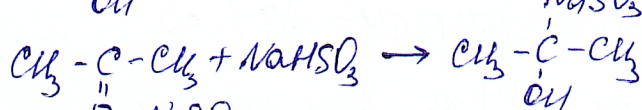
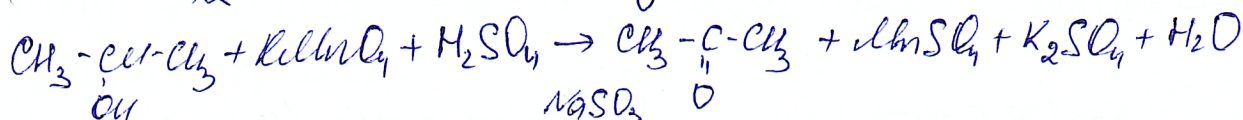
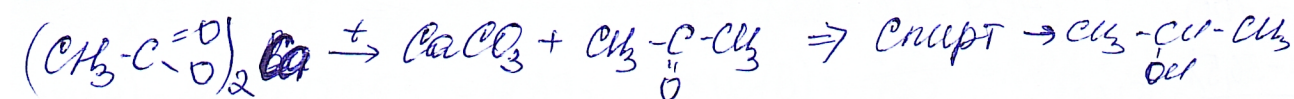
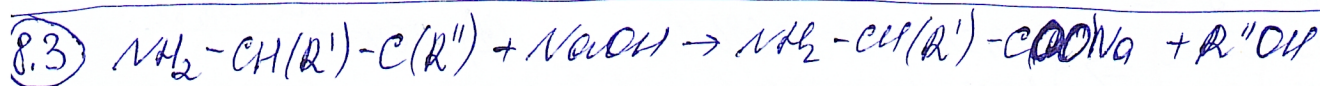
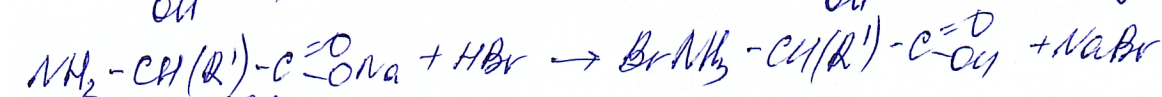


1	2	3	4	5	6	7	8	9	10
6	6	8	10	12	12	10			

Сеченов



$n(\text{CH}_3-\text{C}(\text{OH})(\text{NaSO}_3)-\text{CH}_3) = \frac{64,8}{162} = 0,4 \text{ моль} ; n(\text{CH}_3-\text{C}(\text{OH})(\text{NaSO}_3)-\text{CH}_3) = n(\text{CH}_3-\text{C}(=\text{O})-\text{CH}_3) = n(\text{CH}_3-\text{CH}(\text{OH})-\text{CH}_3)$



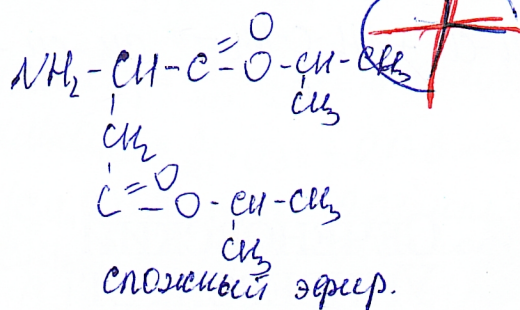
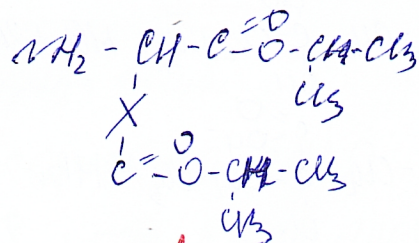
$n(\text{HBr}) = \frac{48,6}{81} = 0,6 \text{ моль}$

$n(\text{HBr}) : n(\text{CH}_3\text{COOC}_3\text{H}_7) = 0,6 : 0,4 = 3 : 2 \Rightarrow 2 \text{ карбоксильные группы}$

$n(\text{сп. эфира}) = \frac{1}{2} n(\text{CH}_3-\text{CH}(\text{OH})-\text{CH}_3) = \frac{1}{2} \cdot 0,4 = 0,2 \text{ моль}$

$M(\text{сп. эфира}) = \frac{43,4}{0,2} = 217,2 / \text{моль}$

$M(X) = 217 - 203 = 14 / \text{моль} \Rightarrow X = (-\text{CH}_2-)$

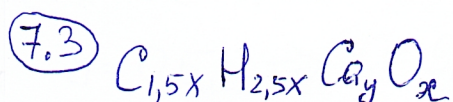
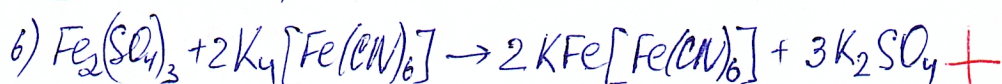
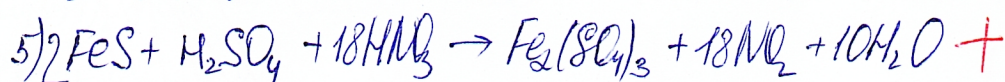
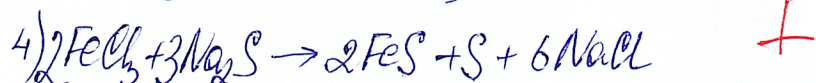
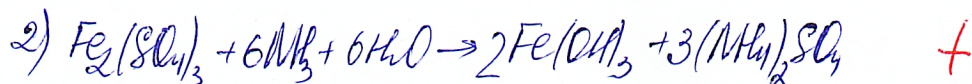
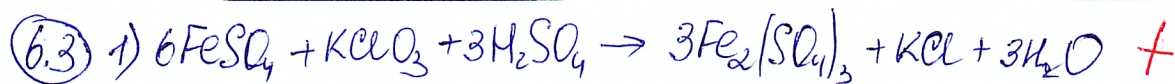


Ответ: аспариновая кислота.



СЕЧЕНОВСКИЙ
УНИВЕРСИТЕТ

11 X 16 7



$$\begin{cases} 19,5x + 20y = 52,688 \\ 36,5x + 40y = 100 \end{cases} \Rightarrow \begin{cases} 19,5x + 20y = 52,688 \quad (1) \\ 40y = 100 - 36,5x \quad (2) \end{cases}$$

$$(2) \quad 20y = \frac{100 - 36,5x}{2}$$

$$(1) \quad 19,5x + \frac{100 - 36,5x}{2} = 52,688$$

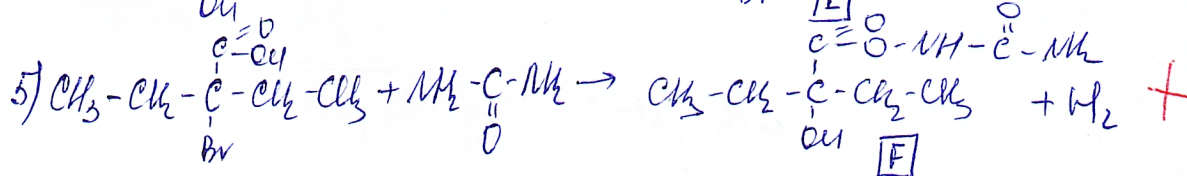
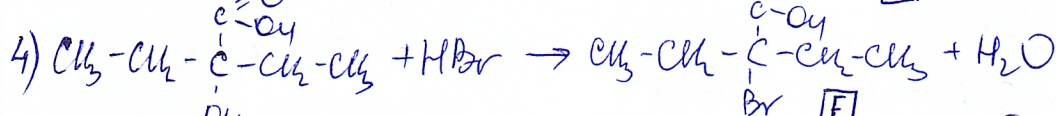
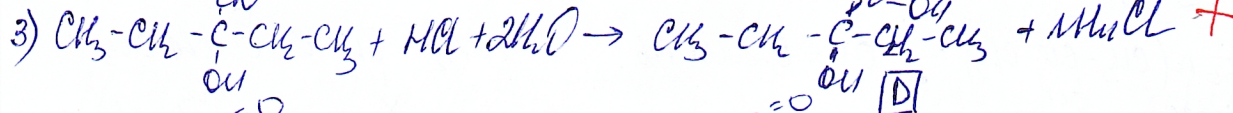
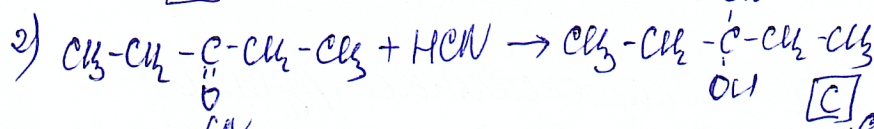
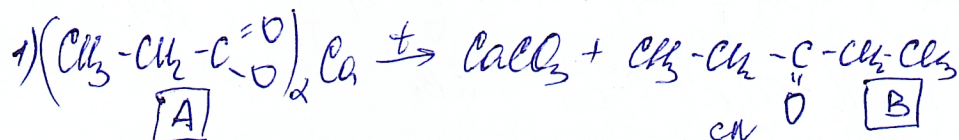
$$1,25x = 2,688$$

$$x = 2,15 \Rightarrow y = \frac{100 - 36,5 \cdot 2,15}{40} = 0,54$$

$$x:y = 2,15:0,54 = 4:1 \Rightarrow$$

$\Rightarrow \text{C}_6\text{H}_{10}\text{CaO}_4$ - молек. формула

$(\text{CH}_3-\text{CH}_2-\text{C}(=\text{O})_2)_2\text{Ca}$ - структурная формула

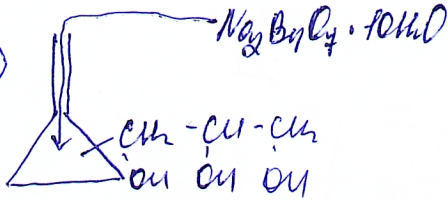


СЕЧЕНОВСКИЙ
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11 X 16 7

12

2.3



$$n(\text{Na}_2\text{B}_4\text{O}_7 \cdot 10\text{H}_2\text{O}) = X \quad n(\text{H}) = 20X \quad n(\text{B}) = 4X$$

$$n(\text{C}_2\text{H}_5\text{COOH}) = Y \quad n(\text{H}) = 8Y$$

пусть масса раствора = 100 г, тогда:

$$\begin{cases} 20X + 8Y = 8 \\ 382X + 92Y = 100 \end{cases}$$

$$Y = \frac{8 - 20X}{8}$$

$$382X + 92 \cdot \frac{8 - 20X}{8} = 100$$

$$382X + 92 - 230X = 100$$

$$152X = 8$$

$$X = 0,053 \Rightarrow Y = \frac{8 - 2 \cdot 0,053}{8} = 0,9867$$

$$m(\text{B}) = 4 \cdot 11 \cdot 0,053 = 2,332 \Rightarrow w(\text{B}) = \frac{2,33}{100} = 100\% = 2,33\%$$

Ответ: $w(\text{B}) = 2,33\%$

1.3 $n(\text{Al}_2(\text{PO}_4)_3 \cdot 3\text{H}_2\text{O}) = X$ $n(\text{H}) = 8X$ $n(\text{Al}_2(\text{PO}_4)_3 \cdot 3\text{H}_2\text{O}) = Y$ $n(\text{H}) = 9Y$
 $n(\text{P}) = 2X$ $n(\text{P}) = 2Y$

$$\sum n(\text{H}) = \frac{1,7157 \cdot 10^{24}}{6,02 \cdot 10^{23}} = 2,85 \text{ моль}$$

$$\sum n(\text{P}) = \frac{4,214 \cdot 10^{23}}{6,02 \cdot 10^{23}} = 0,7 \text{ моль}$$

$$\begin{cases} 8X + 9Y = 2,85 \\ 2X + 2Y = 0,7 \end{cases}$$

$$\Rightarrow X = 0,35 - Y$$

$$8(0,35 - Y) + 9Y = 2,85$$

$$2,8 - 8Y + 9Y = 2,85$$

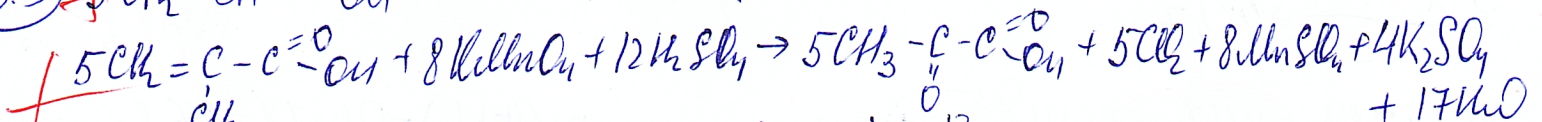
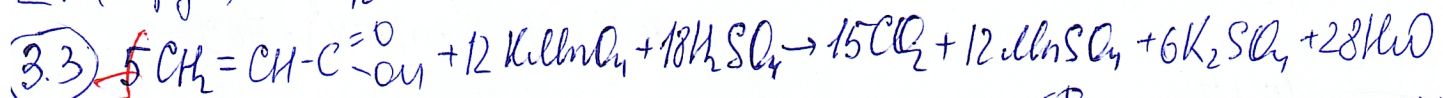
$$Y = 0,05 \Rightarrow X = 0,35 - 0,05 = 0,3$$

$$m(\text{Al}_2(\text{PO}_4)_3 \cdot 3\text{H}_2\text{O}) = 0,3 \cdot 416 = 124,8$$

$$m(\text{Al}_2(\text{PO}_4)_3 \cdot 3\text{H}_2\text{O}) = 0,05 \cdot 376 = 18,8$$

$$\sum m(\text{продукты}) = 124,8 + 18,8 = 143,6$$

Ответ: $m(\text{продукты}) = 143,6$



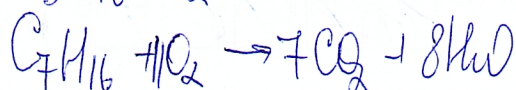
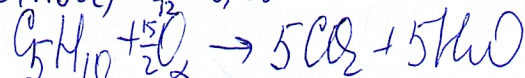
$$n(\text{KlMnO}_4) = \frac{50,56}{158} = 0,32 \text{ моль}$$

$$n(\text{KlMnO}_4)_1 = \frac{12}{20} \cdot 0,32 = 0,192 \text{ моль}$$

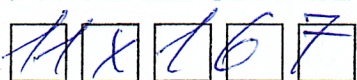
$$n(\text{KlMnO}_4)_2 = \frac{8}{20} \cdot 0,32 = 0,128 \text{ моль}$$

$$n(\text{C}_3\text{H}_4\text{O}_2) = \frac{5}{12} \cdot 0,192 = 0,08 \text{ моль}$$

$$n(\text{C}_4\text{H}_6\text{O}_2) = \frac{5}{12} \cdot 0,128 = 0,053 \text{ моль}$$



СЕЧЕНОВСКИЙ
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$$n(C_5H_{10}) = x \quad n(CO_2) = 5x \quad n(H_2O) = 5x$$

$$n(C_7H_{16}) = y \quad n(CO_2) = 7y \quad n(H_2O) = 8y$$

$$H_2SO_4 + H_2O \rightarrow \quad n(H_2O) = \frac{167,4}{18} = 9,3$$

$$Ca(OH)_2 + CO_2 \rightarrow CaCO_3 + H_2O \quad n(CaCO_3) = n(CO_2) = \frac{880}{100} = 8,8$$

$$\begin{cases} 5x + 7y = 8,8 \\ 5x + 8y = 9,3 \end{cases}$$

$$5x + 8y = 9,3$$

$$y = 0,5 \text{ моль} \Rightarrow x = \frac{9,3 - 8 \cdot 0,5}{5} = 1,06 \text{ моль}$$

$$m(C_5H_{10}) = 70 \cdot 1,06 = 74,2$$

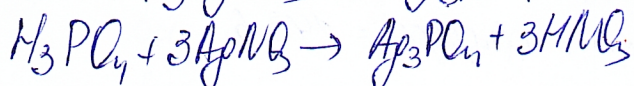
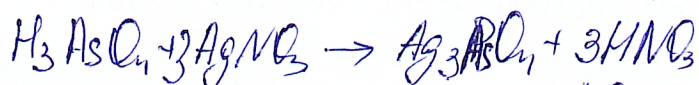
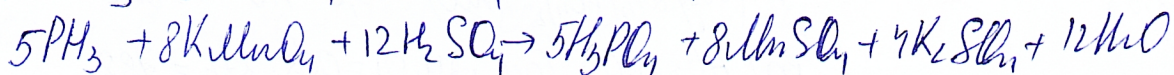
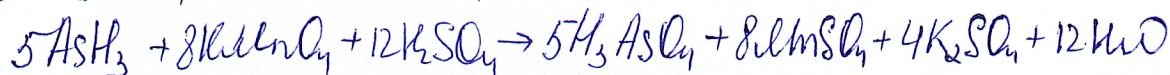
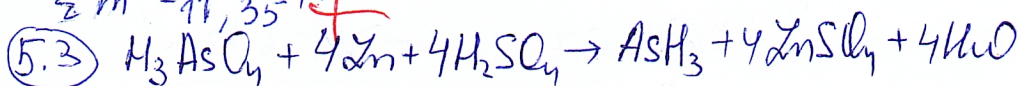
$$m(C_7H_{16}) = 100 \cdot 0,5 = 50$$

$$m(\text{кислот}) = 135,7 - 50 - 74,2 = 11,52$$

$$w(C_5H_{10}) = \frac{74,2}{135,7} \cdot 100\% = 54,68\%$$

$$w(C_7H_{16}) = \frac{50}{135,7} \cdot 100\% = 36,85\%$$

$$\Sigma m = 11,55$$



$$n(AgNO_3) = c \cdot V = 0,45 \cdot 2 = 0,9 \text{ моль}$$

$$n(PH_3) = x \quad m(PH_3) = 34x$$

$$n(AsH_3) = y \quad m(AsH_3) = 78y$$

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

$$34x + 78y = 48,67x + 48,67y$$

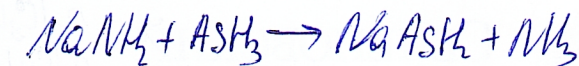
$$m(AsH_3) = 0,6 \cdot 78 = 46,82$$

$$y = 2x \Rightarrow n(AsH_3) = 2n(PH_3) \Rightarrow n(AsH_3) = \frac{2}{3} n(AgNO_3) = \frac{2}{3} \cdot 0,9 = 0,6 \text{ моль}$$



СЕЧЕНОВСКИЙ
УНИВЕРСИТЕТ

18 16 7



$$n(AsH_3) = n(NH_3)$$

$$V(NH_3) = \frac{pRT}{p} = 2,46 \text{ л}$$