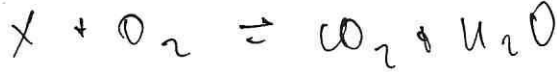


Задача 2.7



~~РВ~~ $PV = \nu RT$

$$\nu = \frac{PV}{RT} \quad \nu(CO_2) = \frac{99,9 \text{ г} \cdot 14,72 \text{ кПа}}{8,31 \cdot 295} = 0,6 \text{ моль}$$

$$\nu(H_2O) = \frac{13,5 \text{ г}}{18} = 0,75 \text{ моль}$$

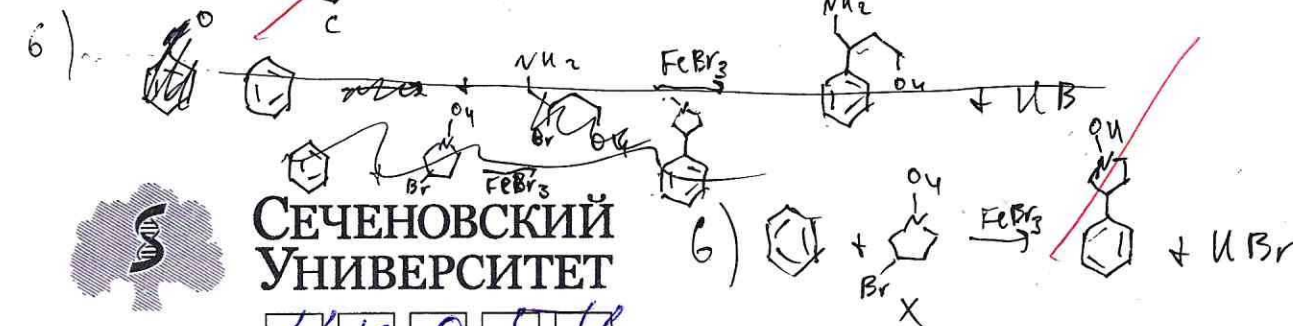
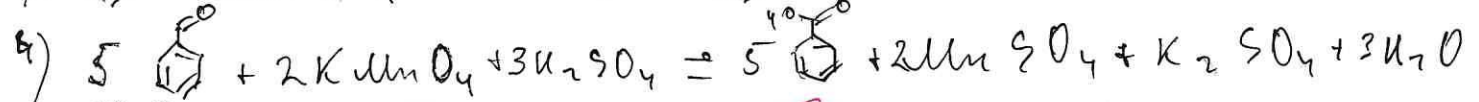
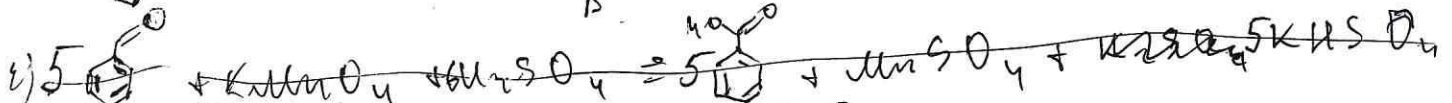
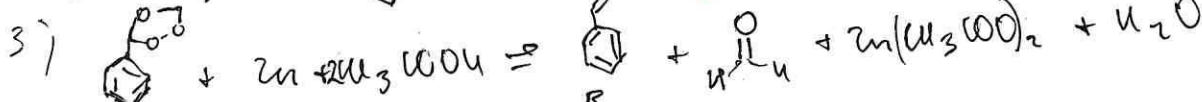
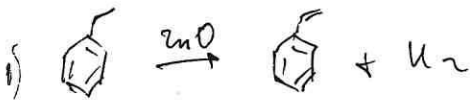
$$\nu(C) : \nu(H) = 0,6 : 1,5 = 2 : 3 = 2 \cdot 5$$

формула $C_{2n}H_{3n}O_n$ не удовлетворяет, тогда её можно удвоить $C_{4n}H_{6n}O_{2n}$. Отсюда наименьшая целочисленная открытая цепочка $C_4H_6O_2$ где $X = C_4H_6O_2$

ред.

Задача 8.9

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

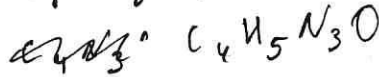
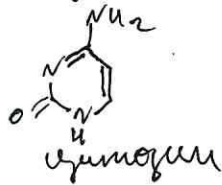
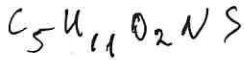
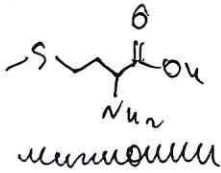


$\Sigma = 45$ б

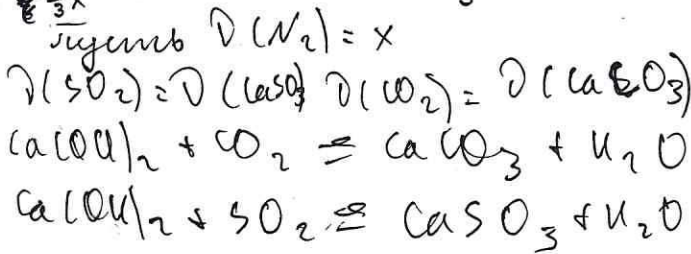
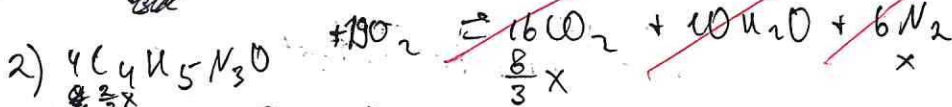
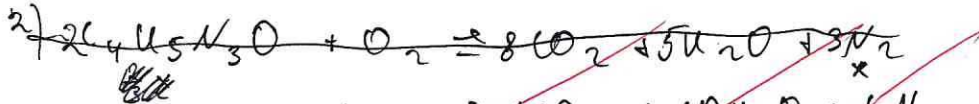
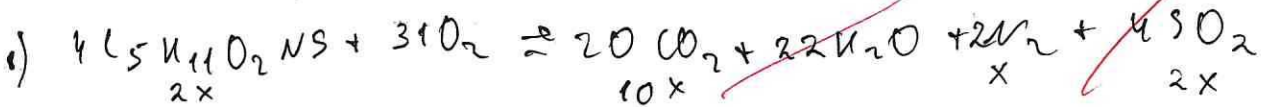
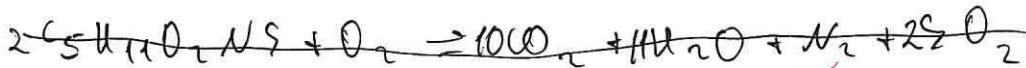


Задача 9.4

Исходные вещества метанол и уксусная кислота



25

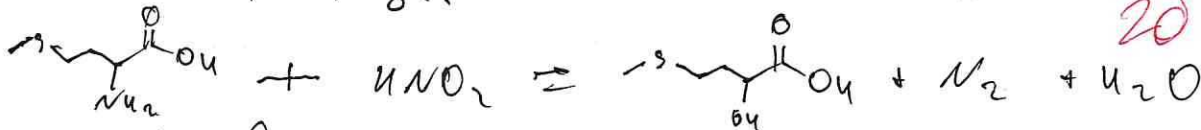


$m_1(CaCO_3) = \nu \cdot M = 10x \cdot 100 = 1000x$ (г)
 $m_1(CaSO_3) = \nu \cdot M = 2x \cdot 120 = 240x$ (г)
 $m_2(CaCO_3) = \nu \cdot M = \frac{8}{3}x \cdot 100 = \frac{800}{3}x$ (г)

~~$m_2(CO_2) = \nu \cdot M = 10x \cdot 44 = 440x$ (г)
 $m_4(SO_2) = \nu \cdot M$~~

$\frac{m_1(\text{влага})}{m_2(\text{влага})} = \frac{1000x + 240x}{\frac{800}{3}x} = 4,65$

Ответ: в 4,65 раза.



$m = 14,9$ $\nu(\text{мет.}) = \frac{m}{M} = \frac{14,9}{149} = 0,1$ моль

$\nu(\text{мет.}) = \nu(N_2)$ $\nu(N_2) = \nu \cdot V_m = 0,1 \cdot 22,4 = 2,24$ л

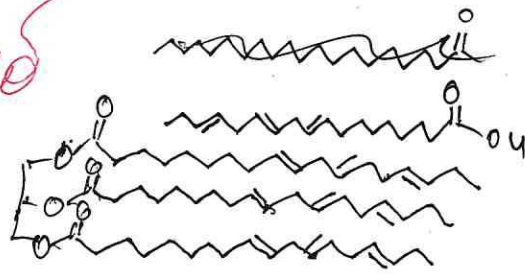
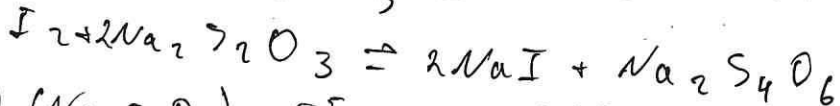
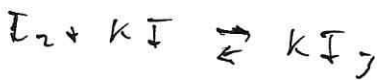
Ответ: 2,24 л.

25.

25.



Задача 6.4



$$D_1(Na_2S_2O_3) = V \cdot c = 0,0088 \cdot 0,25 = 2,2 \cdot 10^{-3} \text{ моль}$$

$$D_1(I_2) = \frac{D_1(Na_2S_2O_3)}{2} = 1,1 \cdot 10^{-3} \text{ моль}$$

$$D_2(Na_2S_2O_3) = V \cdot c = 0,016 \cdot 0,25 = 4 \cdot 10^{-3} \text{ моль}$$

$$D_2(I_2) = \frac{D_2(Na_2S_2O_3)}{2} = 2 \cdot 10^{-3} \text{ моль}$$

$$m(I_2) = D \cdot M = 9 \cdot 10^{-4} \cdot 254 = 0,2286 \text{ г}$$

мало подозреваете ли вы это?
 Задача 6.4

1) более точно, KBr произведен из $KBrO_3$ и HCl и получена соль

$$M(\text{соль}) = \frac{M(Br)}{w(Br)} = \frac{80}{0,3257} = 246 \text{ г/моль}$$

$M(АК) = 246 \text{ г/моль} - M(KBr) = 165 \text{ г/моль}$,
 значит первая АК - фениламин

2) более точно, K -соль $KBrO_3$ не произведена

$$M'(\text{соль}) = \frac{M(Br)}{w(Br)} = \frac{80}{0,1841} = 441$$

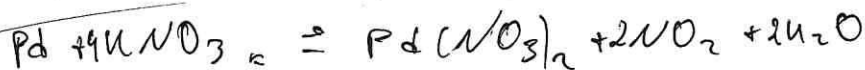
$$M(\text{второй АК}) = 441 - 165 + 18 - 81 = 213 \text{ г/моль}$$

возможные структуры:

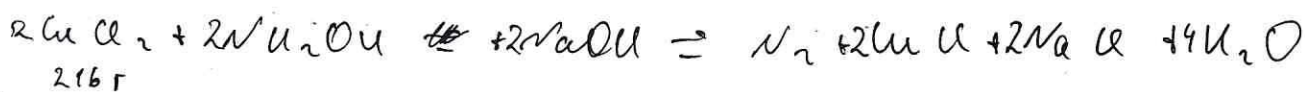


Задача 5.4

$$V(\text{шара}) = \frac{4}{3} \pi r^3 = \frac{4}{3} \cdot \pi \cdot 1,02^3 = 4,44 \text{ см}^3$$



$$V(\text{NO}_2) = 8,34 V(\text{NO})$$



$$V(\text{CuCl}_2) = \frac{m}{M} = \frac{216}{135} = 1,6 \text{ (моль)} = V(\text{N}_2) \cdot 2$$

$$V(\text{NO}) = \frac{0,8}{8,34} = 0,096 \text{ (моль)} \quad V(\text{N}_2) = V(\text{NO}_2) = 0,8 \text{ моль}$$

$$V(\text{Pd}) = \frac{1}{2} V(\text{NO}_2) = 0,4 \text{ моль}$$

$$1,33x + y = 0,096$$

$$13,032 \text{ кг/м}^3 = 13,032 \text{ г/см}^3$$

$$m(\text{шара}) = V \cdot \rho = 4,44 \cdot 13,032 = 57,862 \text{ г}$$

$$m(\text{Pd}) = V \cdot \rho = 0,4 \cdot 106 = 42,4 \text{ г}$$

$$m(\text{Au/Pt}) = 57,862 - 42,4 = 15,462 \text{ (г)}$$

$$\begin{cases} 1,33x + y = 0,096 \\ 195x + 197y = 15,462 \end{cases} \Rightarrow x = 0,0515$$

$$m(\text{Au}) = M \cdot \nu = 197 \cdot 0,0275 = 5,4175 \text{ г}$$

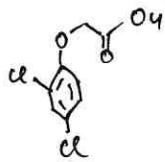
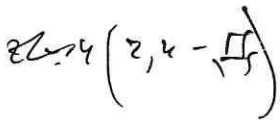
$$m(\text{Pt}) = 15,462 - 5,4175 = 10,0445 \text{ (г)}$$

$$w(\text{Au}) = \frac{5,4175}{57,862} = 0,0936 = 9,36\% \quad w(\text{Pt}) = \frac{10,0445}{57,862} = 0,1736 = 17,36\%$$

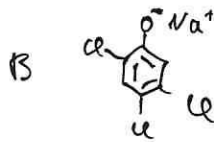
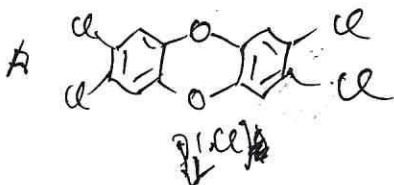
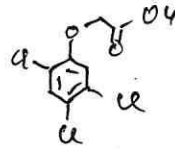
$$w(\text{Pd}) = \frac{42,4}{57,862} = 0,7328 = 73,28\%$$



Задача 1.4



(2,4,5-Т)



Пусть $\nu(B) = x$,
 $\nu(A) = 1 - x$

$$3x + 4(1-x) = 2,2 \cdot (x + 2(1-x))$$

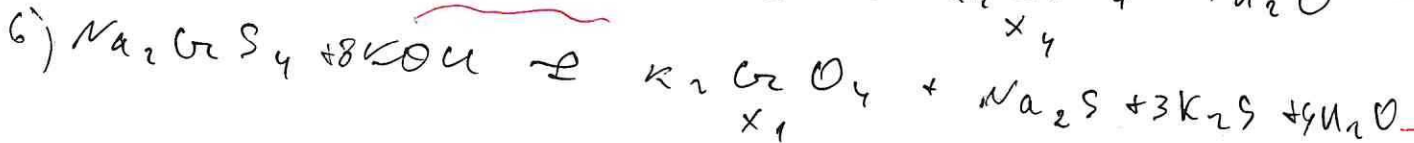
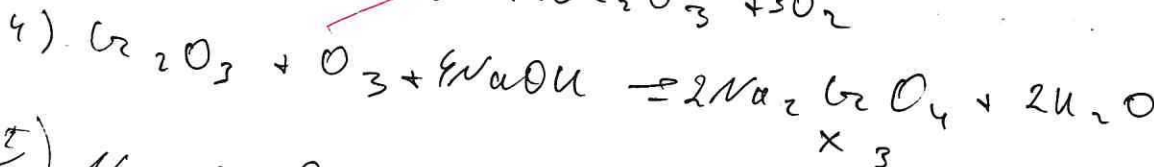
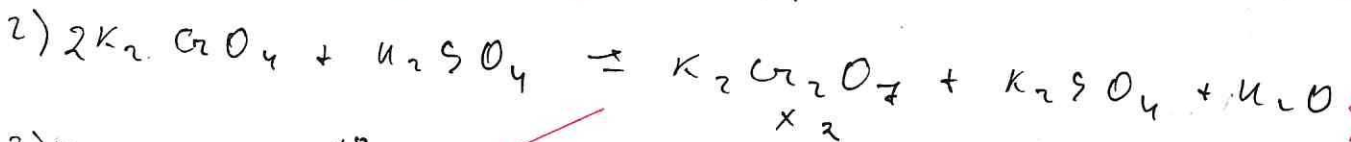
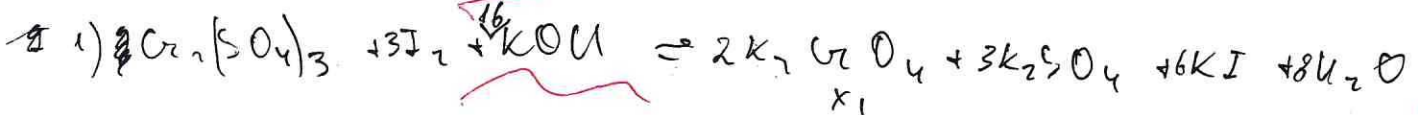
$$x = 0,333$$

$$w(B) = \frac{0,333 \cdot 219,5}{0,333 \cdot 219,5 + 0,667 \cdot 322}$$

$$= 0,254 = 25,4\%$$

$$w(A) = 100\% - 25,4\% = 74,6\%$$

Задача 7.4.



Задача № 3.4

Объем шара = $\pi r^2 \cdot h = 3,14 \cdot 3,5^2 \cdot 30 = 1154 \text{ (см}^3\text{)}$ *10.*

$m(r-ka) = V \cdot \rho = 50 \cdot 1,0666 = 53,33 \text{ (г)}$

$m(\text{Cu}_2\text{CO}_3\text{OH}) = \frac{m}{M} \cdot \mu \cdot \omega = 34,6645 \text{ г}$

$D(\text{Cu}_2\text{CO}_3\text{OH}) = \frac{m}{M} = \frac{34,6645}{60} = 0,58 \text{ моль}$ *10.*

$V = 1154 \cdot 0,7 = 807,8 \text{ мл}$ *10.*

$C(\text{Cu}_2\text{CO}_3\text{OH}) = \frac{D}{V} = \frac{0,58}{0,8078} = 0,718 \text{ моль/л}$ *10.*

$K_a = \frac{[H^+]^2}{C_0 - [H^+]}$

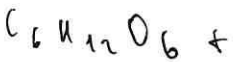
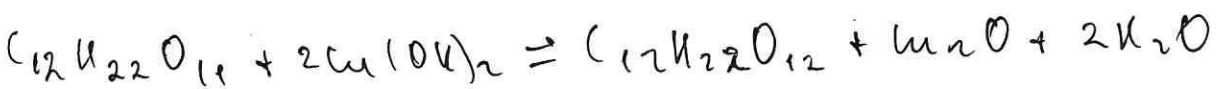
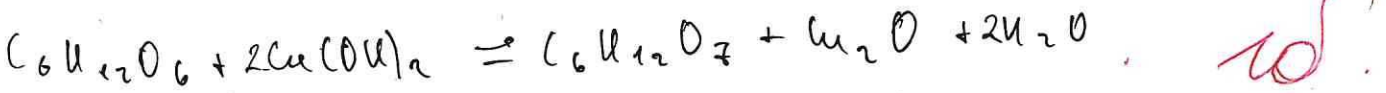
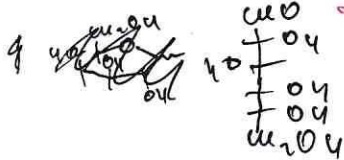
$K_a = 10^{-pKa}$

$K_a = 1,738 \cdot 10^{-5} = \frac{[H^+]^2}{C_0 - [H^+]} = \frac{[H^+]^2}{0,718 - [H^+]}$

$pH = -\log_{10}([H^+])$ $pH = 2,45$ *20.*

отсюда находим $[H^+]$
 $[H^+] = 3,524 \cdot 10^{-3} \text{ моль/л}$

Задача № 4.4



$\rho = D \cdot R \cdot T \cdot D(Cu_2O) = \frac{pV}{RT} = \frac{101,5 \cdot 27,8}{8,31 \cdot 283} \approx 1,2 \text{ моль}$

