

$$\begin{array}{cccccccccccc} 1 & 2 & 3 & 4 & 5 & 6 & 7 & 8 & 9 & 10 & \\ \hline 6 & 2 & 1 & - & 1 & 6 & 10 & 8 & 4 & 6 & \\ \hline & & 5 & & & & & & & & \end{array}$$

$$\Sigma 50$$

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1.2.

$$n = \frac{\sqrt{a}}{\sqrt{a}}$$

$$n(P) = \frac{2,709 \cdot 10^{23}}{6,02 \cdot 10^{23}} = 0,45 \text{ (моль)}$$

$$n(O) = \frac{1,5953 \cdot 10^{24}}{6,02 \cdot 10^{23}} = 2,65 \text{ (моль)}$$

$$\begin{cases} n(P) = n(P)_{\text{сер.}} + n(P)_{\text{мб}} \\ n(O) = n(O)_{\text{сер.}} + n(O)_{\text{мб}} \end{cases}$$

$$\begin{cases} 0,45 = n(\text{сер.}) \cdot 2 + n(\text{мб.}) \\ 2,65 = n(\text{сер.}) \cdot 12 + n(\text{мб.}) \cdot 5 \end{cases}$$

Т.к.:

$$\begin{aligned} n(P)_{\text{сер.}} &= 2n(\text{сер.}) \\ n(O)_{\text{сер.}} &= 12n(\text{сер.}) \\ n(P)_{\text{мб.}} &= n(\text{мб.}) \\ n(O)_{\text{мб.}} &= 5n(\text{мб.}) \end{aligned}$$

Решая, $n(\text{сер.}) = 0,2 \text{ моль}$; $n(\text{мб.}) = 0,05 \text{ моль}$

$$\Rightarrow m_{\text{образца}} = 0,2 \cdot (24,3 + 65,42 + 31 \cdot 2 + 16 \cdot 12 + 8) + 0,05 \cdot (63,52 + 31 + 16 \cdot 5 + 1) = 95,37 \text{ (г.)}$$

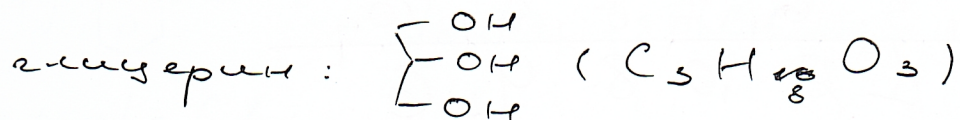
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СЕЧЕНОВСКИЙ
УНИВЕРСИТЕТ

АХОЧБ

2.2.



$$w(\text{H}) = \frac{w(\text{H})_{\text{глиц}} \cdot m(\text{C}_3\text{H}_8\text{O}_3) + w(\text{H})_{\text{бура}} \cdot m(\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O})}{m(\text{C}_3\text{H}_8\text{O}_3) + m(\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O})}$$

$$w(\text{H})_{\text{глиц}} = \frac{8}{12 \cdot 3 + 8 + 16 \cdot 3} = \frac{2}{23}$$

$$w(\text{H})_{\text{бура}} = \frac{20}{23 \cdot 2 + 11 \cdot 4 + 20 + 16 \cdot 17} = \frac{10}{191}$$

Пусть, был р-р массой 100 (г.), тогда
(препарат)

$$w(\text{глиц.}) = \frac{x}{100}, \text{ где } x - \text{масса } \text{C}_3\text{H}_8\text{O}_3,$$

$$\text{а } w(\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}) = \frac{100 - x}{100}$$

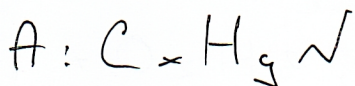
$$0,08 = \frac{\frac{2}{23} (x) + \frac{10}{191} (100 - x)}{100}$$

$$x = 79,89 (\text{г.})$$

$$\Rightarrow w(\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}) = 100\% - 79,89\% = 20,11\%$$



7.2.



$$0,53763 = \frac{7 + y + 6 \cdot x}{14 + 12 \cdot x + y}, \text{ т.к.: } +$$

H не содержит нейтронов — только протоны

✓ — 7 и 7 протонов/нейтронов

C — 6 и 6 протонов/нейтронов
+ 0,53763y

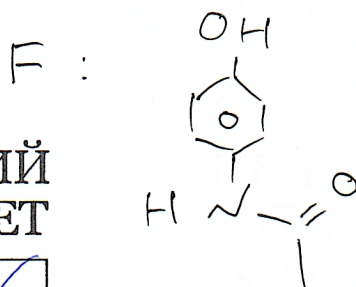
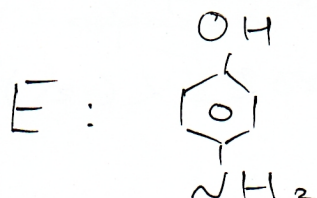
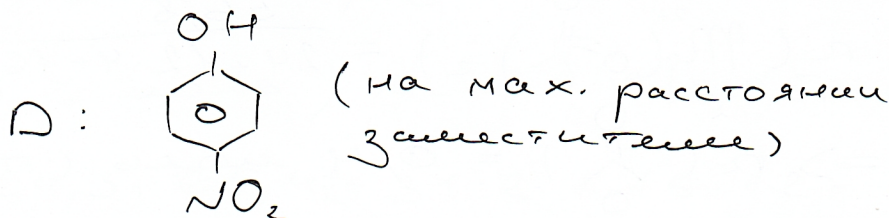
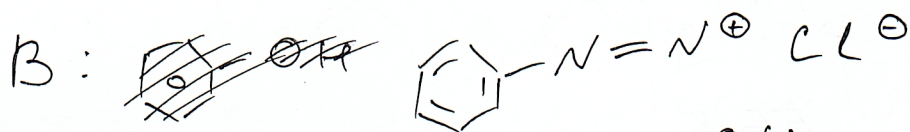
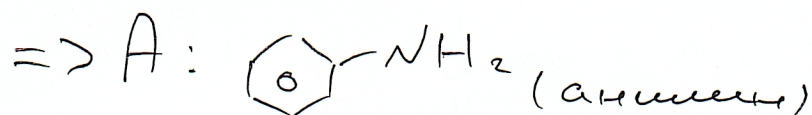
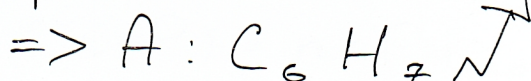
$$7,52682 + 6,45156 \cdot x = 7 + y + 6x$$

$$0,52682 + 0,45156 \cdot x = y - 0,53763y$$

при $x=10, y=8$ (единственные 7 числа)
 $\Rightarrow A: C_{10}H_8N$ x, y

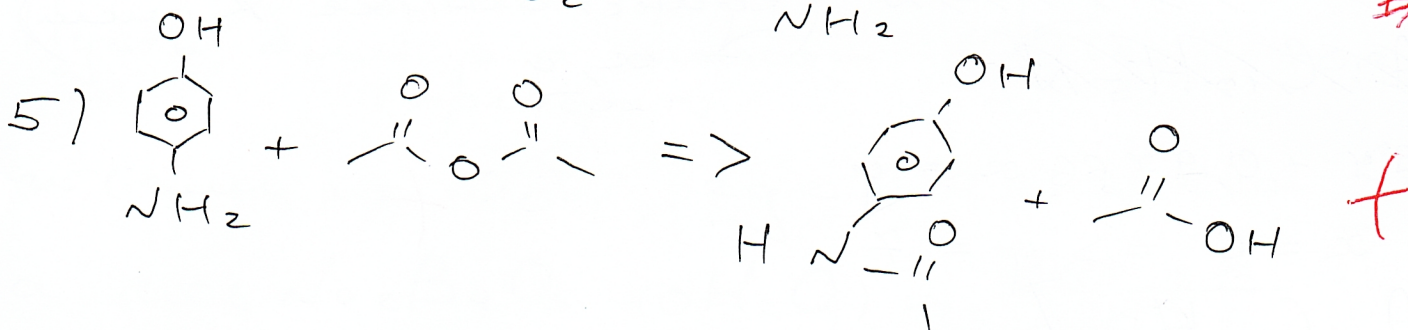
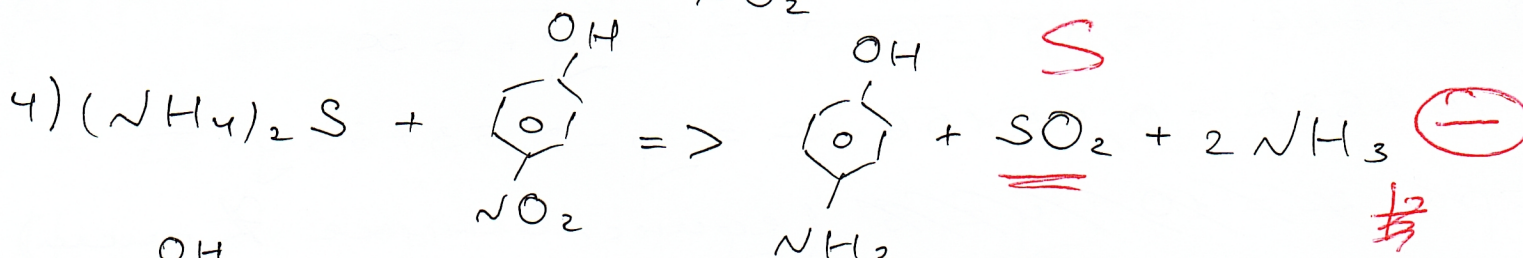
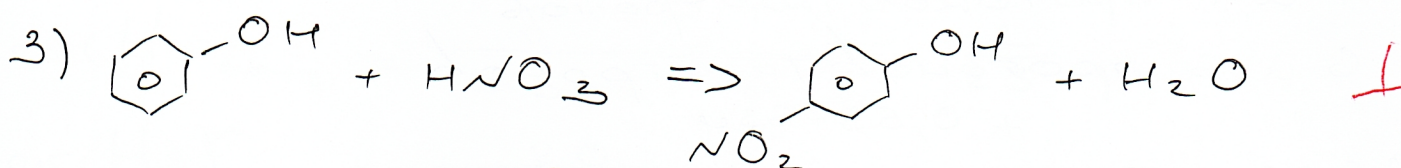
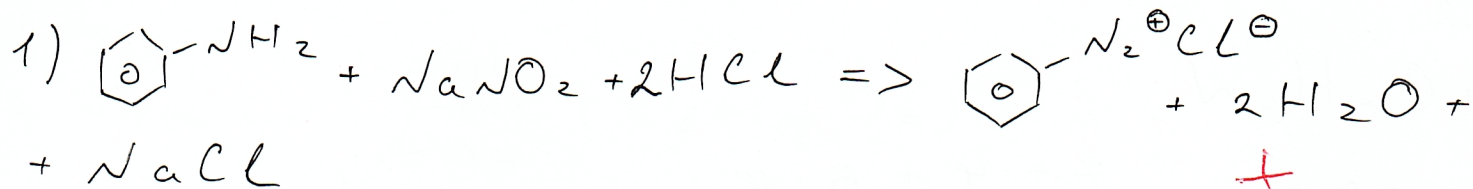
$$1,1394 + 0,9766x = y$$

при $x=6 \Rightarrow y=7$ +

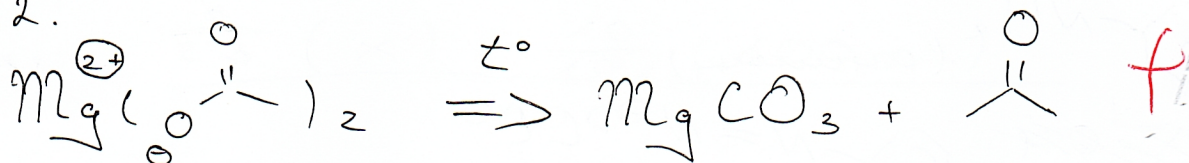


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8.2.



$$n(\text{Mg}^{2+}(\text{CH}_3\text{COO})_2) = \frac{56,8}{24 + 12 \cdot 4 + 16 \cdot 4 + 6} = 0,4 \text{ (моль)}$$

$$\Rightarrow n(\text{CH}_3\text{COOH}) = 0,4 \text{ моль (по реакции)}$$

$$\Rightarrow m(\text{CH}_3\text{COOH}) = 0,4 (12 \cdot 3 + 6 + 16) = 23,2 \text{ (г.)}$$



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УНИВЕРСИТЕТ

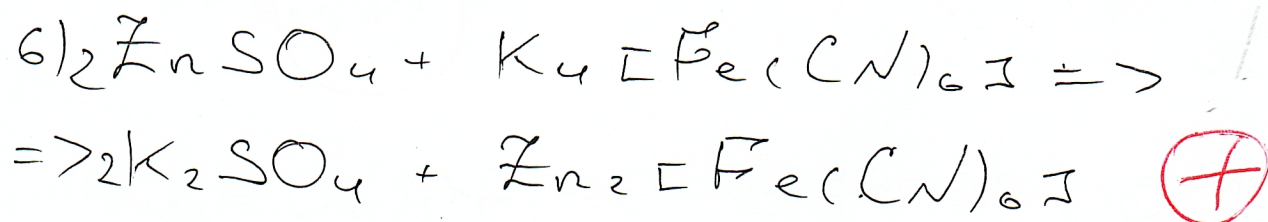
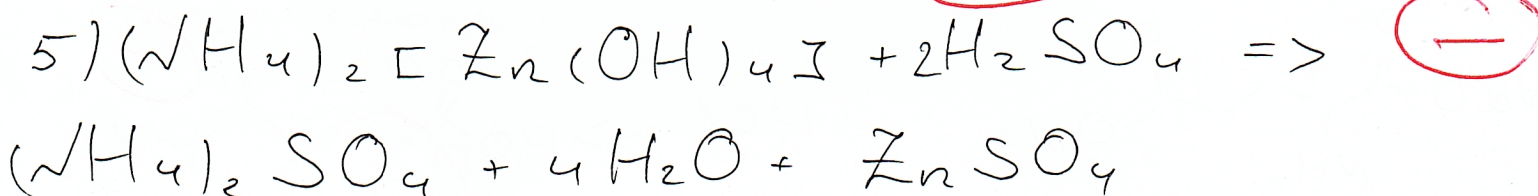
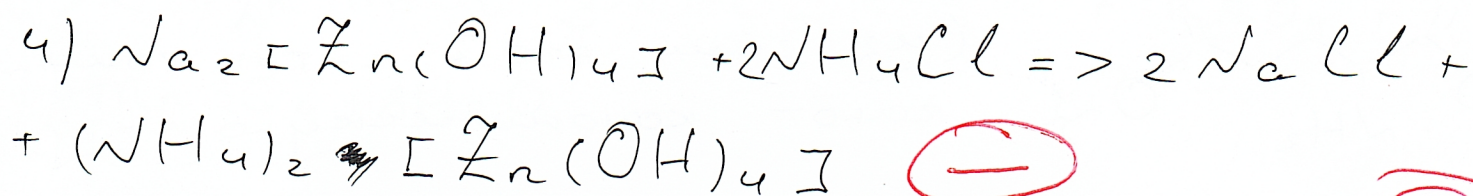
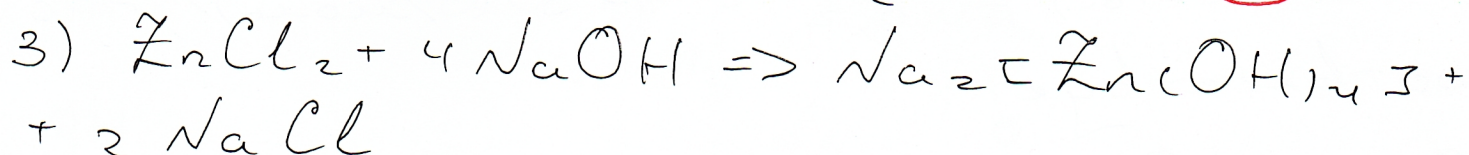
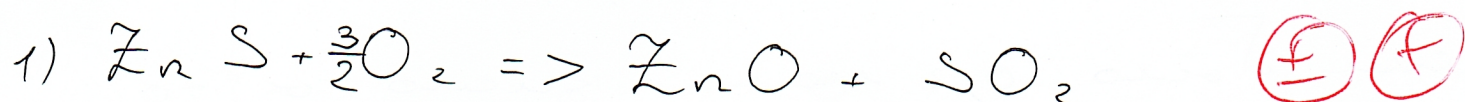
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6.2.

По описанию $X_1: ZnS$; $X_2: ZnO$;
 $X_3: ZnCl_2$; $X_4: ZnNa_2(OH)_4$;

$X_5: (NH_4)_2[Zn(OH)_4]$

$X_6: ZnSO_4$ $X_7: Zn_2[Fe(CN)_6]$



8.2.

$$\Rightarrow n(\text{C}_3\text{H}_7\text{OH}) = 0,4 \text{ моль}$$

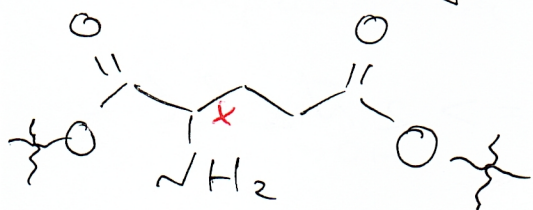
$$\Rightarrow \cancel{M_{\text{ост}}} M_{\text{ост}} = 46,2 - m(\text{C}_3\text{H}_7\text{OH}) =$$

$$= 46,2 - 0,4(12 \cdot 3 + 7) = 29 \text{ (г/моль)}$$

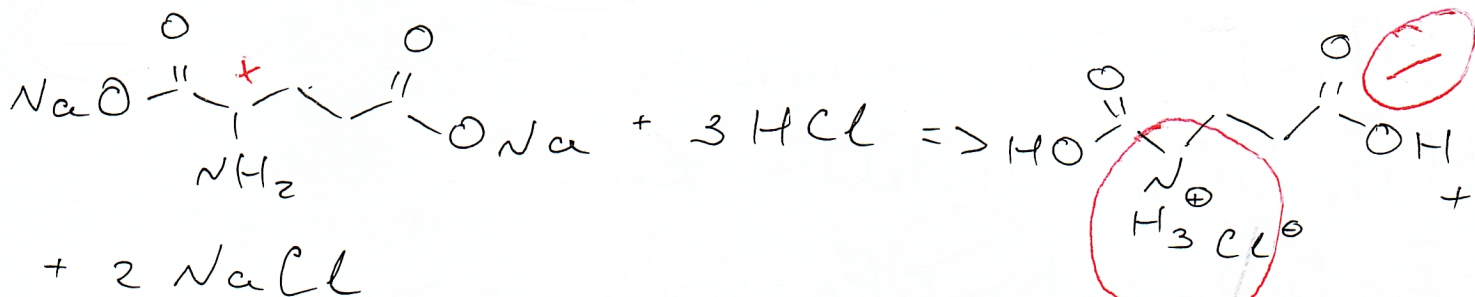
если было 0,2 моль кислоты, то:

$$M_{\text{ост}}(\text{к-ты}) = \frac{29}{0,2} = 145 \text{ (г/моль)}, \text{ что}$$

соответствует:



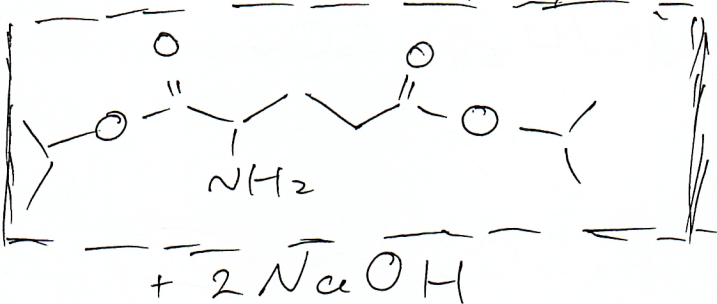
(из сам этой к-ты получают каноническую к-ту)



$\Rightarrow$ как раз соотношение 1:3 $\Rightarrow$
 $n(\text{сам А}) = 0,2$, т.к. $n(\text{HCl}) = 0,6 \text{ моль}$.

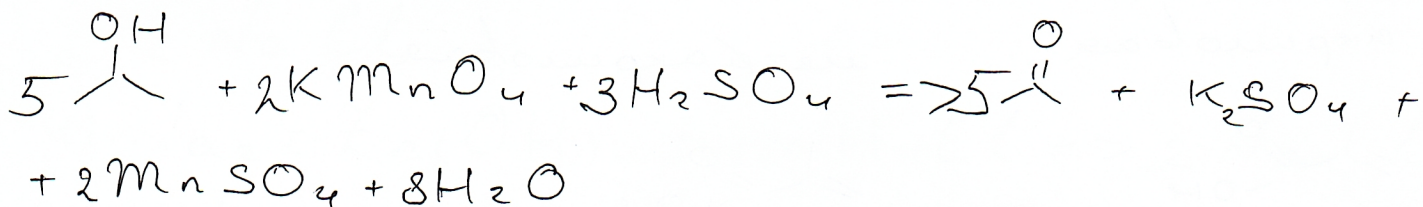
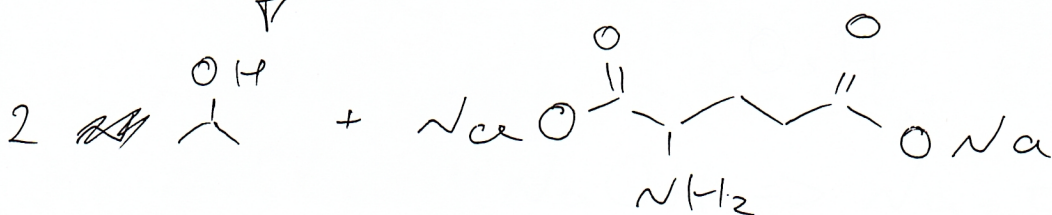


сложный эфир:

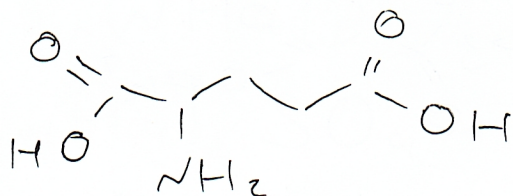


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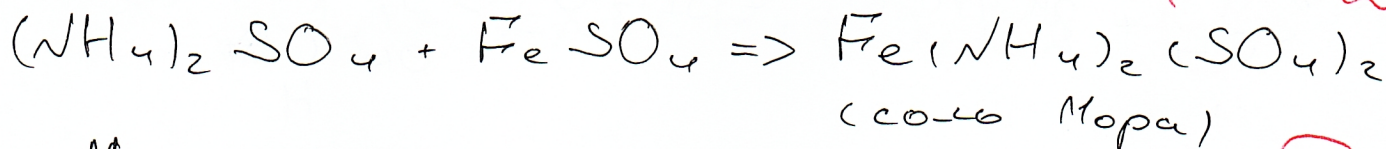
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аминокислота:



10.2.



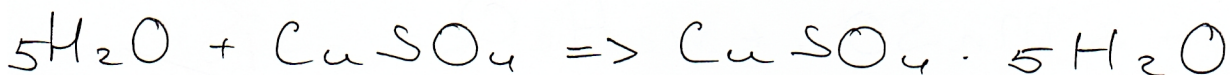
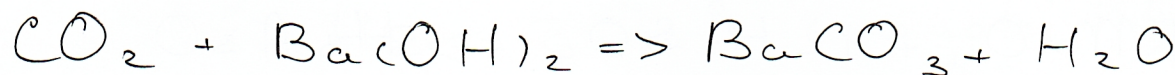
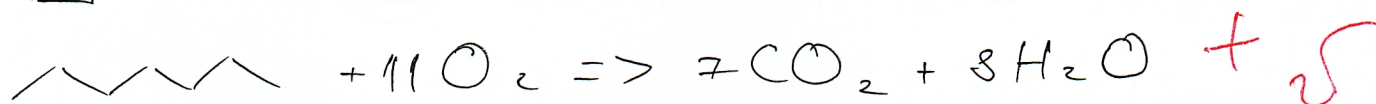
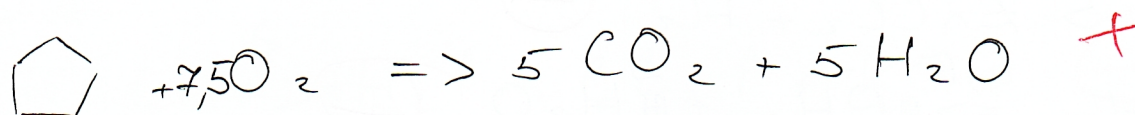
$$n(\text{Морс}) = 0,02 \cdot 2,25 = 0,045 \text{ (моль)}$$

$$n(\text{KMnO}_4) = 0,5 \cdot 0,015 = 7,5 \cdot 10^{-3} \text{ (моль)}$$



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$$m(\text{H}_2\text{O}) = 144 \Rightarrow n(\text{H}_2\text{O}) = 8 \text{ моль}$$

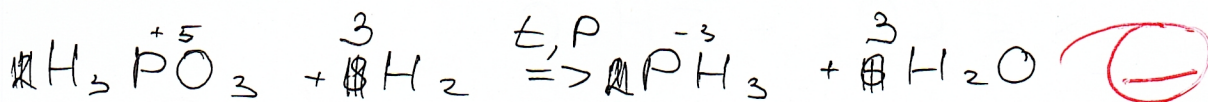
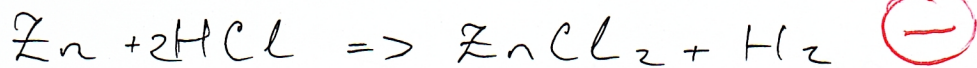
$$m(\text{CO}_2) = 44 \cdot n(\text{BaCO}_3) = 44 \cdot \frac{147,5}{137,8 + 16 \cdot 3 + 12} = 330(2.)$$

$$\Rightarrow n(\text{CO}_2) = 7,5 \text{ моль}$$

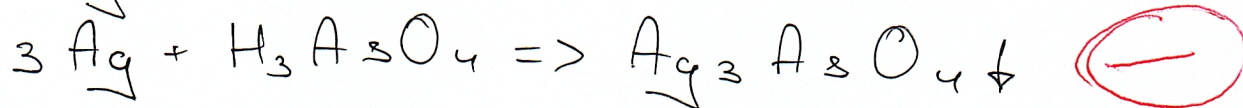
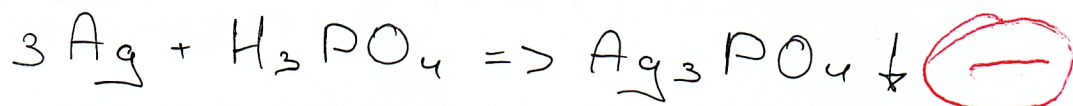
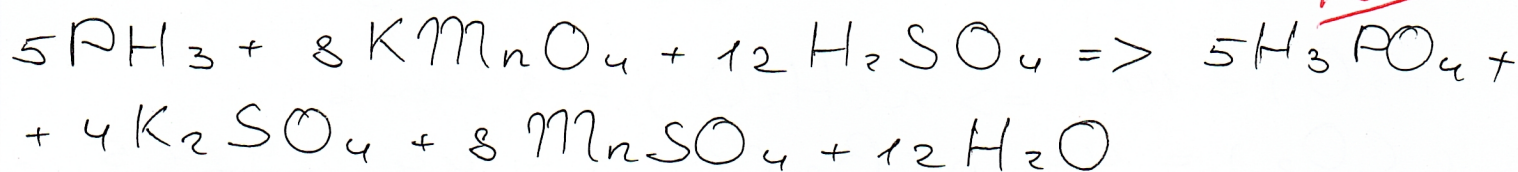
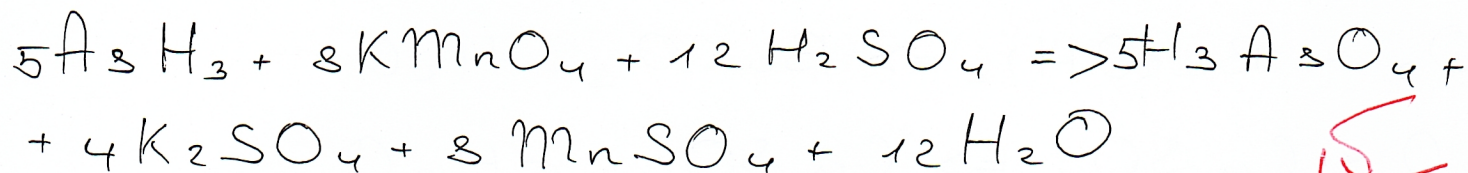
$$\begin{cases} 5 \cdot n(\text{C}_5\text{H}_{10}) + 7 \cdot n(\text{C}_7\text{H}_{14}) = 7,5 \\ 5 \cdot n(\text{C}_5\text{H}_{10}) + 8 \cdot n(\text{C}_7\text{H}_{14}) = 8 \end{cases}$$

$$n(\text{C}_5\text{H}_{10}) = 0,8 \text{ моль} ; n(\text{C}_7\text{H}_{14}) = 0,5 \text{ моль}$$





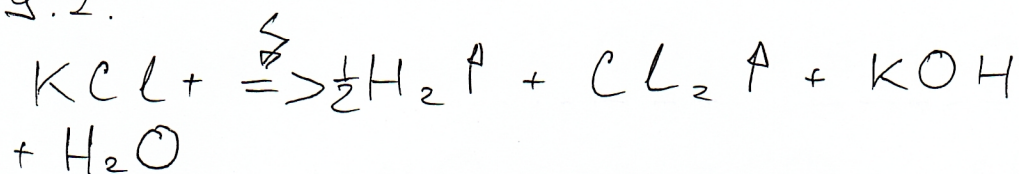
$$M_{\text{ср}}(\text{смеси}) = 20 \cdot 2,4335 = 48,67 \text{ (г/моль)}$$



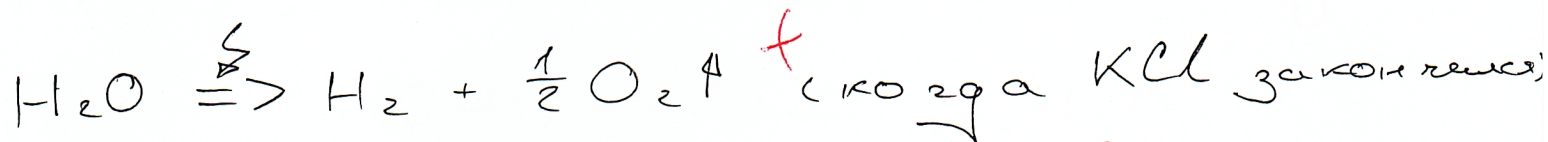
$$\begin{cases} n(\text{PH}_3) \cdot (108 \cdot 3 + 31 + 16 \cdot 4) + n(\text{AsH}_3) \cdot (108 \cdot 3 + 75 + 16 \cdot 4) = 130,1 \\ x(\text{PH}_3) \cdot 34 + x(\text{AsH}_3) \cdot 78 = 2,4335 \end{cases}$$



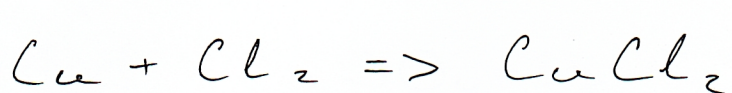
3.2.



⊖



+ (когда KCl закончился)

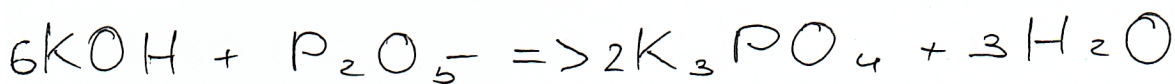
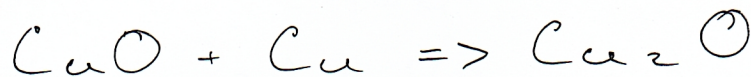
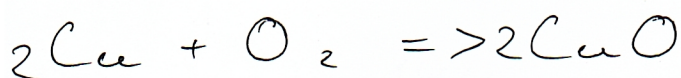


+

+

+

45.



⊖

