



дешифр.

**МОСКОВСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ  
имени М.В.ЛОМОНОСОВА**

Вариант 2

Место проведения Москва  
город

+1 мч  
Иванов

**ПИСЬМЕННАЯ РАБОТА**

Олимпиада школьников Ломоносов  
наименование олимпиады

по Химии  
профиль олимпиады

Шуруп Дана Александровна  
фамилия, имя, отчество участника (в родительном падеже)

Дата  
«12» марта 2023 года

Подпись участника

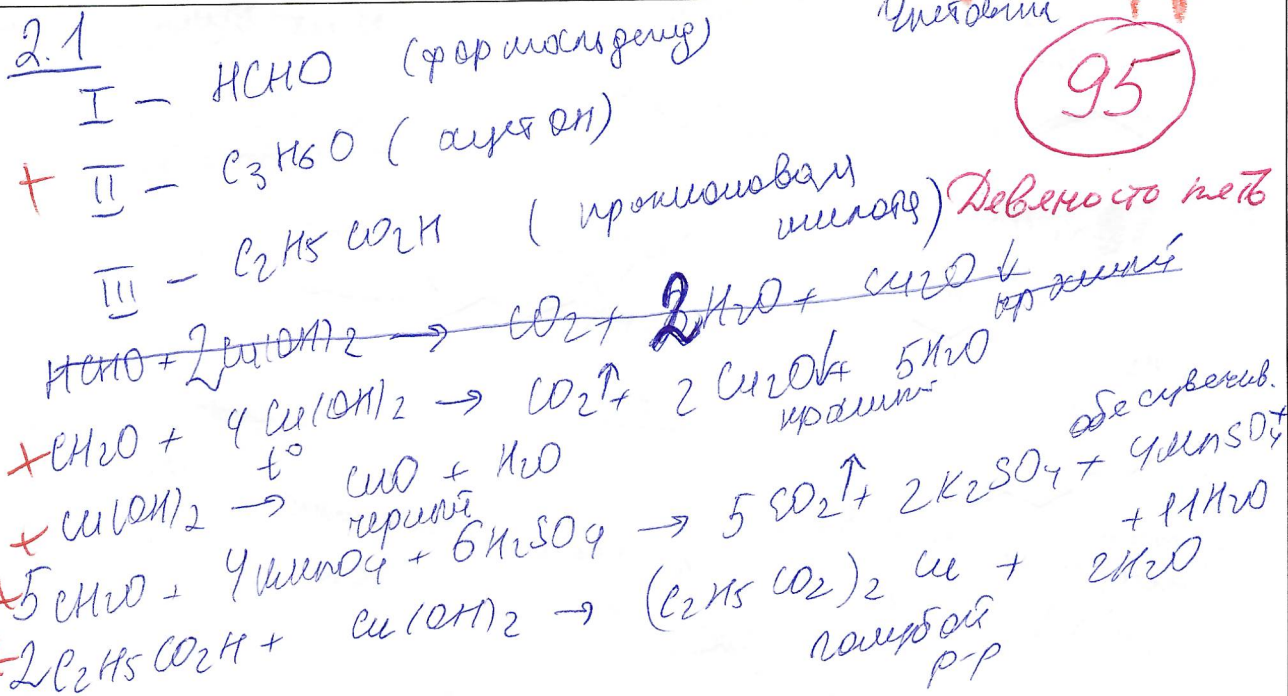
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дешифр

Числовый

95

35-83-87-33  
(64.20)



1	2	3	4	5	6	7	8	9	10
6	8	6	12	14	14	17	18	95	

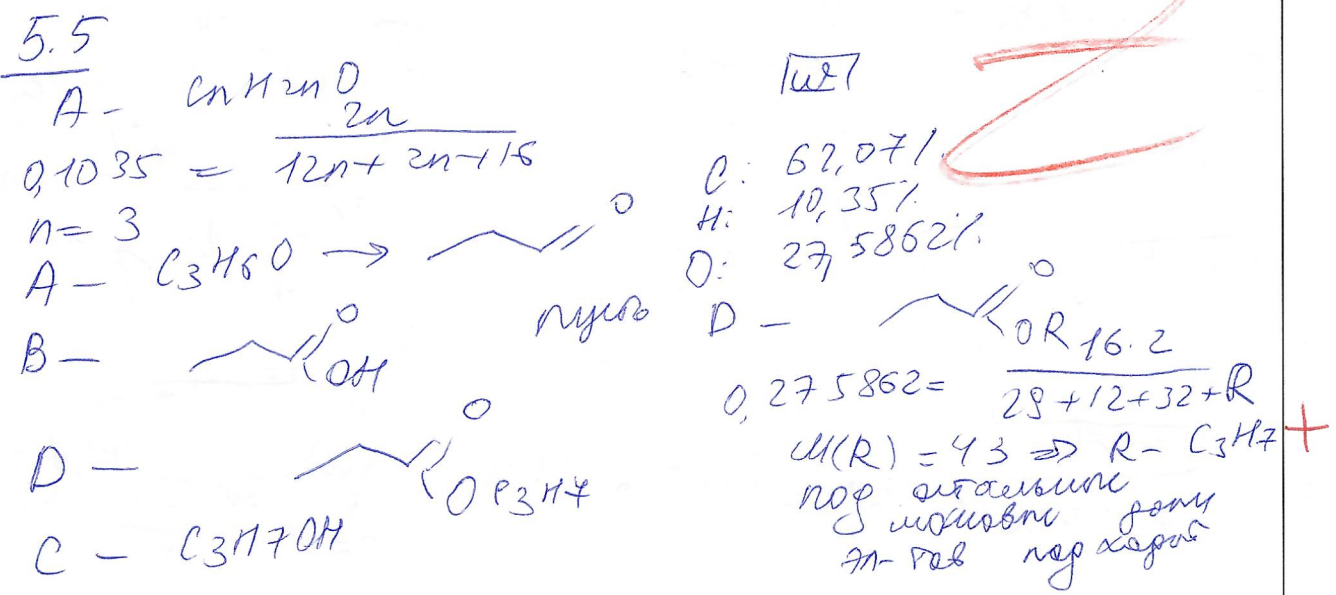
4.2

C2H6 + 7/2 O2 -> 2CO2 + 3H2O + 1559,7

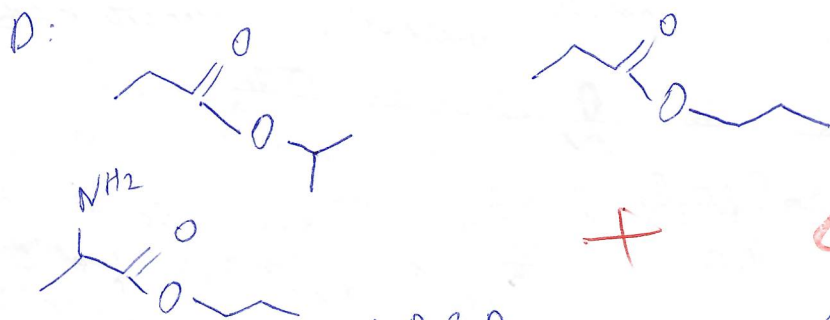
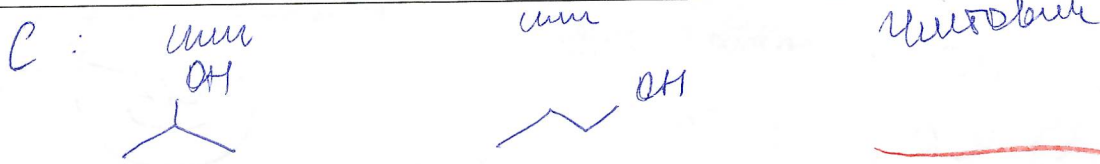
$Q_r = 285,8 \cdot 3 + 393,5 \cdot 2 - \frac{7}{2} \cdot 0 - 84,7 = 1559,7$

$Q_{сгорания} = c \cdot m_{H2O} \cdot \Delta T = 75,31 \cdot \frac{1,179 \cdot 10^3}{18} \cdot (98 - 24) = 365,03 \text{ кДж}$

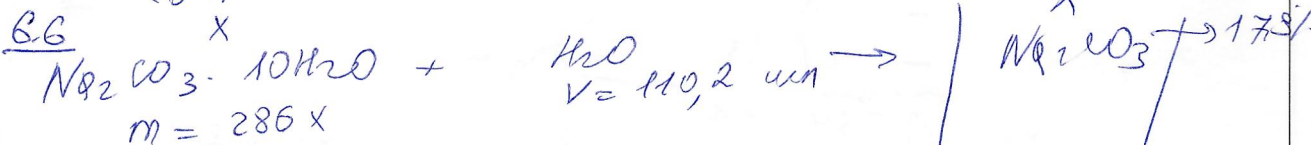
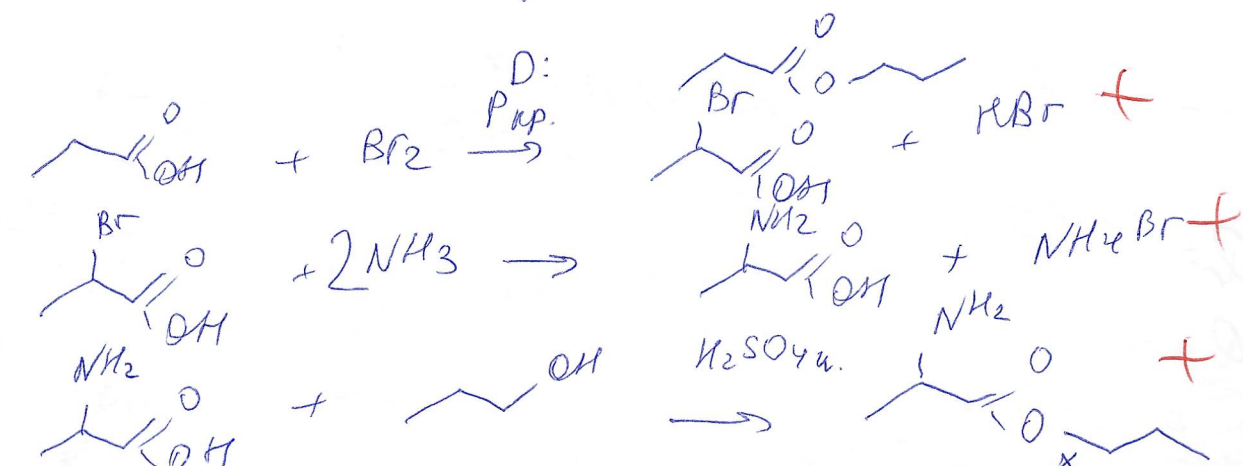
$V_{C2H6} = \frac{0,234 \cdot 8,314 \cdot (15 + 273)}{\frac{720}{760} \cdot 101,325} = 5,76 \text{ л}$



дешифр



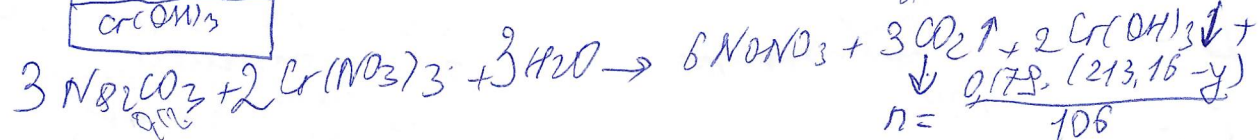
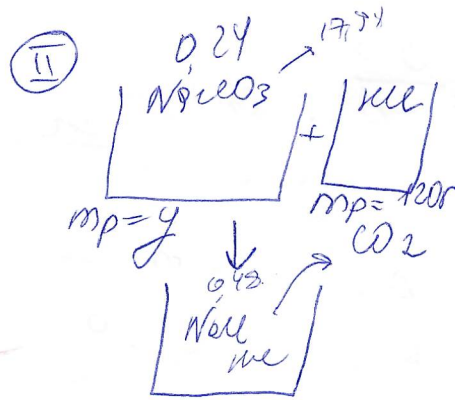
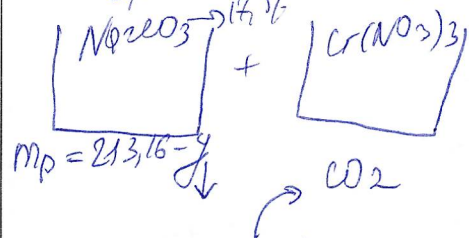
у нас есть у A, B, C, D спирт с. 5M  $\Rightarrow$  CCCO - e

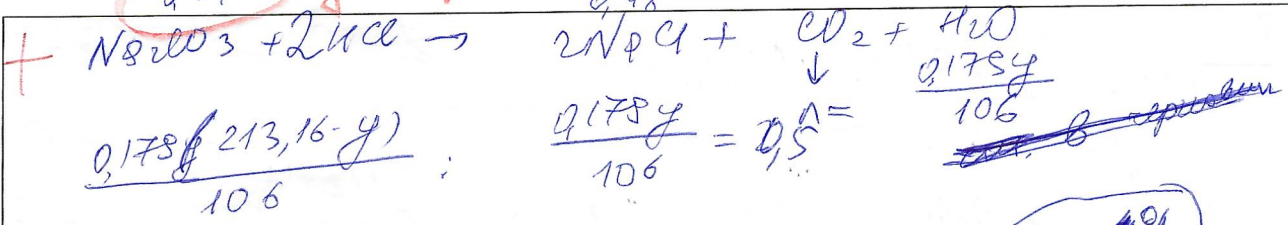


$\frac{21,8}{21,8 + 110,2} \cdot 100\% = \frac{21,8}{132,0} \cdot 100\% = 16,5\%$

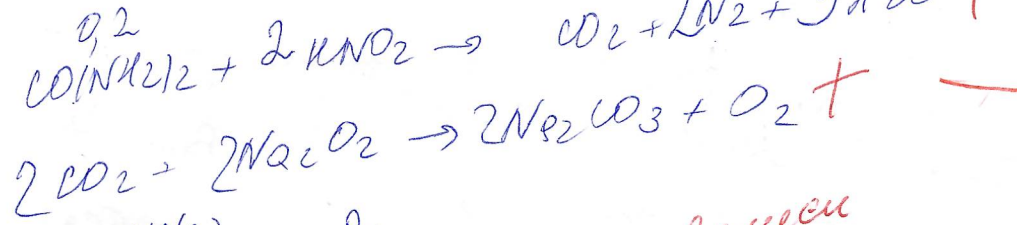
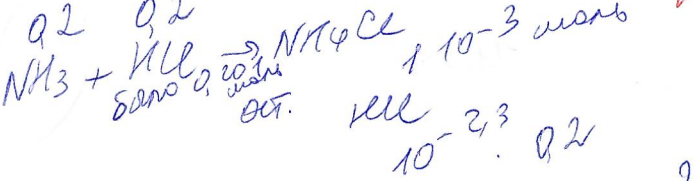
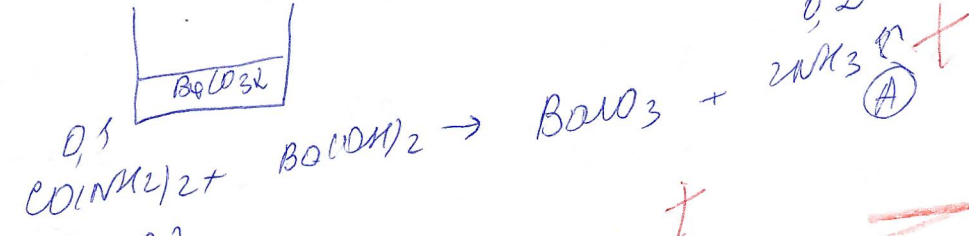
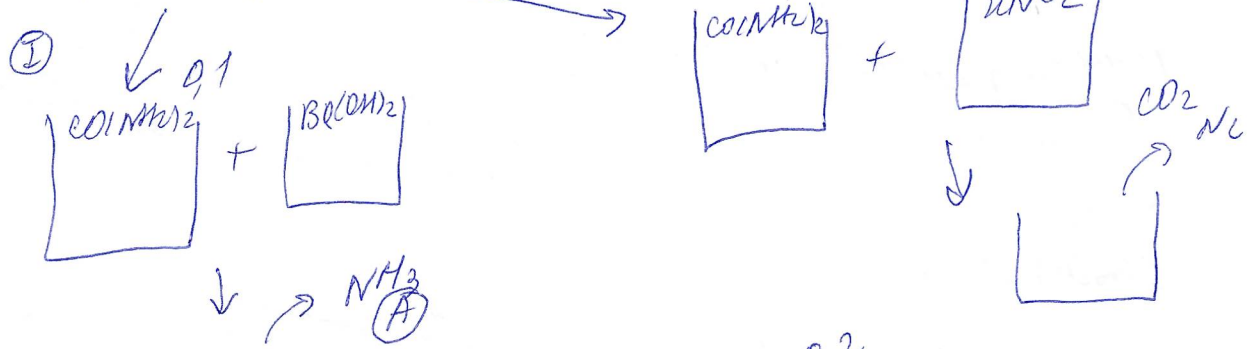
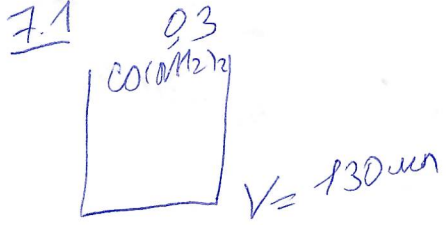
$0,1788 = \frac{286x + 110,2}{106x}$

Ⓘ  $0,12 = \frac{286x + 110,2}{106x}$        $x = 0,36$  моль





$y = 142,1 \text{ г}$   
 $w(\text{NaCl}) = \frac{58,5 \cdot 0,48}{142,1 + 120 - 0,24 \cdot 44} \cdot 100\% = 11,16\%$

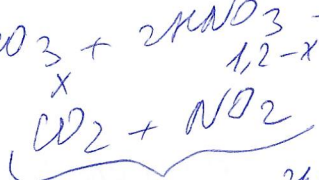
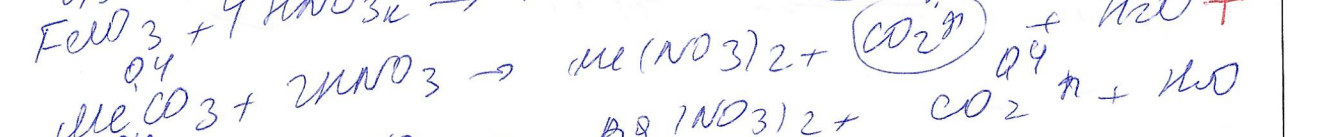
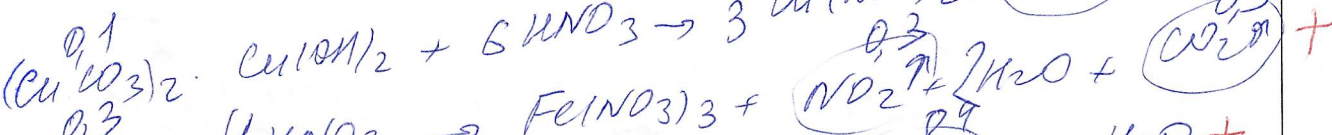
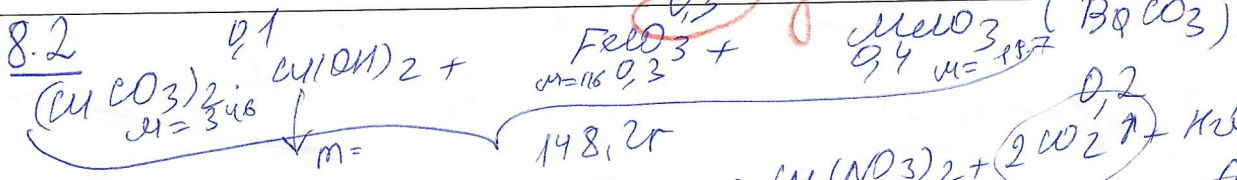


$\frac{n(\text{N}_2)}{n(\text{NH}_3)} = 2$   
 ↓ 0,4  
 с учетом =  $\frac{0,3}{0,13} = 2,31 \text{ M}$   
 2,0

учетом

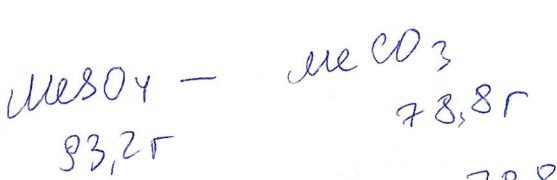
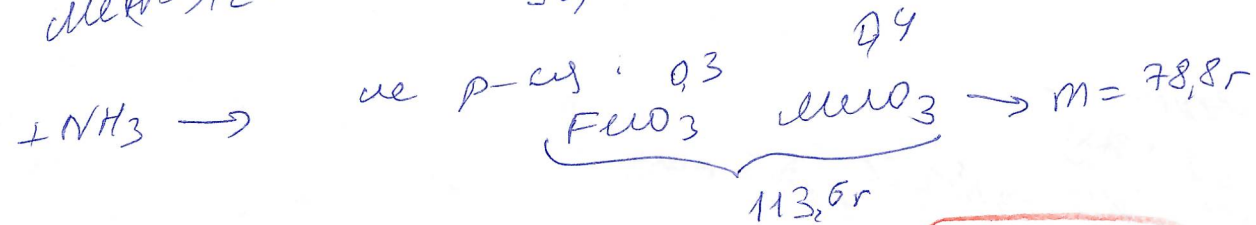
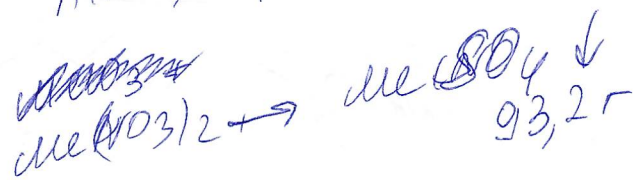
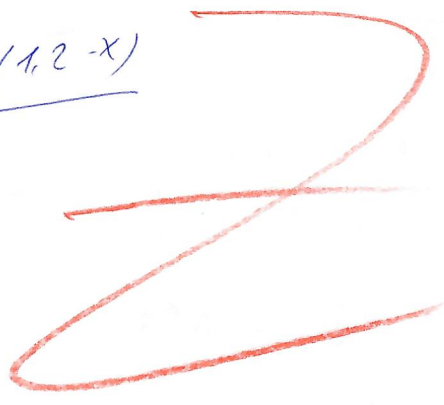
*дешифр.*

8.2



$M_{\text{CO}_2} = 44,502 \text{ г/моль}$   
 $n = 1,2 \text{ моль}$   
 $44,502 = \frac{44x + 46(1,2 - x)}{1,2}$   
 $x = 0,9$

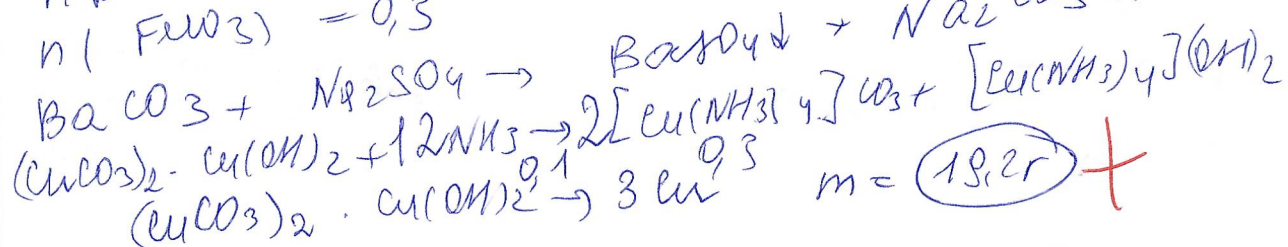
$n(\text{NO}_2) = 0,3$



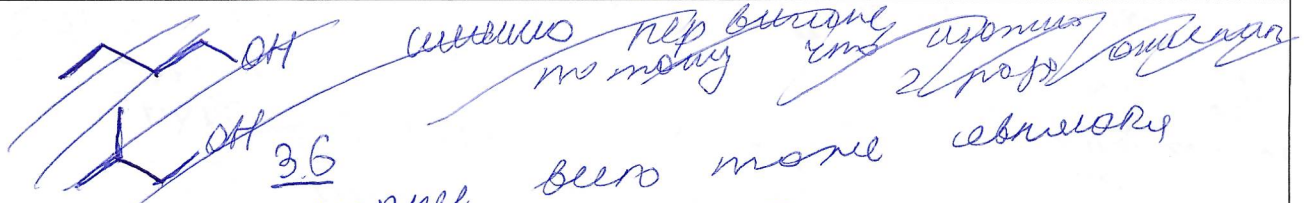
$\frac{93,2}{M(\text{Me}) + 32 + 64} = \frac{78,8}{M(\text{Me}) + 12 + 48}$

$M(\text{Me}) = 137 \text{ г/моль} \Rightarrow \text{Me} - \text{Ba} \quad +$   
*набрав из себя малой суммарно микронов*

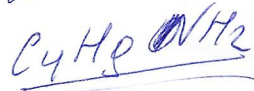
$n(\text{BaCO}_3) = 0,1$   
 $n(\text{Fe}_2\text{O}_3) = 0,3$



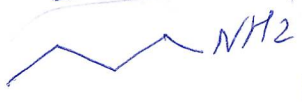




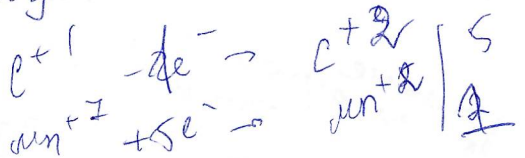
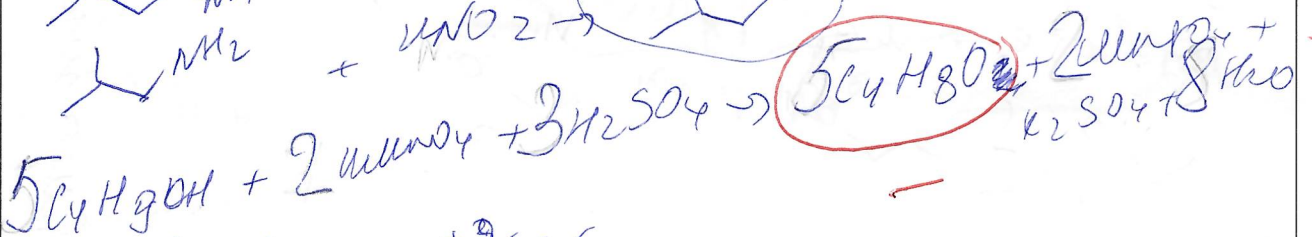
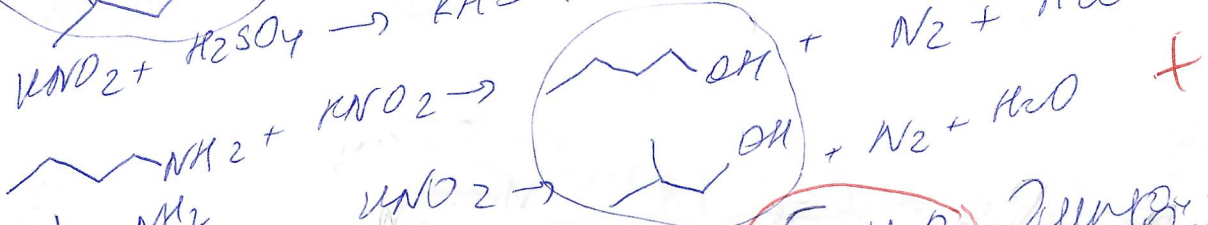
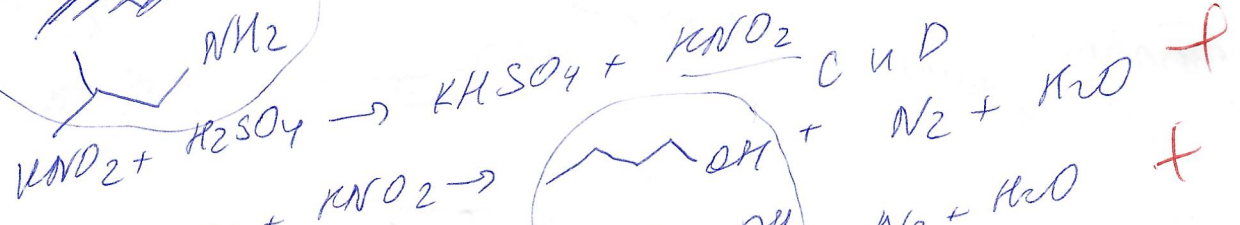
3.6  
 А и В скорее всего тоже спирты  
 углеродами, как и С, D  
 А и В скорее всего содержат С, H  
 $KNO_2$   $H_2SO_4$  ~~реакт~~  $KNO_2$  С, H, O  
 $KNO_2$  скорее всего для определения  
 окислов



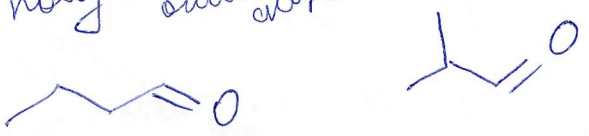
$M = 73$  уловом



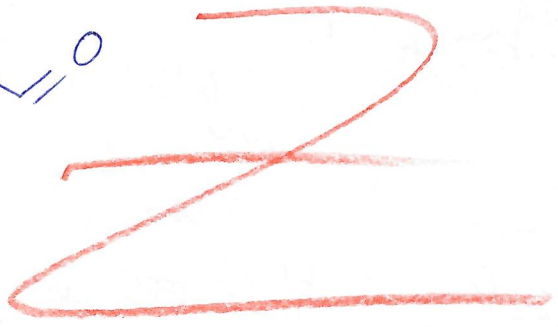
А и В ~~структура спирта~~



E F — скорее всего альдегид  $\ominus$   
 кислоты



E и F



чужие

Черновики

①  $5x + x = \text{четный}$

$6x = \text{нечетное}$   
 $6, 12, 18, 24, 30, 36, 42, 48, 54, 60$   
 ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓ ↓  
 $1 \square, 2 \square, 3 \square, 4 \square, 5 \square, 6 \square, 7 \square, 8 \square, 9 \square, 10 \square$   
 $1 \square, 2 \square, 3 \square, 4 \square, 5 \square, 6 \square, 7 \square, 8 \square, 9 \square, 10 \square$   
 $1 \square, 2 \square, 3 \square, 4 \square, 5 \square, 6 \square, 7 \square, 8 \square, 9 \square, 10 \square$

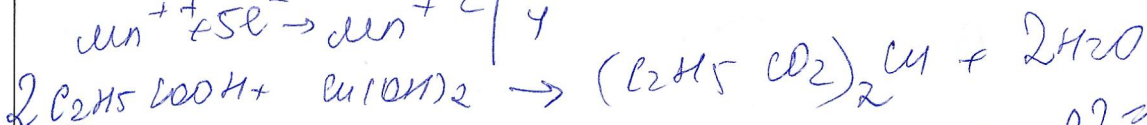
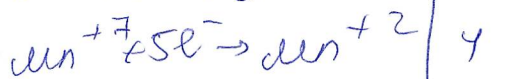
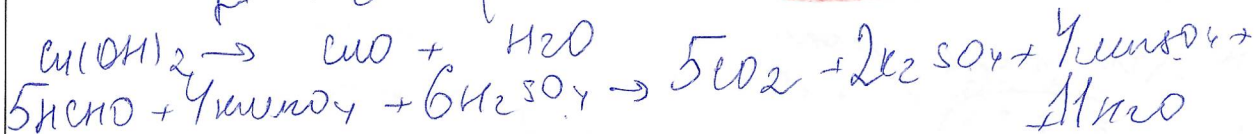
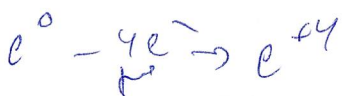
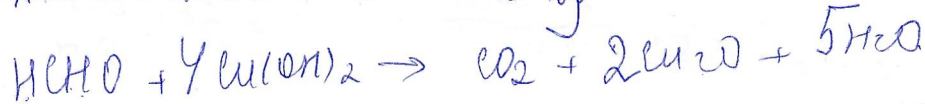
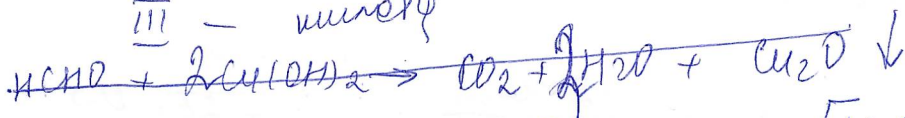
$10x + x = \text{нечетное}$   
 $10x + x = 11x$   
 $11x = \text{нечетное}$   
 $11 \rightarrow 6 \cdot 11$   
 $11 \square, 22 \square, 33 \square, 44 \square, 55 \square, 66 \square, 77 \square, 88 \square, 99 \square, 110 \square$

2.1

~~И - нитро~~

II - аммоний

III - аммоний



$50 + 22 = 72$

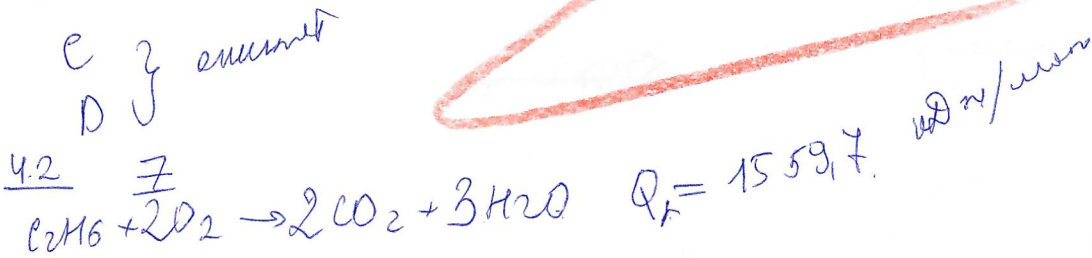
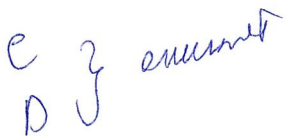
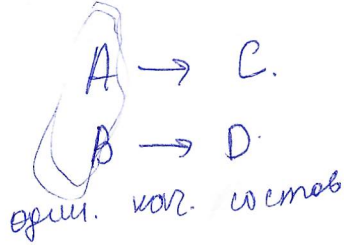
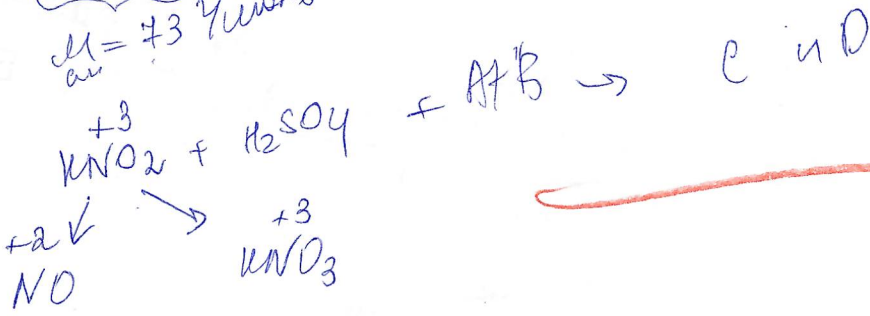
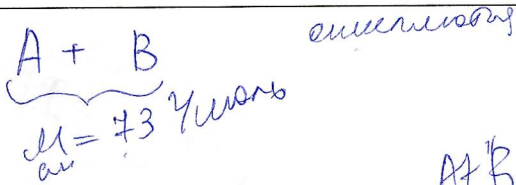
2.4

$10x + x = \text{нечетное}$

н. решается

$22, 44, 66, 88, 110$   
 $1 \square, 2 \square, 3 \square, 4 \square, 5 \square, 6 \square, 7 \square, 8 \square, 9 \square, 10 \square$   
 $1 \square, 2 \square, 3 \square, 4 \square, 5 \square, 6 \square, 7 \square, 8 \square, 9 \square, 10 \square$   
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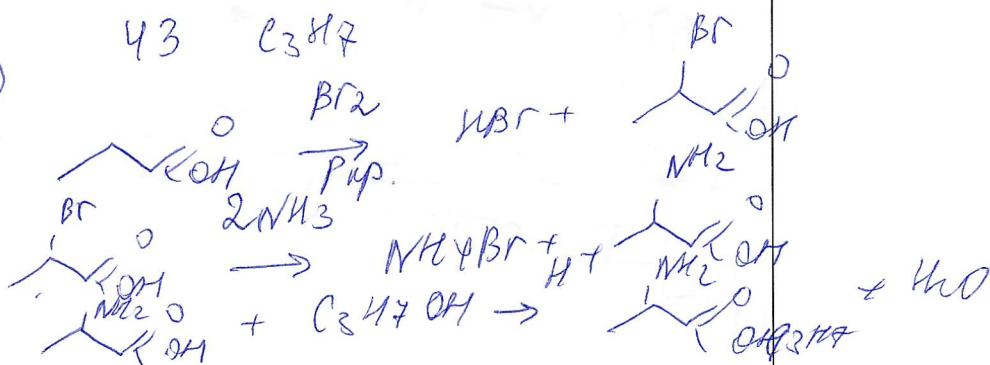
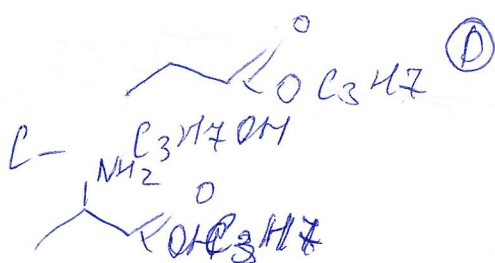
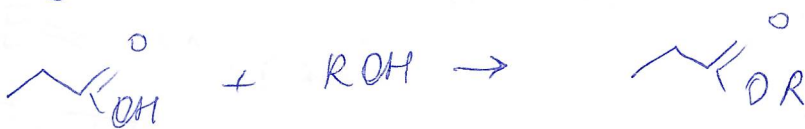
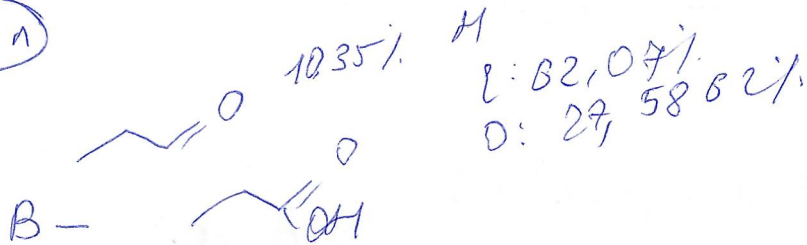
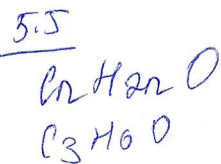


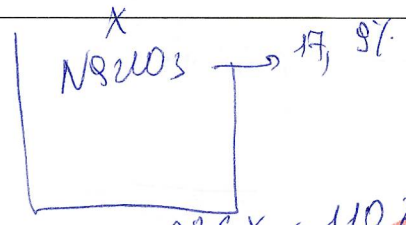
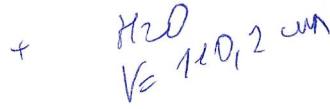
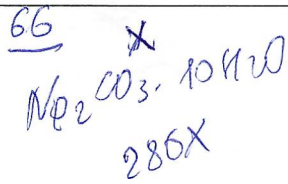


$Q = C \cdot n_{H_2O} \cdot \Delta T = 75.31 \frac{\text{Дж}}{\text{моль} \cdot K} \cdot \dots = 365.03 \text{ кДж}$

$1559.7 - 1 \text{ моль}$   
 $365.03 - x \text{ моль}$   
 $x = 0.234 \text{ моль}$

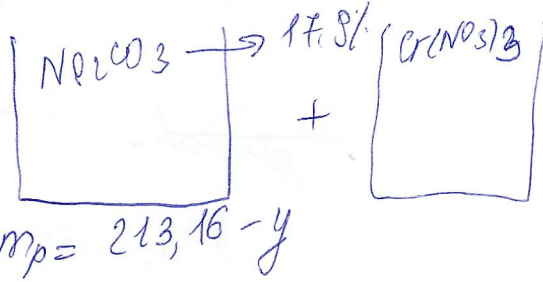
$V = \frac{C_2H_6}{n} = 5.76 \text{ л}$



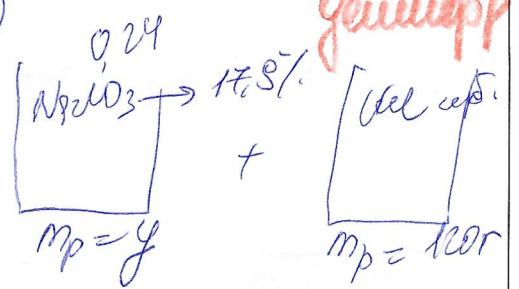


$m_p = 286X + 110,2 = 213,16$   
 $X = 0,36 \text{ моль}$

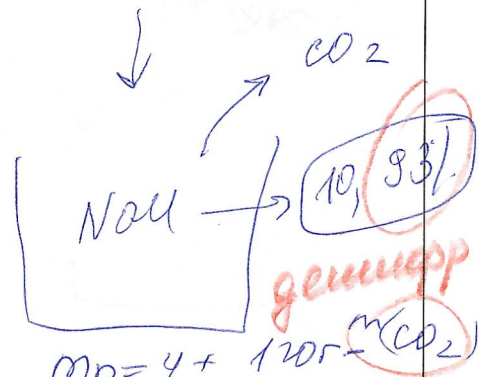
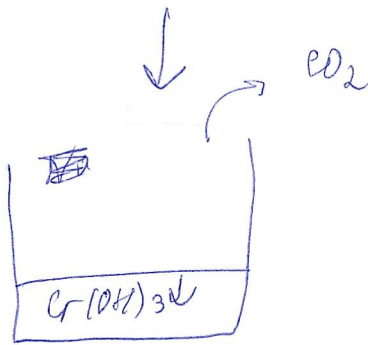
Ⓘ



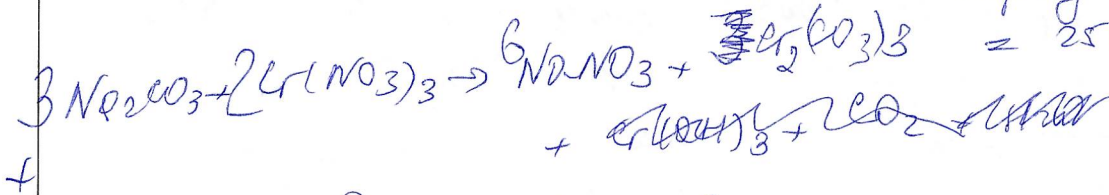
Ⓛ



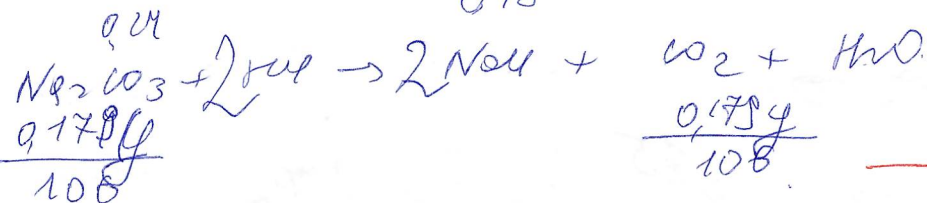
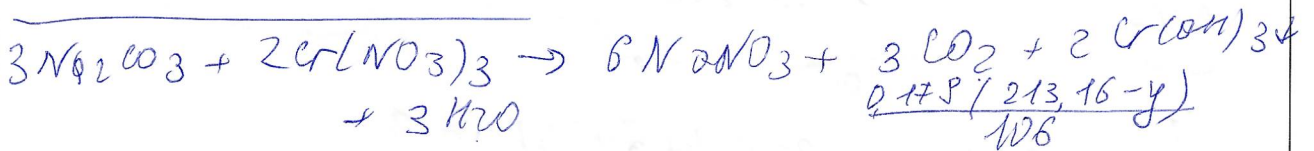
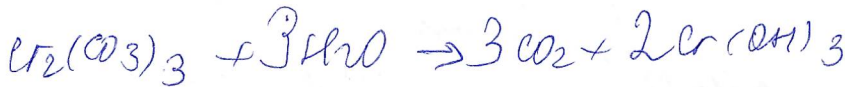
гемипр



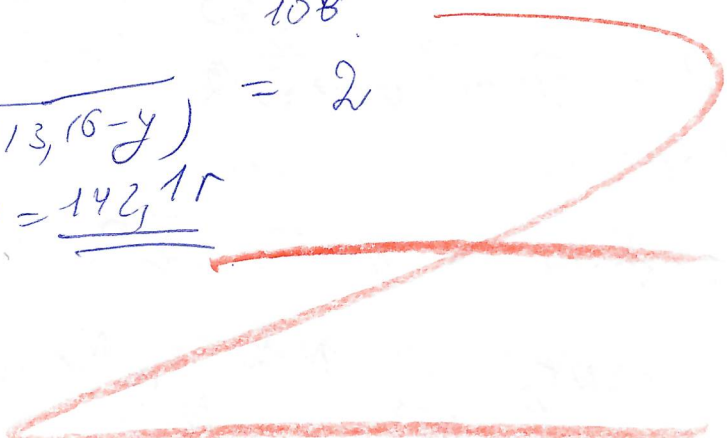
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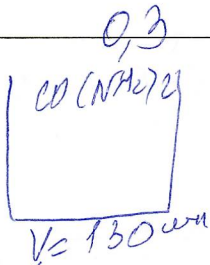
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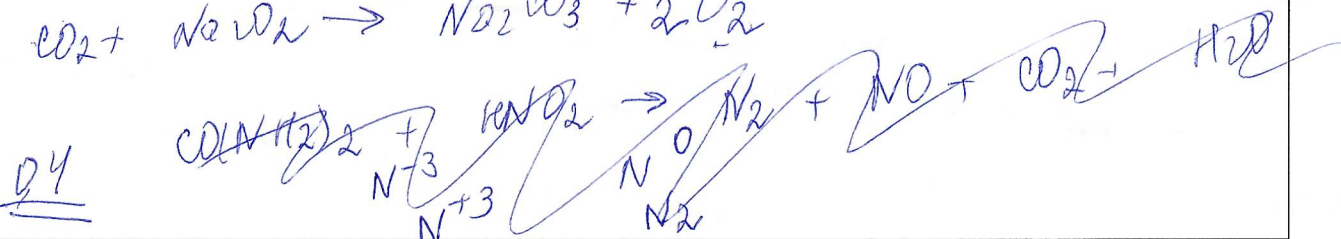
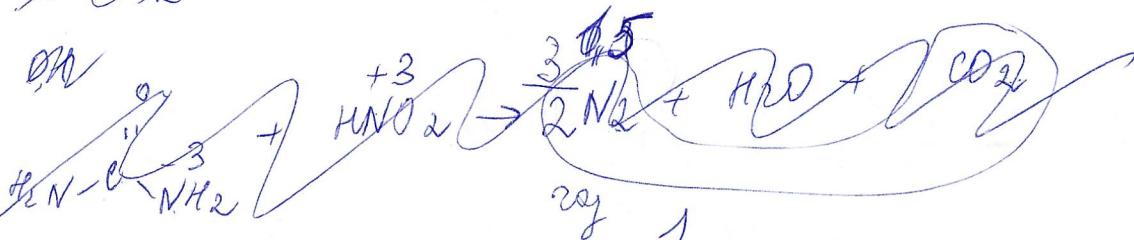
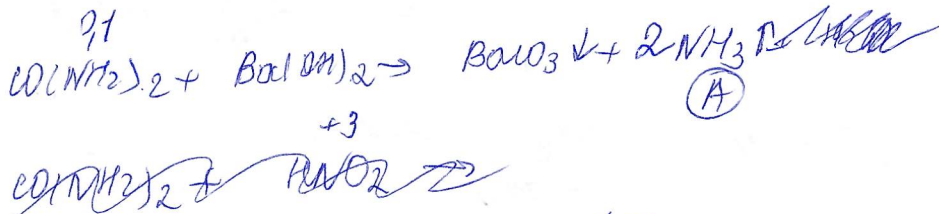
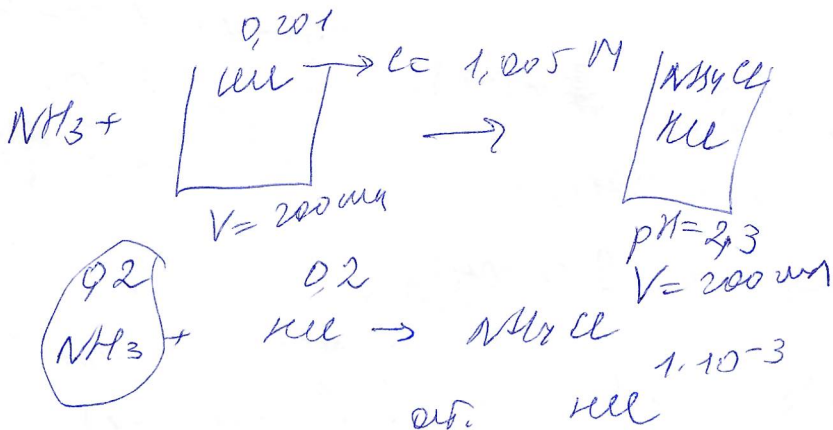
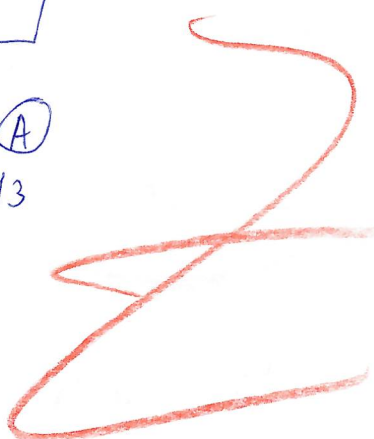
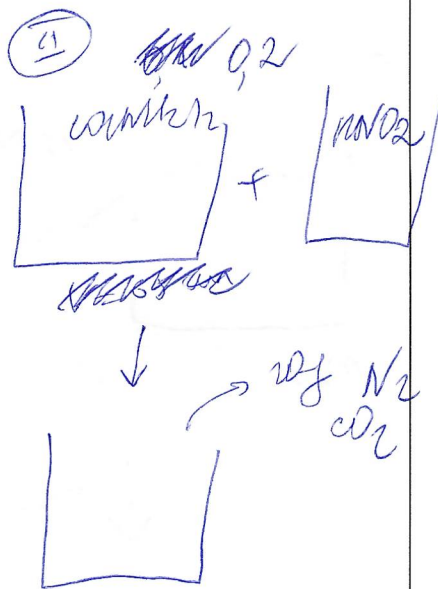
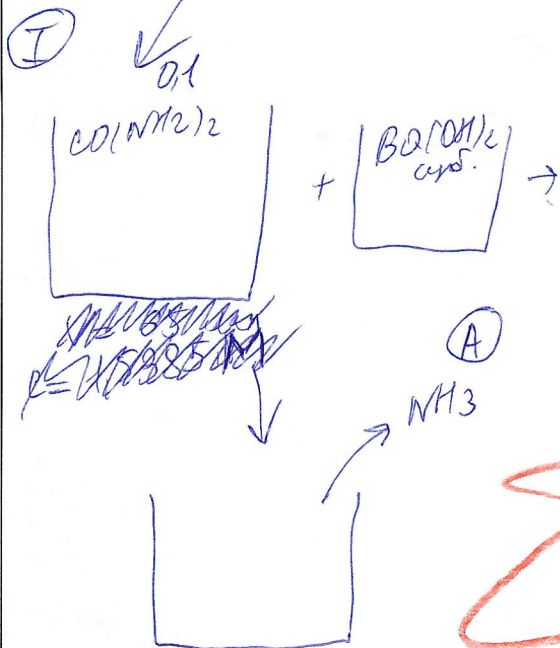
$\frac{0,175y}{108} \cdot \frac{108}{0,175(213,16 - y)} = 2$   
 $y = 142,1\text{г}$



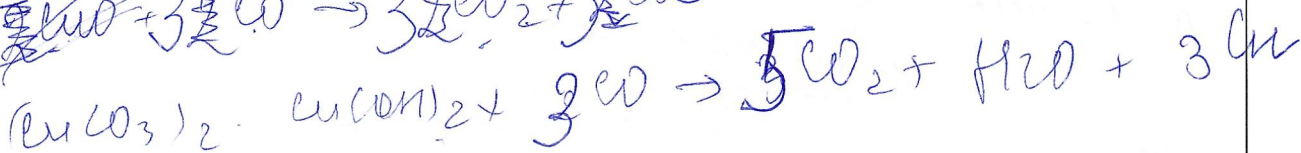
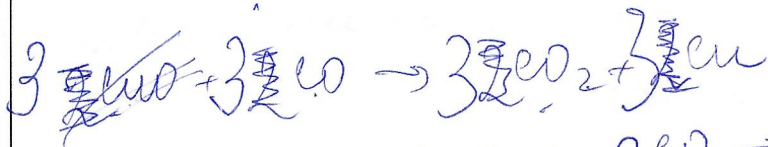
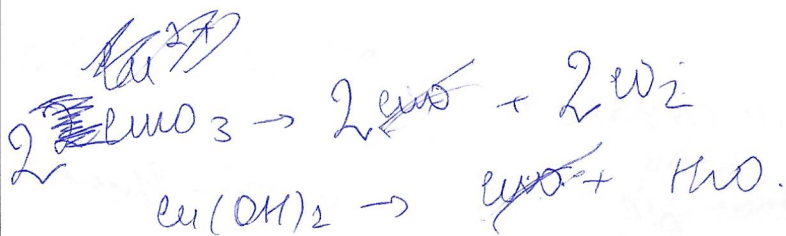
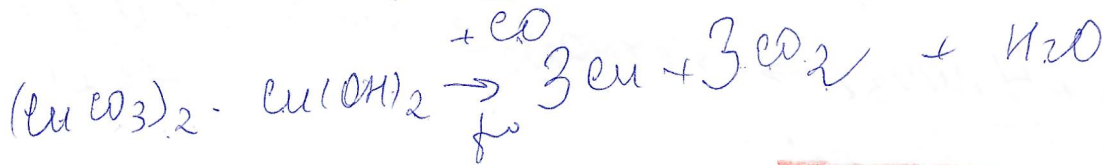
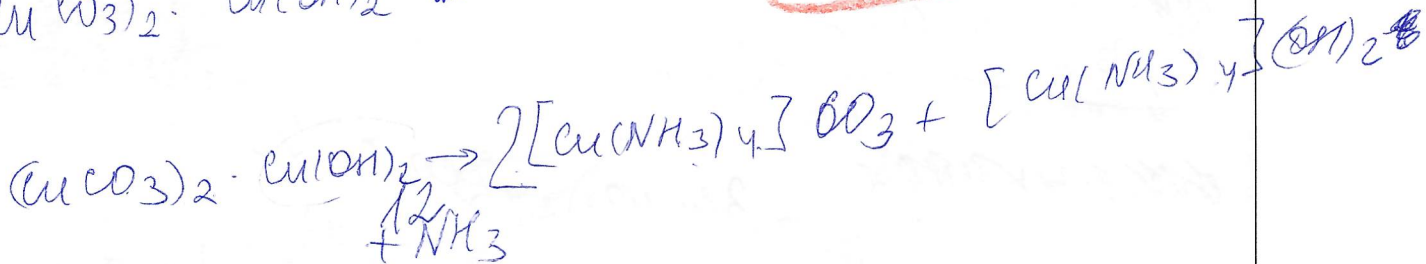
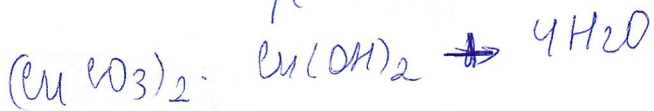
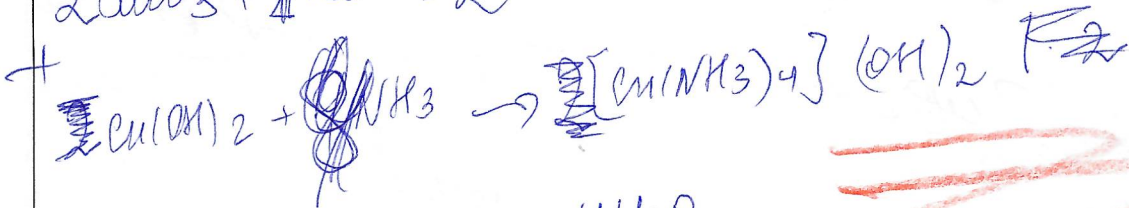
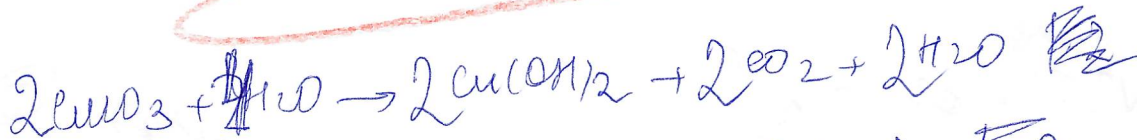
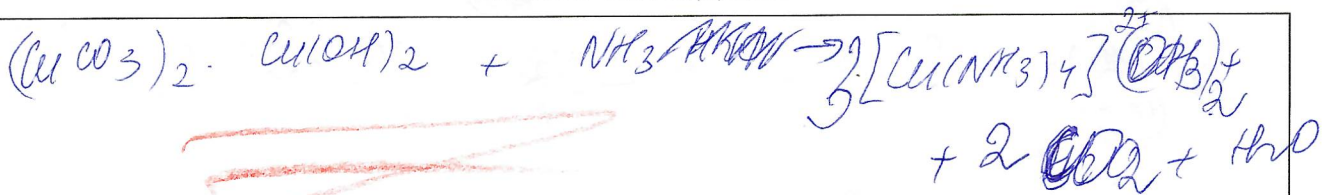
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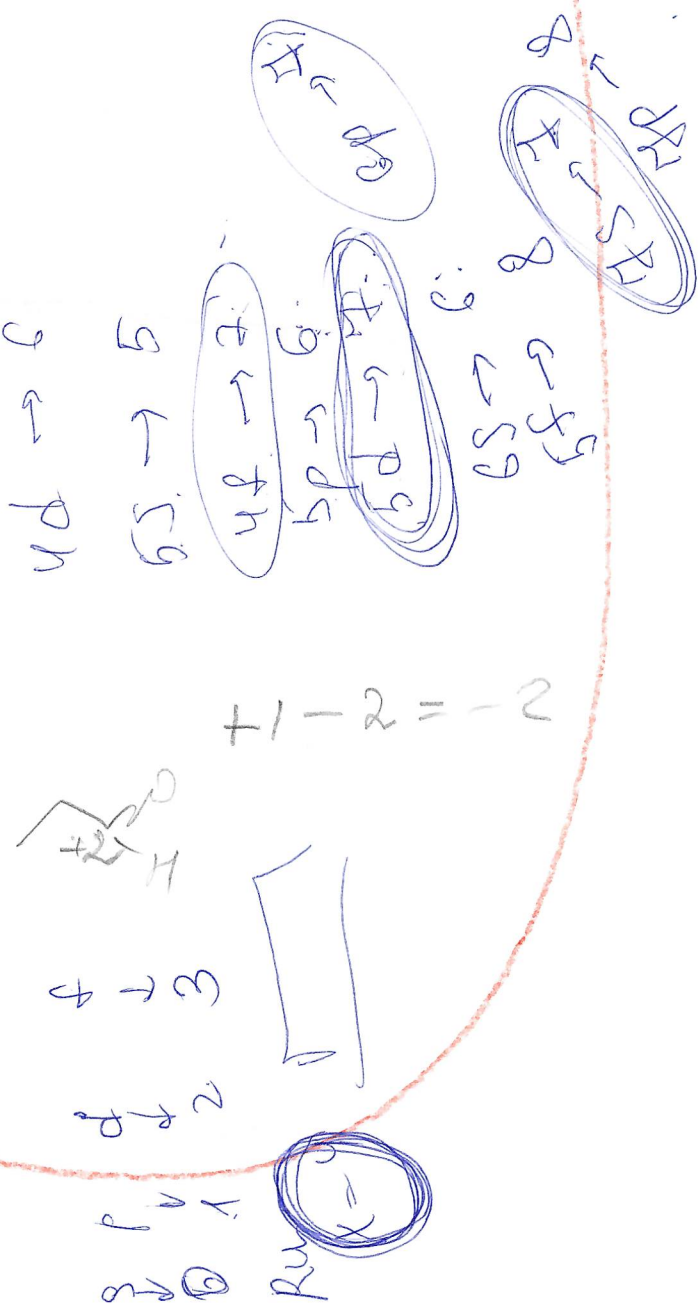
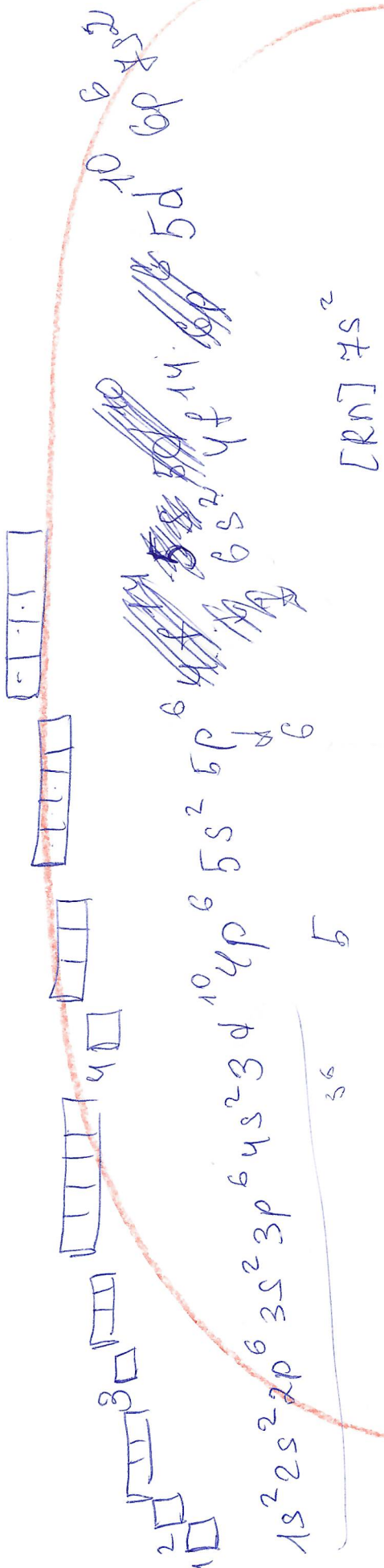
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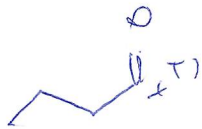
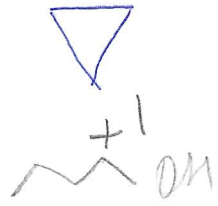
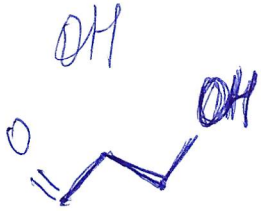




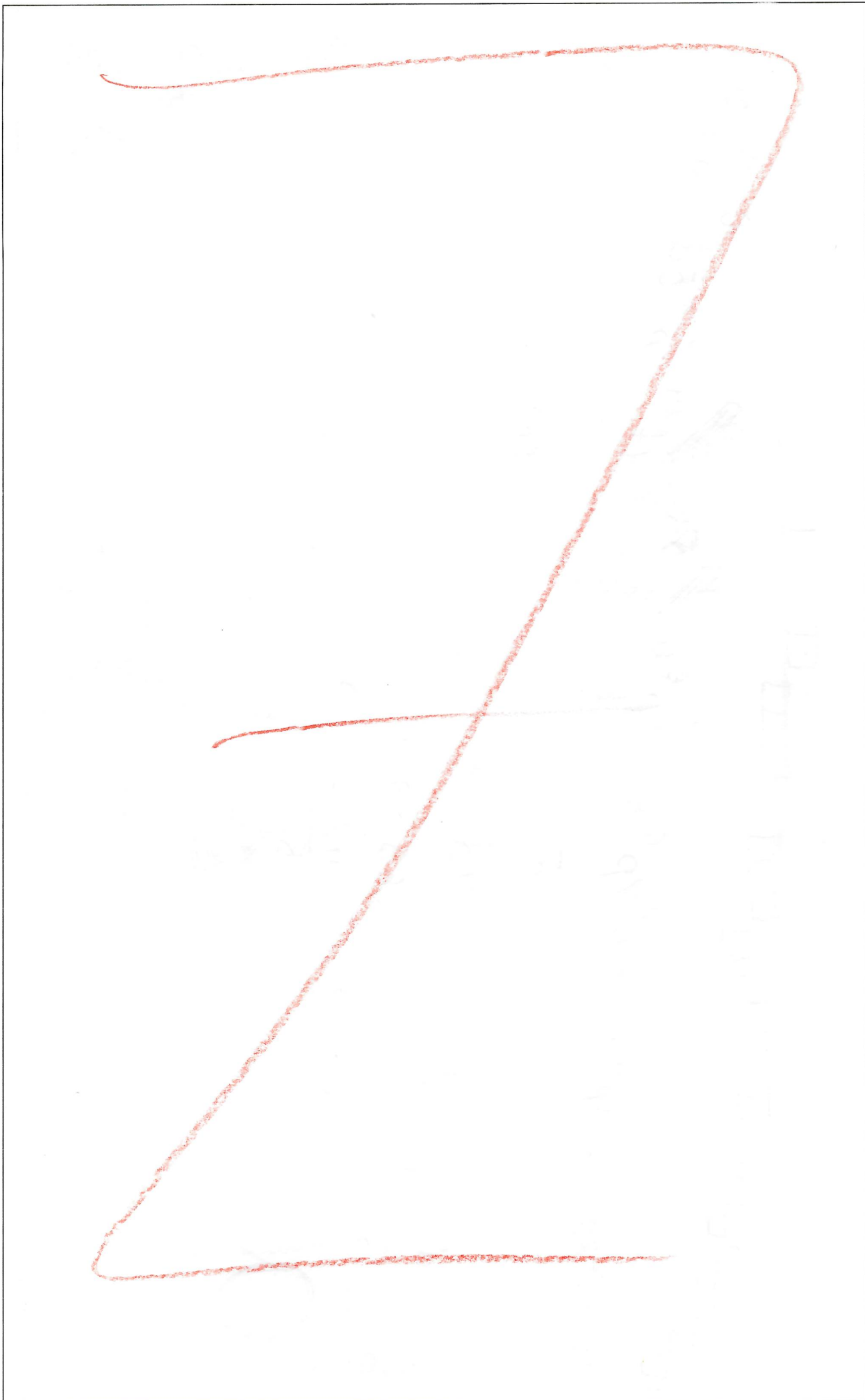


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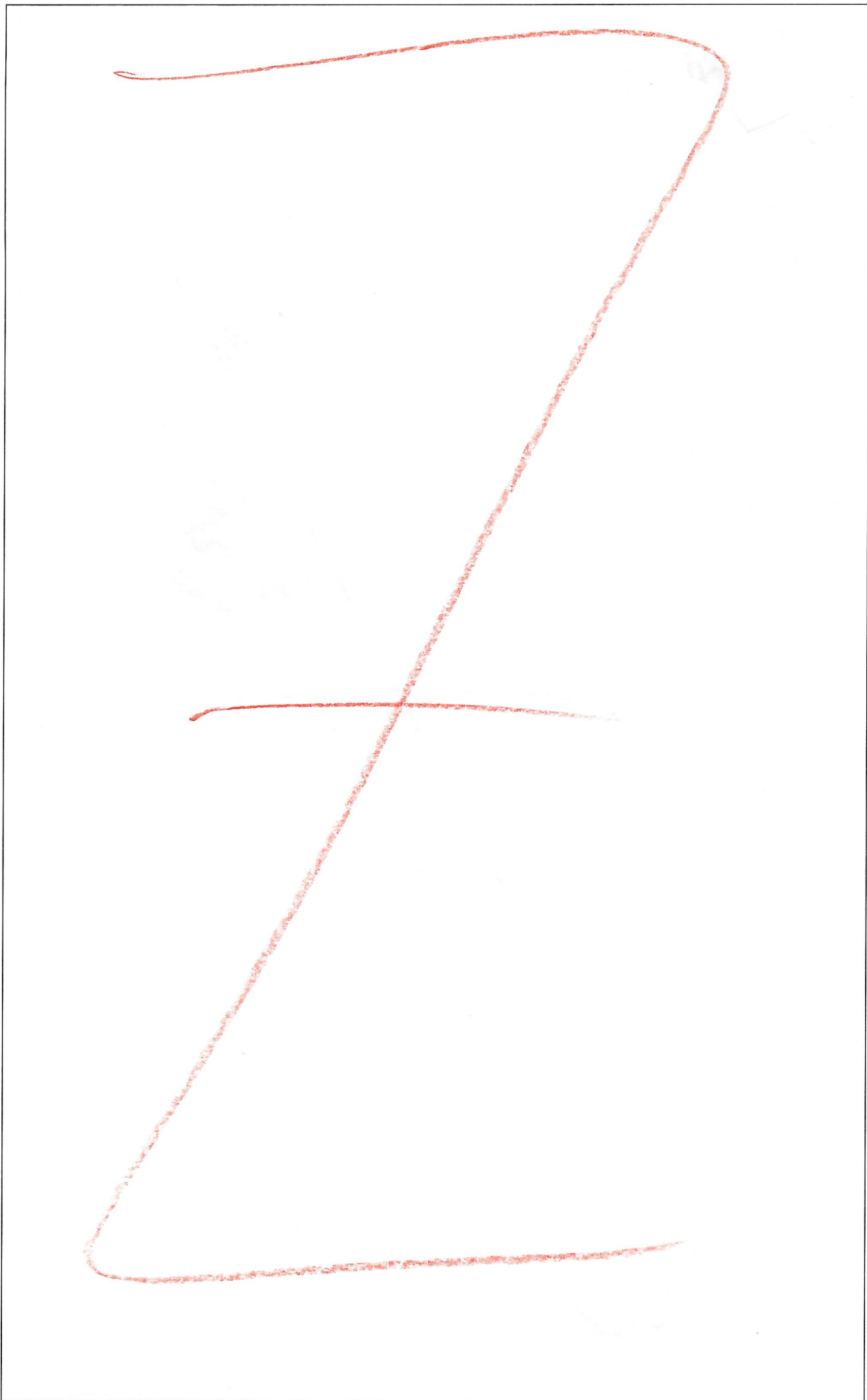
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