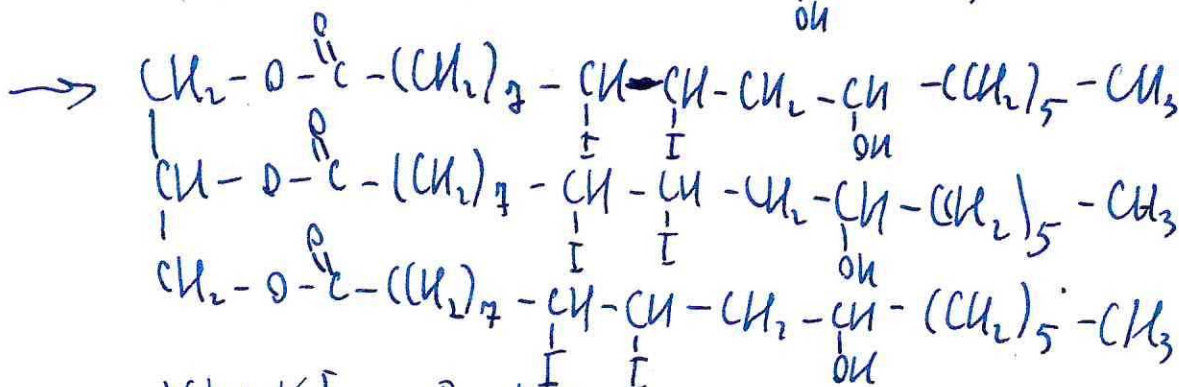
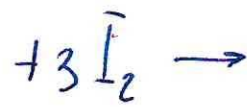
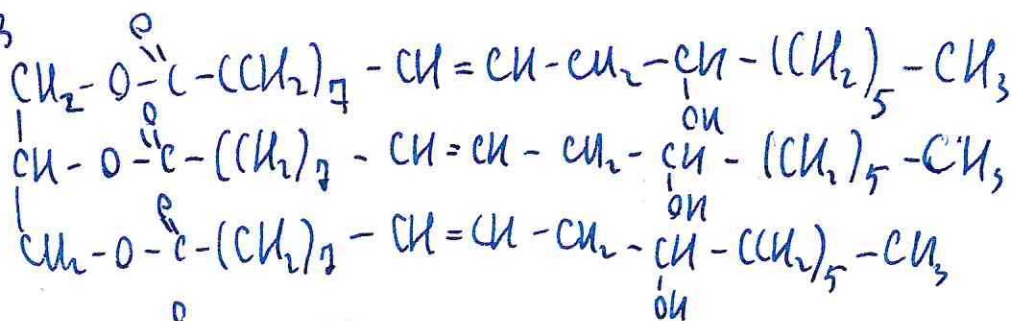
95
↑ ↑

N 7.3



1	2	3	4	5	6	7	8	9	10
6	9	8	6	6	10	10	12	8	20

N 10.3



$$\text{I}_2 = \frac{V_k - V_0}{m} \cdot 100$$

$$\begin{aligned} \eta &= \frac{c(\text{Na}_2\text{S}_2\text{O}_3) \cdot M(\frac{1}{2}\text{I}_2)}{1000} = \\ &= \frac{0,2 \cdot 127}{1000} = 0,0254 \end{aligned}$$



$$\bar{I}_n = \frac{0,0254 (18 - 9,6) \cdot 100}{0,25} = 85,344 \text{ мг I}_2 / 100 \text{ мг}$$

$82 < 85,344 < 88 \Rightarrow$ кастровое масло гидрокачественное



$$V(Na_2S_2O_3) = 0,018 - 0,0096 = 0,0084 \text{ (л)}$$

$$\nu(Na_2S_2O_3) = 0,0084 \cdot 0,2 = 0,00168 \text{ моль}$$

$$\nu(I_2) = \frac{1}{2} \cdot \nu(Na_2S_2O_3) = \frac{0,00168}{2} = 0,00084 \text{ моль} = 0,25 \text{ моль}$$

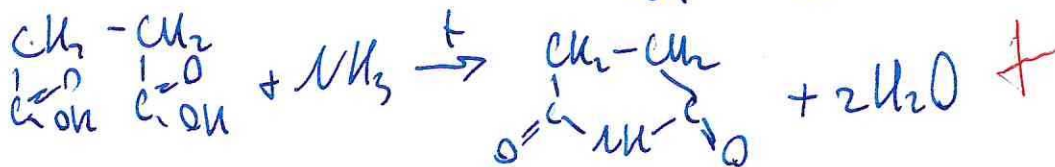
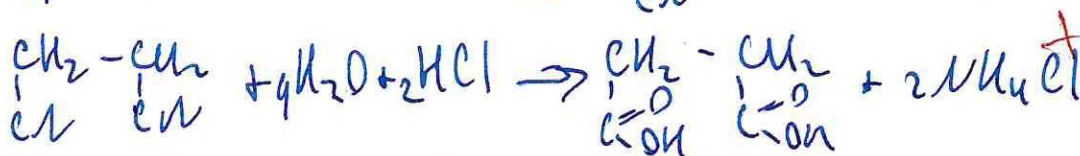
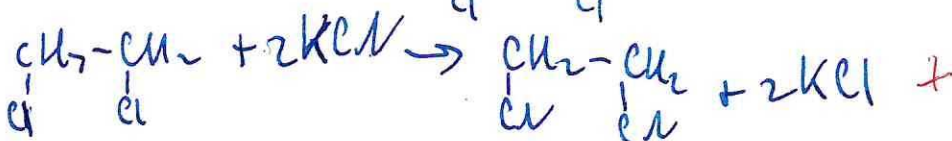
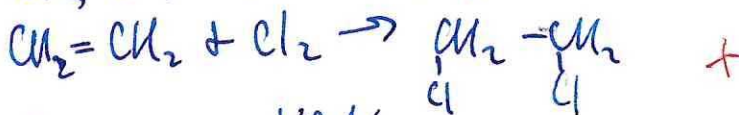
$$\frac{0,00084 \cdot 100}{0,25} = 9336 \text{ мг} \cdot 100 \text{ мг}$$

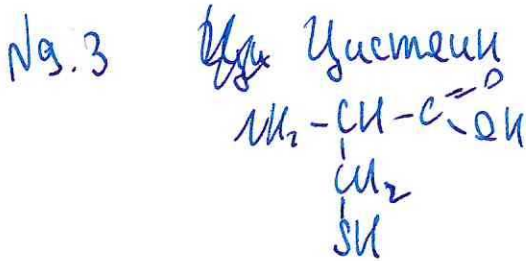
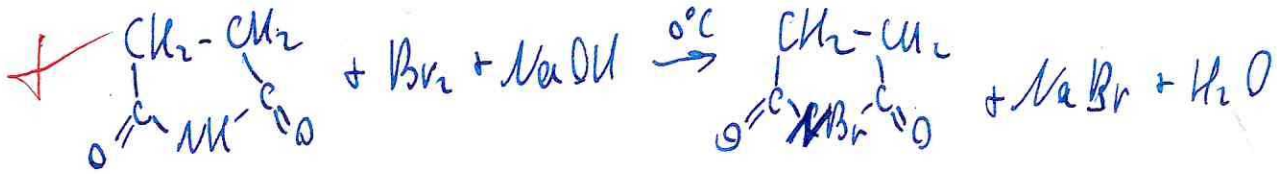
$$\nu(H_2K_34O_5) = \nu(I_2) = 9336 \text{ моль}$$

$$m(H_2K_34O_5) = 9336 \cdot 298 = 100,128 \text{ (г)}$$

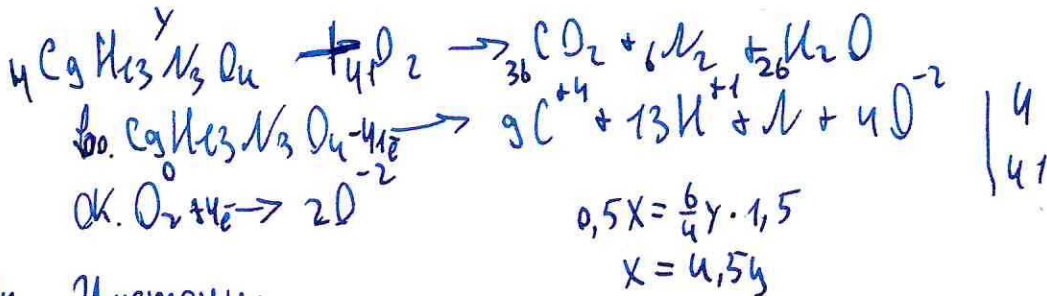
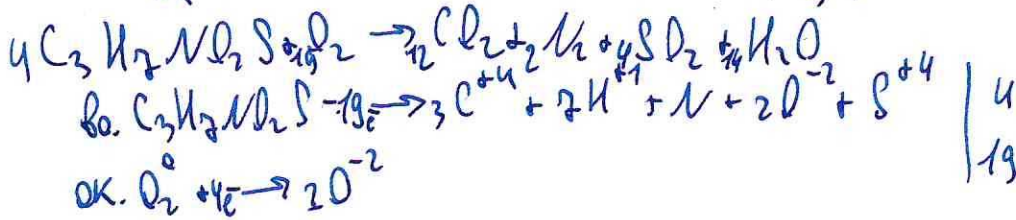
$$\omega(H_2K_34O_5) = \frac{100,128}{100} = 1,00128 \cdot 100\% = 100,128\%$$

Ответ: $I_2 = 85,344 \Rightarrow$ гидрокачественное; 100,128 на ринкалевуо.

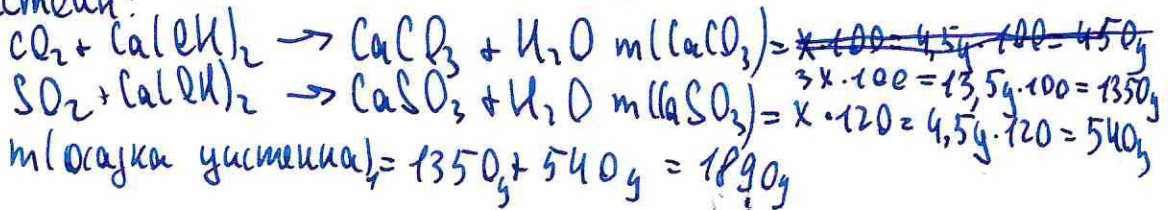




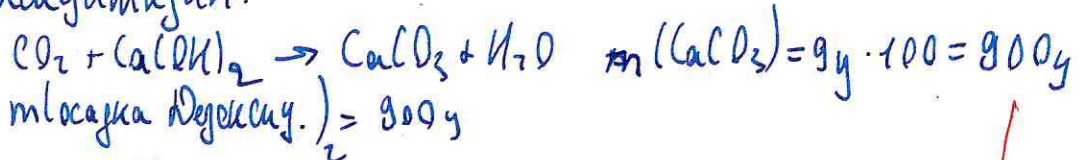
x



Уксусная:

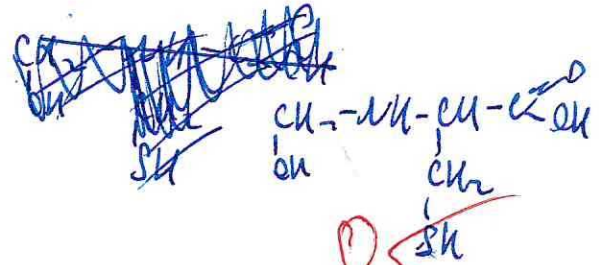
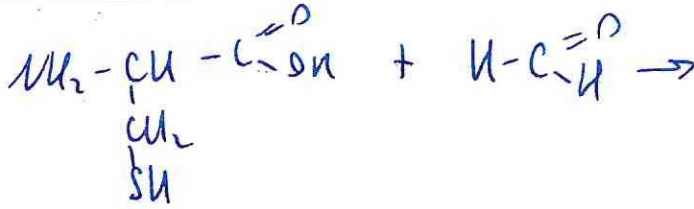


Дезоксицитидин:



$$\frac{\text{осад}_1}{\text{осад}_2} = \frac{990y}{900y} = 2,1 \text{ раза - отличие}$$



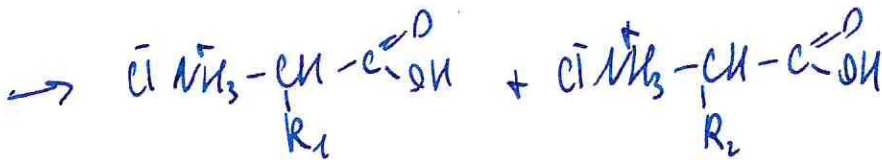
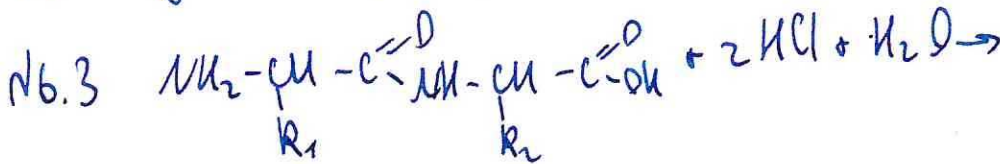


$n(\text{уистеша}) = \frac{3,63}{121} = 0,03 \text{ моль}$

$m(\text{продукта } \text{C}_4\text{H}_5\text{NO}_3\text{S}) = 0,03 \cdot 151 = 4,53 \text{ (г)}$

88

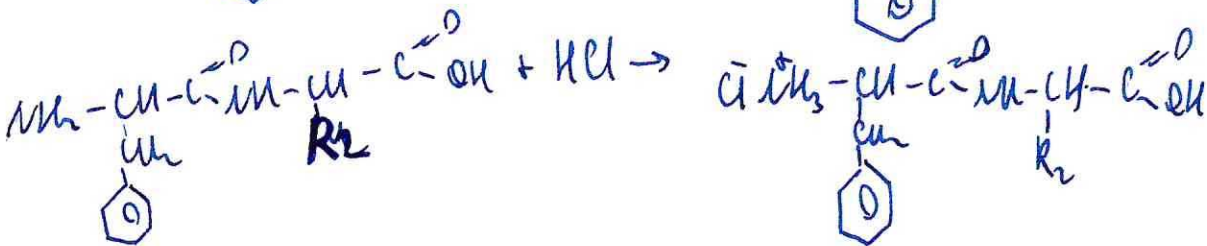
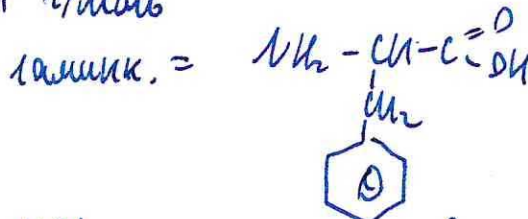
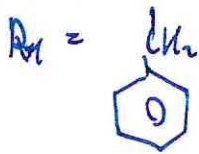
Ответ: масса уистеша в 2,1 раза больше
масса Дезоксицитриина.



$M(\text{продукта}) = \frac{35,5}{0,176179} = 201,5 \text{ г/моль}$

$M(\text{аминк.}) = 201,5 - 36,5 = 165 \text{ г/моль}$

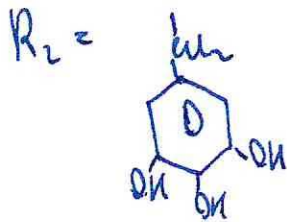
$M(\text{R}_2) = 165 - 74 = 91 \text{ г/моль}$



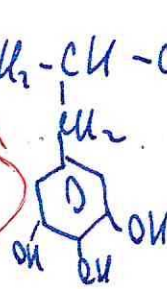
$$M(\text{продукта}) = \frac{35,5}{0,088533} = 396,5 \text{ г/моль}$$

$$M(\text{2 аминок.}) = 396,5 - 36,5 - 165 + 18 = 213 \text{ г/моль}$$

$$M(R_2) = 213 - 74 = 139 \text{ г/моль}$$

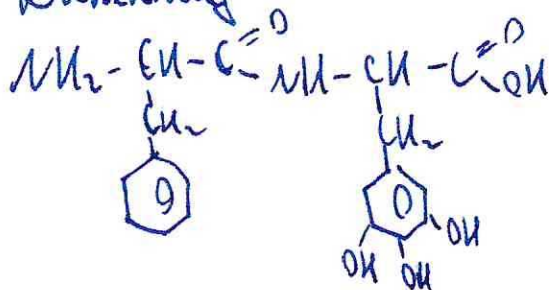


2 аминокислота: $NH_2-CH(CH_3)-C(=O)OH$

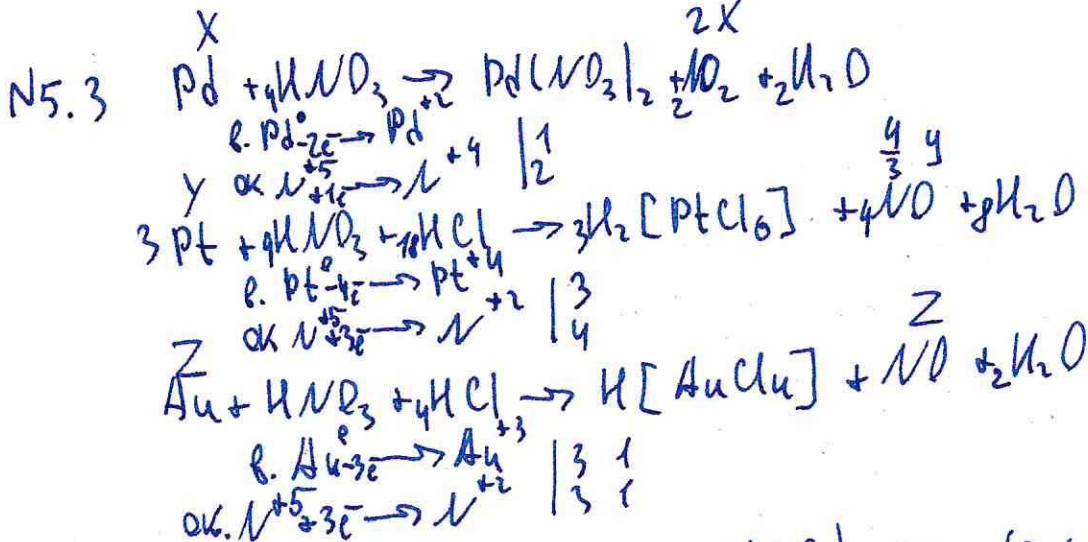
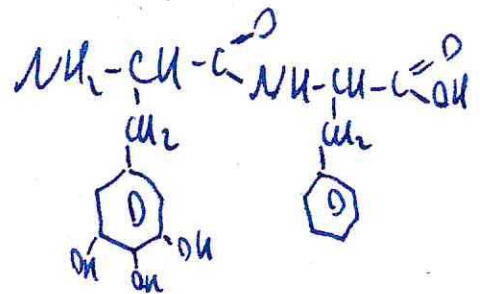


10

Дипептид:

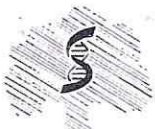


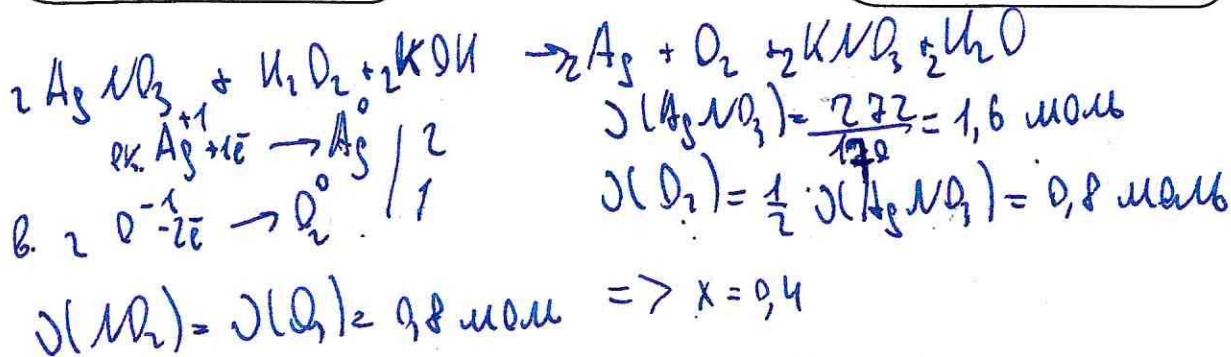
или



+

$$O(N_2) = 8,34 \cdot (O NO)$$





$$V_{\text{вып.}} = \frac{1}{3} \cdot S_{\text{полн}} \cdot h = \frac{1}{3} \cdot 4 \cdot 3,4 = 4,5333 \text{ см}^3$$

$$m_{\text{серебра}} = \frac{4,5333 \cdot 12,74 \cdot 1,5}{1000} = 57,9 \text{ г}$$

$$\begin{cases} 106x + 195y + 197z = 57,9 \\ 8,34(1,333y + z) = 0,8 \end{cases}$$

$$106x = 0,4 \cdot 106 = 42,4 \text{ (1)}$$

$$\begin{cases} 195y + 197z = 57,9 - 42,4 \\ 8,34(1,333y + z) = 0,8 \quad | : 8,34 \end{cases}$$

$$\begin{cases} 195y + 197z = 15,5 \\ 1,333y + z = 0,0959 \end{cases}$$

$$z = 0,0959 - 1,333y$$

$$195y + 197(0,0959 - 1,333y) = 15,5$$

$$195y + 18,89 - 262,6y = 15,5$$

$$-67,6y = -3,39$$

$$y = 0,05$$

$$z = 0,0959 - 1,333 \cdot 0,05 = 0,029$$

$$m(\text{Pd}) = 42,4 \text{ (2)}$$

$$m(\text{Pt}) = 0,05 \cdot 195 = 9,7 \text{ (2)}$$

$$m(\text{Au}) = 0,029 \cdot 197 = 5,7 \text{ (2)}$$

$$w(\text{Pd}) = \frac{42,4}{57,9} = 0,732 \approx 73\%$$

$$w(\text{Pt}) = \frac{9,7}{57,9} = 0,167 \approx 17\%$$

$$w(\text{Au}) = \frac{5,7}{57,9} = 0,098 \approx 10\%$$

68



№3.3 $V_y = \pi r^2 h = 3,14 \cdot 2,5^2 \cdot 25 = 490,625 \text{ см}^3$

$V_g = 490,625 \cdot 0,8 = 392,5 \text{ мл}$

$m(\text{NH}_3) = 392,5 \cdot 25 = 9812,5 \text{ мг} = 9,8125 \text{ г}$

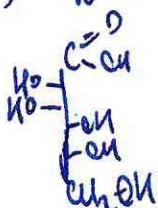
$n(\text{NH}_3) = \frac{9,8125}{17} = 0,577 \text{ моль}$

$c(\text{NH}_3) = \frac{0,577}{0,3925} = 1,47 \text{ моль/л}$

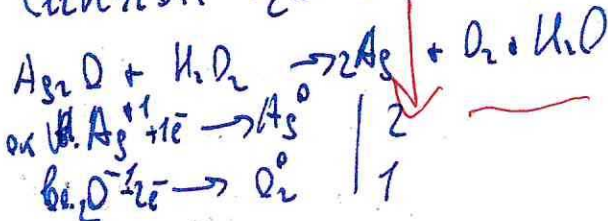
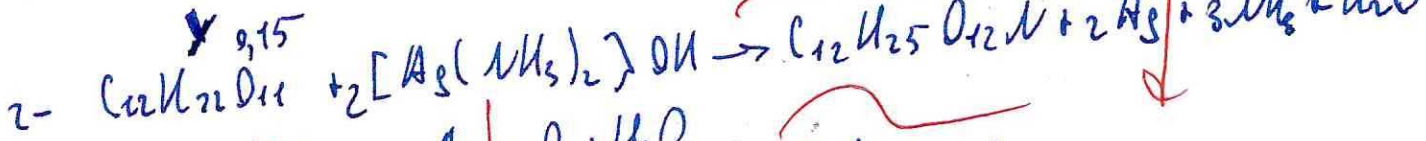
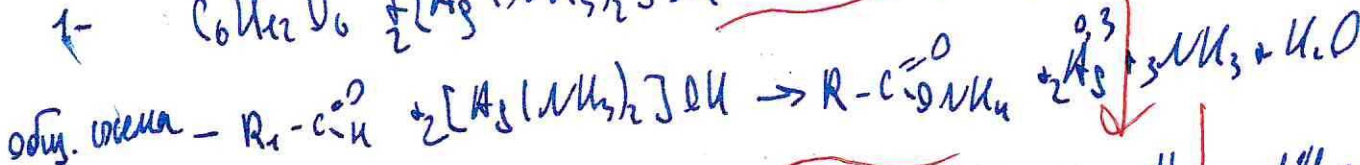
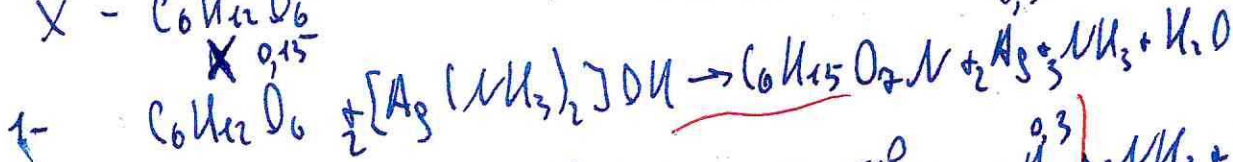
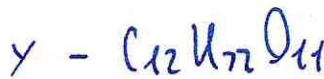
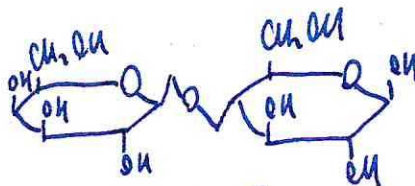
$pH(\text{NH}_3) = 14 - 0,5(pK_b - \lg c)$

$pH(\text{NH}_3) = 14 - 0,5(4,76 - \lg 1,47) = 14 - 0,5(4,7147) = 14 - 2,3573 = 11,64$

№4.3 D-манноза



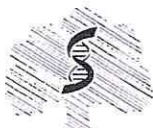
Лактоза

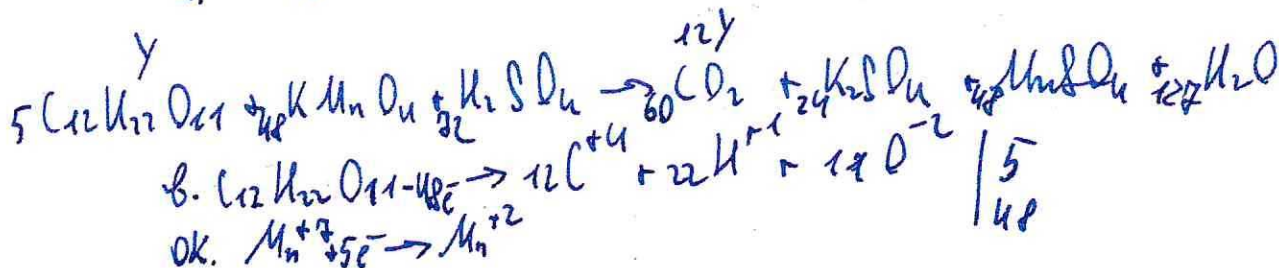
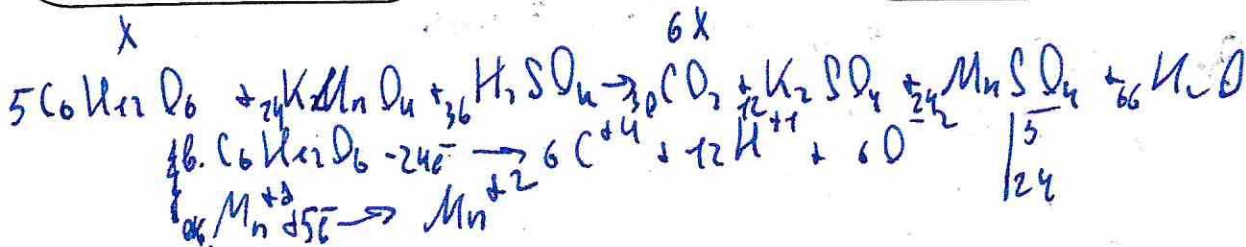


$n(H_2O) = \frac{17 \cdot 0,3}{18} = 0,28 \text{ моль}$

$n(Ag) = 0,3 \text{ моль}$

$X + Y = 0,15$





$p.v = \text{окр}$ $\nu(\text{CO}_2) = \frac{28,7 \cdot 101,8}{8,31 \cdot 293} = 1,2 \text{ моль}$

$$\begin{cases} x + y = 0,15 \\ 6x + 12y = 1,2 \end{cases} \quad y = 0,15 - x$$

$$6x + 12(0,15 - x) = 1,2$$

$$6x + 1,8 - 12x = 1,2$$

$$-6x = -0,6$$

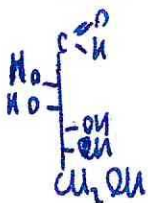
$$x = 0,1$$

$$y = 0,15 - 0,1 = 0,05$$

$$m(\text{C}_6\text{H}_{12}\text{O}_6) = 0,1 \cdot 180 = 18 \text{ (г)}$$

$$m(\text{C}_{12}\text{H}_{22}\text{O}_{11}) = 0,05 \cdot 342 = 17,1 \text{ (г)}$$

$$m(\text{смеси}) = 18 + 17,1 = 35,1 \text{ (г)}$$



$$\nu(\text{максимума}) = \nu(\text{C}_6\text{H}_{12}\text{O}_6) = 0,1 \text{ моль}$$

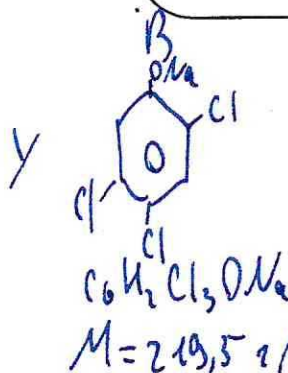
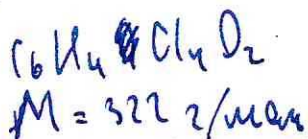
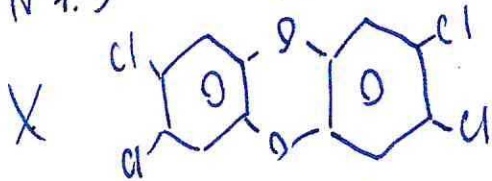
$$m(\text{максимума}) = 0,1 \cdot 182 = 18,2 \text{ (г)}$$

$$m(\text{максимума})_{\text{пр.}} = 18,2 \cdot 0,6 = 10,92 \text{ (г)}$$

6 - 60



N 1.3



$$\nu(Cl) = \frac{6,622 \cdot 10^{23}}{6,02 \cdot 10^{23}} \approx 1,1 \text{ моль}$$

$$\nu(O) = \frac{3,01 \cdot 10^{23}}{6,02 \cdot 10^{23}} \approx 0,5 \text{ моль}$$

$$\begin{cases} 4x + 3y = 1,1 \\ 2x + y = 0,5 \end{cases}$$

$$\begin{cases} 4x + 3y = 1,1 \\ 4x + 2y = 1 \end{cases} \ominus$$

$$y = 0,1$$

$$x = \frac{0,5 - 0,1}{2} = 0,2$$

$$m(\text{образца}) = 322 \cdot 0,2 + 219,5 \cdot 0,1 = 64,4 + 21,95 = 86,35 \text{ (г)}$$



№2.3



$$\nu(CO_2) = \frac{17,92}{27,4} = 0,65 \text{ моль}$$

$$\nu(C) = 0,65 \text{ моль}$$

$$\nu(H_2O) = \frac{18}{18} = 1 \text{ моль}$$

$$\nu(H) = 2 \text{ моль}$$

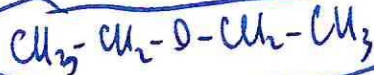
$$m(O) = 14,8 - 0,65 \cdot 12 - 2 \cdot 1 = 14,8 - 9,6 - 2 = 3,2 (2)$$

$$\nu(O) = \frac{3,2}{16} = 0,2 \text{ моль}$$

C : H : O

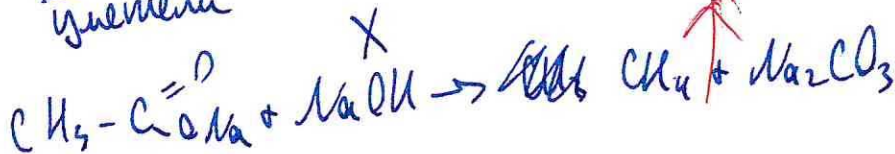
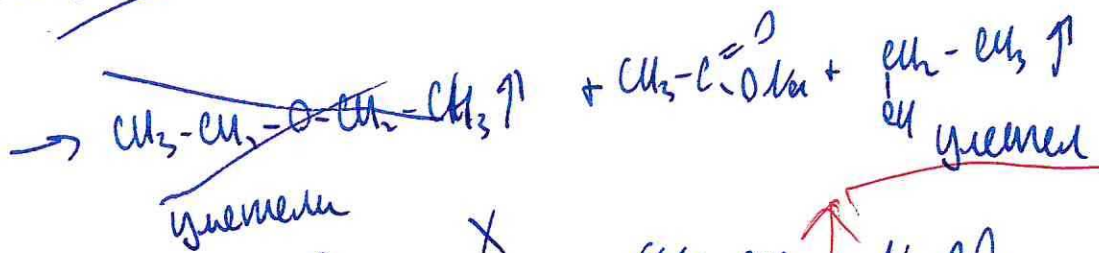
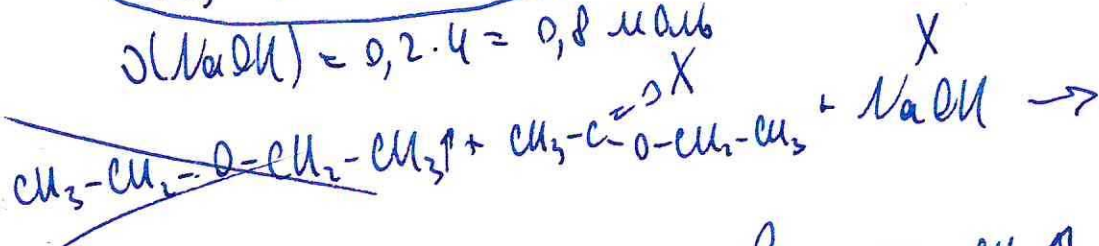
0,65 : 2 : 0,2

4 : 10 : 1



Вещество X

$$\nu(NaOH) = 0,2 \cdot 4 = 0,8 \text{ моль}$$



$$\nu(CH_3-C(=O)-CH_2-CH_3) = X$$

$$\nu(NaOH) = 0,8$$

$$\nu(NaOH)_{\text{израсходовано}} = 0,8 - 2X$$

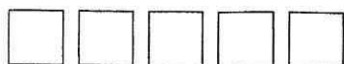
$$\nu(Na)_{\text{в Na}_2\text{CO}_3} = 2X ; \nu(Na)_{\text{в NaOH}} = 0,8 - 2X$$

$$M(Na_2CO_3) = 106 \text{ г/моль}$$

$$M(NaOH) = 40 \text{ г/моль}$$



СЕЧЕНОВСКИЙ
УНИВЕРСИТЕТ



$$m_{\text{сухого осн}} = 106x + 40(0,8 - 2x) = 106x - 80x + 32 = 26x + 32$$

$$m(\text{в. в. в.}) = \left(\nu \left(\text{Na}_2\text{CO}_3 \right) + \nu \left(\text{Na}_2\text{CO}_3 \right) \right) \cdot \frac{M(\text{CO}_2)}{23} = (2x + 0,8 - 2x) \cdot \frac{44}{23} = \frac{44}{23} (1)$$

$$0,462 = \frac{18,4}{26x + 32}$$

$$0,462 (26x + 32) = 18,4$$

$$12x + 14,784 = 18,4$$

$$12x = 18,4 - 14,784$$

$$12x = -3,616$$

$$x = 0,3$$

$$m(\text{ш}_3 - \overset{0}{\text{C}} - \text{ш}_2 - \text{ш}_3) = 0,3 \cdot 88 = 26,4 \quad (1)$$

$$m(\text{вещ. X}) = 45 - 26,4 = 18,6 \quad (2)$$

$$\omega(X) = \frac{18,6}{45} = 0,4133 = \underline{41,33\%}$$

+ 19

