

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

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1.4) Пусть $n(\text{MgZn}_2(\text{PO}_4)_2 \cdot 4\text{H}_2\text{O}) = x$ моль; а $n(\text{Ca}_{10}(\text{PO}_4)_6\text{Cl}_2) = y$ моль, тогда $n(\text{O})$ в первом материале - $12x$ моль, а во втором - $24y$ моль; $n(\text{P})$ в первом - $2x$, во втором -

$$n(\text{O}) = \frac{m}{M} ; n(\text{O}) = \frac{8,6688 \cdot 10^{-23}}{6,02 \cdot 10^{23}} = 1,44 \text{ моль};$$

$$n(\text{P}) = \frac{1,5652 \cdot 10^{-23}}{6,02 \cdot 10^{23}} = 0,26 \text{ моль}$$

$$\begin{cases} 12x + 24y = 1,44 \\ 2x + 6y = 0,26 \end{cases}$$

Решив уравнение, $y = 0,01$; $x = 0,1$

$$m(\text{MgZn}_2(\text{PO}_4)_2 \cdot 4\text{H}_2\text{O}) = 416 \text{ г/моль}; m = 41,6 \text{ г}$$

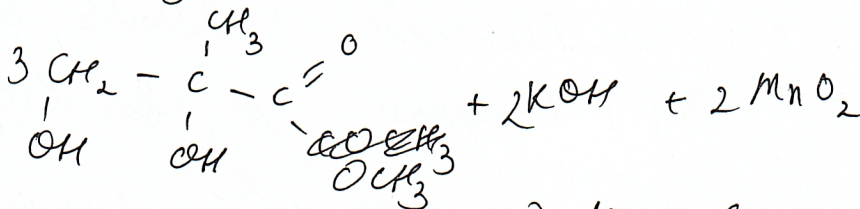
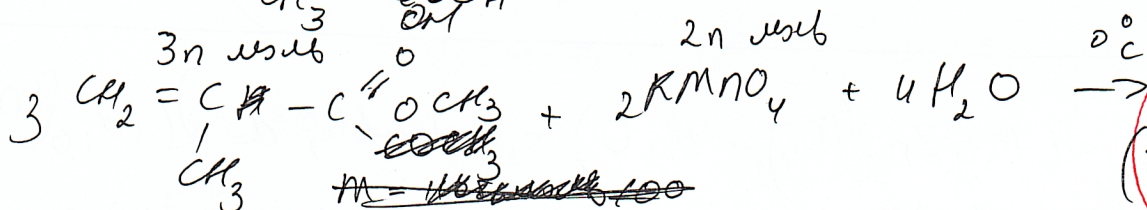
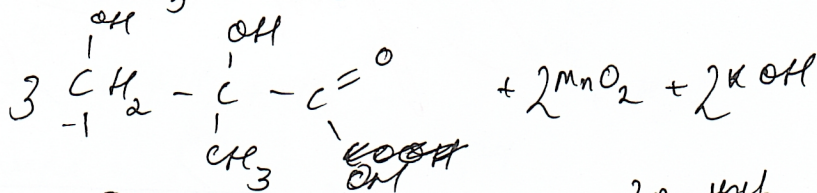
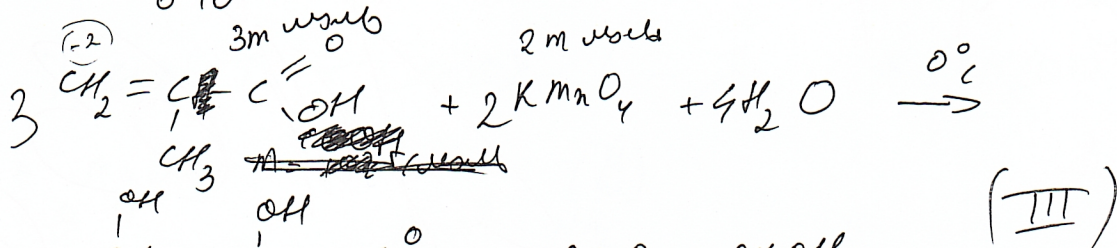
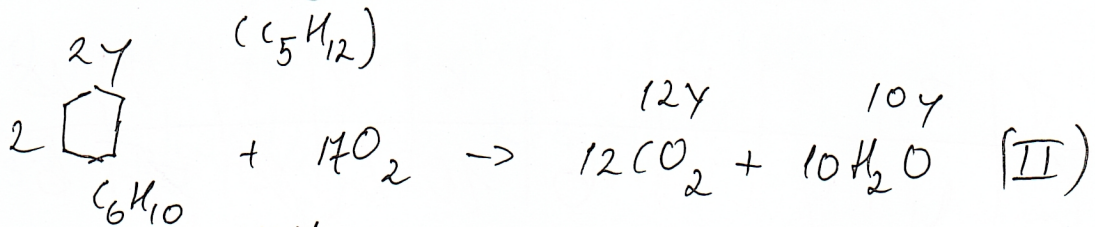
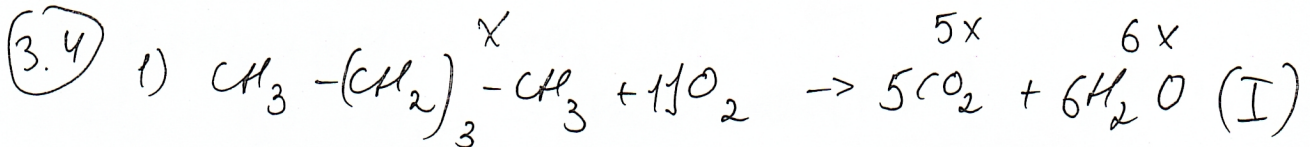
$$m(\text{Ca}_{10}(\text{PO}_4)_6\text{Cl}_2) = 1041 \text{ г/моль}; m = 10,41 \text{ г}$$

$$5) \text{ Масса образца} = 52,01 \text{ г}$$

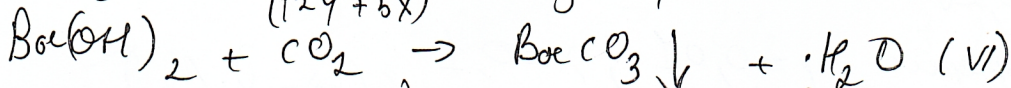
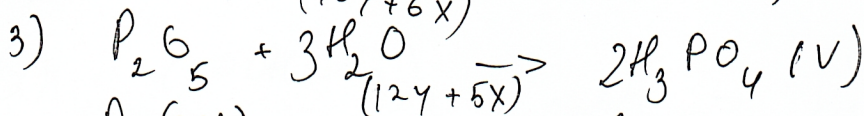


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2) $5x - \nu(\text{CO}_2)$, $6x - \nu(\text{H}_2\text{O})$ в р-ии I; $12y - \nu(\text{CO}_2)$, $10y - \nu(\text{H}_2\text{O})$ в р-ии II; массы гуржи увеличивается за счет H_2O , окисрк - за счет CO_2



$m(\text{H}_2\text{O}) = 108$; $\nu(\text{H}_2\text{O}) = 6 \text{ моль}$; $\nu(\text{BaCO}_3) = 5,5 \text{ моль} = \nu(\text{CO}_2)$

$10y + 6x = 6$

$12y + 5x = 5,5 \text{ моль}$; $x = 0,7727$
 $y = 0,13638$



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$$m(C_6H_{10}) = 0,27276 \cdot 82 \frac{\text{г}}{\text{моль}} = 22,36632 \text{ г}$$

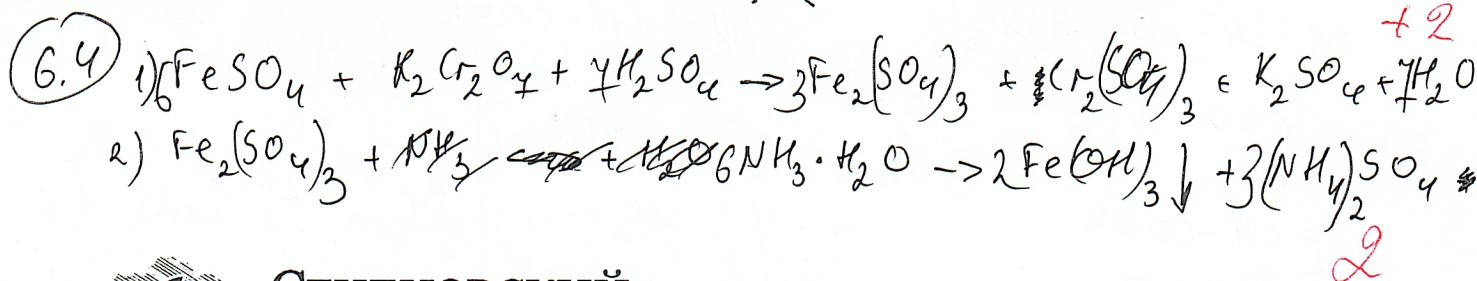
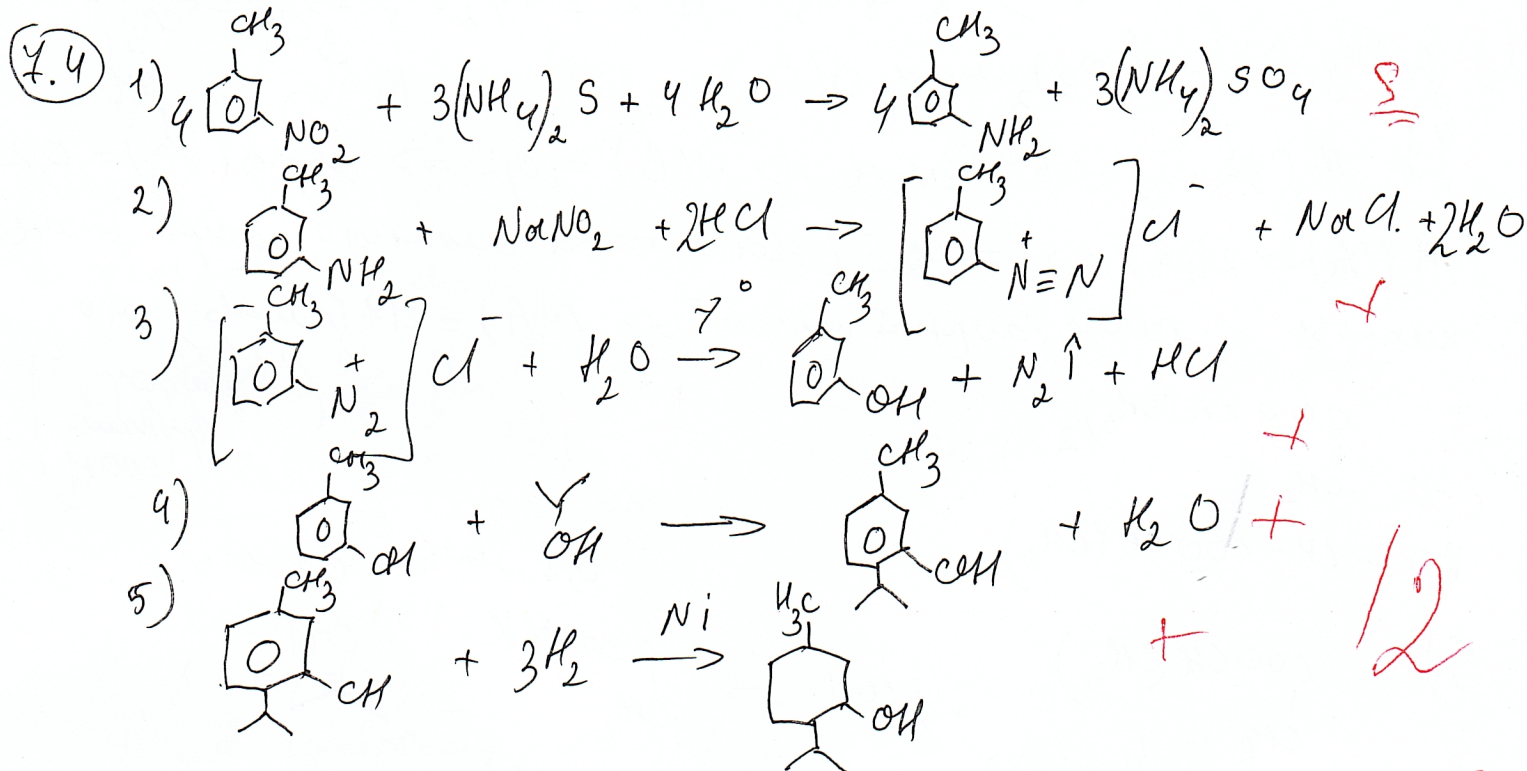
$$m(C_5H_{12}) = 0,7727 \cdot 72 \frac{\text{г}}{\text{моль}} = 55,6344 \text{ г}$$

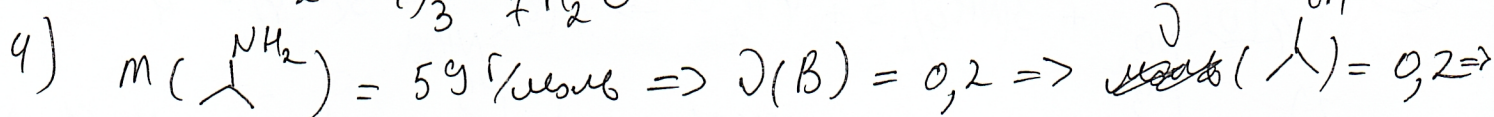
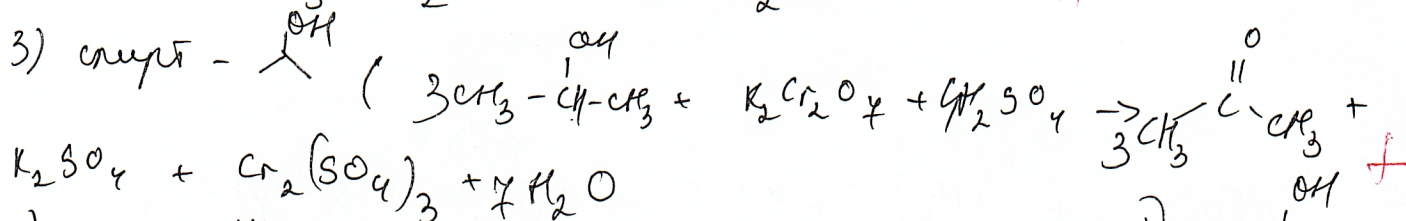
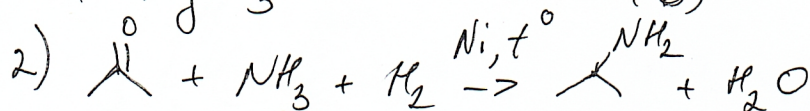
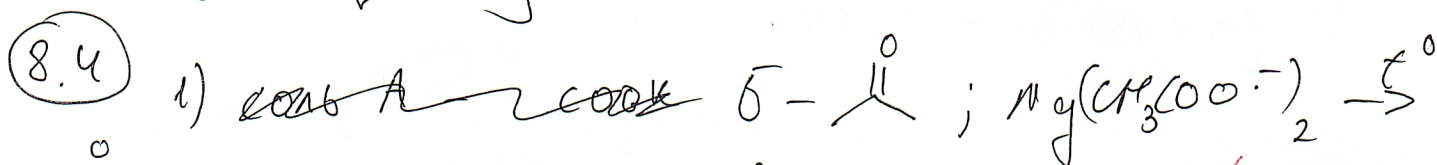
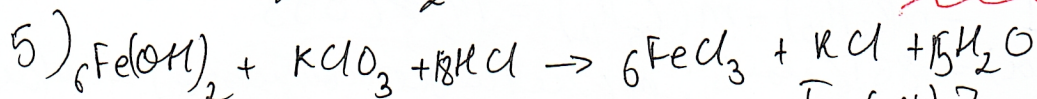
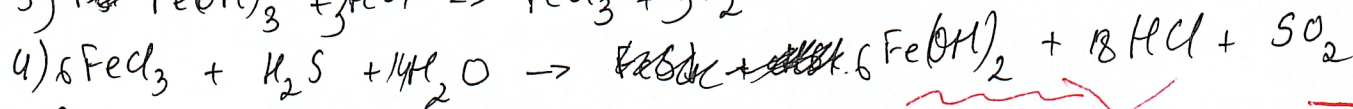
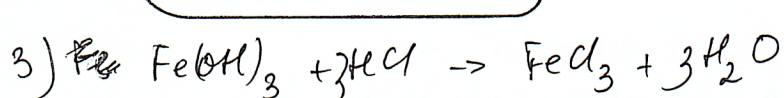
$$4) m(\text{кислота}) = 96,61 - m(C_6H_{10}) - m(C_5H_{12}) = 14,6093$$

$$m(\text{метакриловая}) = 86 \frac{\text{г}}{\text{моль}}; m(\text{метилметакриловая}) = 100 \frac{\text{г}}{\text{моль}}$$

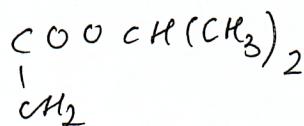
$$5) \begin{cases} 86 \cdot 3m + 100 \cdot 3n = 14,6093 \\ 158 \cdot \frac{3m}{2} + 158 \cdot \frac{3n}{2} = 21,064 \end{cases}$$

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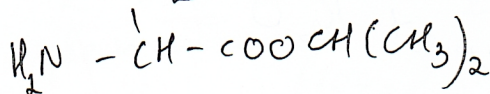


$\text{M(A)} = 21,7 / 0,2 = 108,5$ (нет ~~такой~~ молярной массы) $\Rightarrow \text{M(A)} = 217 \text{ г/моль}$ это

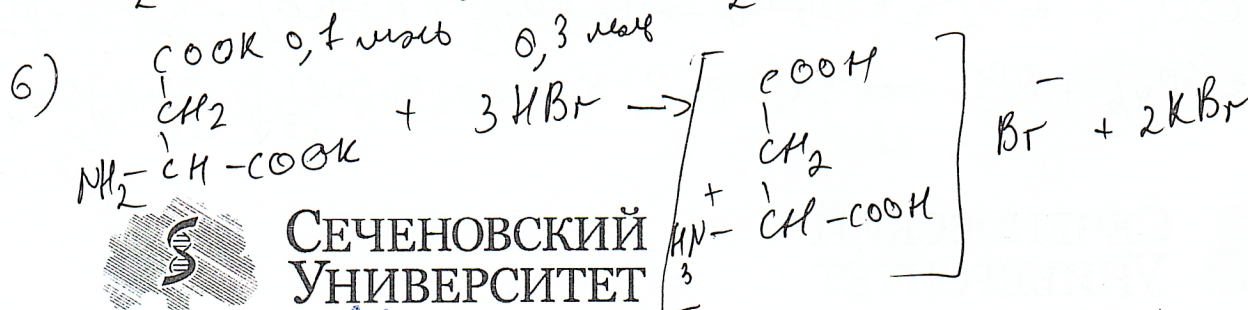
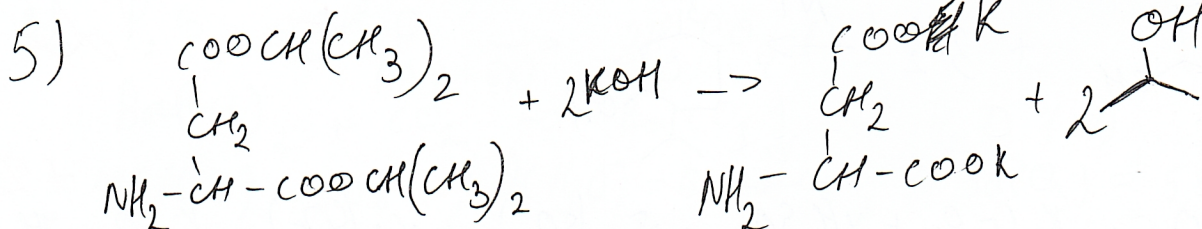


+ 10

(с двумя гидроксильными группами)



0,1 моль 0,2 моль



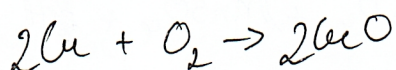
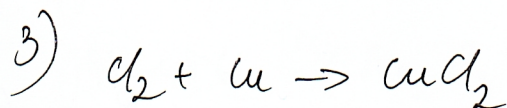
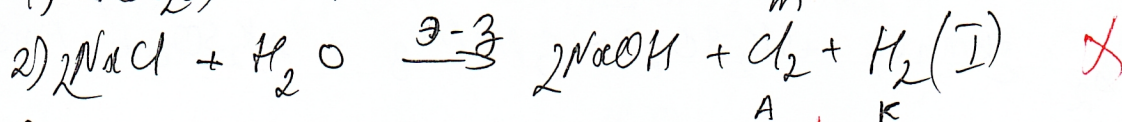
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$$7) \nu(\text{KBr}) = \frac{24,3 \text{ г}}{81 \text{ г/моль}} = 0,3 \text{ моль}$$

9.4

~~1) $\text{NaCl} + \text{H}_2\text{O} \rightarrow \text{NaOH} + \text{H}_2$ $\Rightarrow m(\text{NaCl}) = 8 \text{ г} \Rightarrow m(\text{NaOH}) = 12 \text{ г}$~~



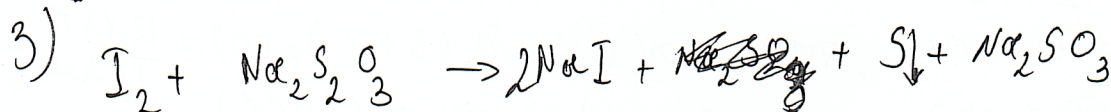
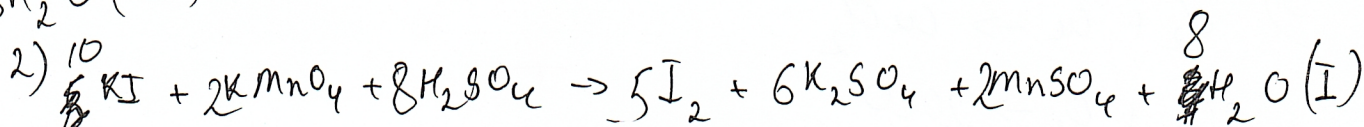
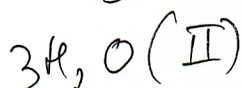
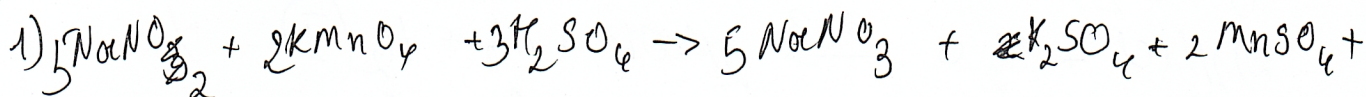
Пусть $m(\text{Cu}) = 100 \text{ г}$, тогда $m(\text{O}) = 12,63 \text{ г}$, $\nu(\text{O}) = \frac{12,63 \text{ г}}{16 \text{ г/моль}} = 0,789375 \text{ моль}$
 $= \nu(\text{CuO}) \Rightarrow m(\text{CuO}) = 63,15 \Rightarrow m(\text{CuCl}_2) = 36,85$
 $(\text{CuCl}_2) = 0,2729$; $m(\text{Cu}) = 67,9556$; $\frac{100 \text{ г}(\text{Cu})}{67,9556} = \frac{x \text{ г}(\text{Cl}_2)}{71,38}$
 $x = 28,5$

$$4) \nu(\text{Cl}_2) = \frac{28,5 \text{ г}}{71,38 \text{ г/моль}} \approx 0,4 \text{ моль}$$

$$5) \nu(\text{NaCl}) = 0,8 \text{ моль (по ре-ш. I)}$$



10.4



$$4) \nu = c \cdot V; V(\text{Na}_2\text{S}_2\text{O}_3) = 0,1 \text{ M} \cdot 0,01 \text{ л} = 1 \text{ мл} =$$

$$\nu(\text{I}_2); \cancel{\nu(\text{KI})} \nu(\text{KMnO}_4) \text{ по р-ции I: } 0,4 \text{ мл} =$$

$$5) \nu(\text{KMnO}_4) \text{ (всего)} = 5 \cdot 10^{-3} \cdot 0,25 = 1,25 \text{ мл} ; \Rightarrow$$

$$\nu(\text{KMnO}_4) \text{ по р-ции II} = 1,25 \text{ мл} - 0,4 \text{ мл} = 0,85 \text{ мл}$$

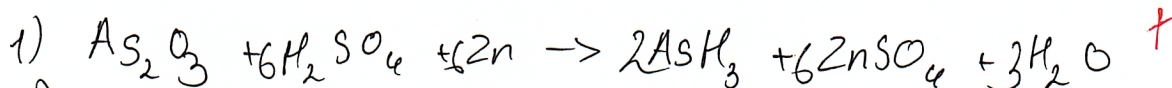
$$6) \nu(\text{NaNO}_2) = 0,85 \text{ мл} \cdot 5 = 2,125 \text{ мл}$$

$$c(\text{NaNO}_2) = \frac{\nu}{V} = \frac{2,125 \text{ мл} \cdot 10^{-3}}{0,01 \text{ л} \cdot 10^{-3}} = 0,2125 \text{ M}$$

$$7) \nu(\text{NaNO}_2) \text{ в р-ре } 500 \text{ мл} = 0,2125 \text{ M} \cdot 500 \text{ мл} \cdot 10^{-3} = 0,10625$$

$$8) m(\text{NaNO}_2) = \nu \cdot M = 0,10625 \cdot 69 = 7,33125 \text{ г}$$

5.4



$$2) m(\text{смеси}) = 12,1675 \cdot 4 = 48,67 \text{ г}$$

$$\frac{78x + 34y}{x + y} = 48,67$$

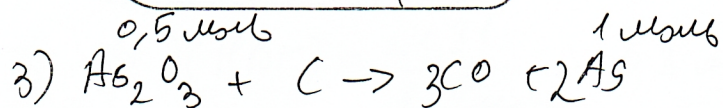
$$\text{Если } x + y = 3, \text{ то } x = 1, y = 2$$

$$m(\text{As}_2\text{O}_3) = 0,5 \text{ моль} \cdot 198 \text{ г/моль} = 99 \text{ г}$$

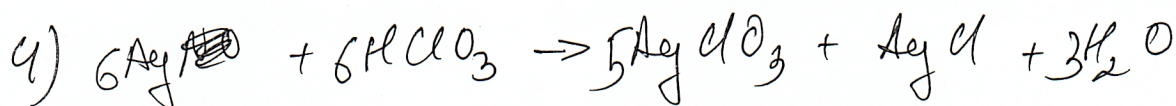


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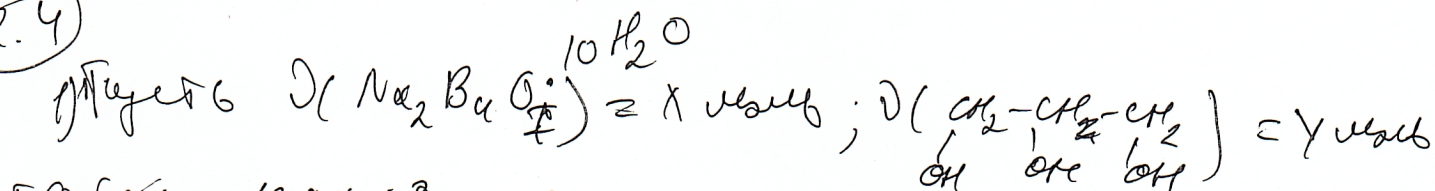
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$m(\text{As}) = 75 \text{ г/моль}$



(2.4)



$\begin{cases} 20x + 8y = 8 \\ 382x + 92y = 100 \end{cases} \quad \begin{aligned} x &= 0,0528 \\ y &= 0,868 \end{aligned}$

2) $\text{C}(\text{O}) = 7 \quad x + 10x + 3y = 17x + 3y = 3,5016$

$w(\text{O}) = \frac{3,5016 \text{ г} \cdot 100\%}{100 \text{ г}} = 3,5016\%$

+

