

Общий балл	Дата	Ф.И.О. Жюри	Подпись
40,75	17.03.25	Раустова	<i>[Signature]</i>
Шифр			025-2-X-61

Задача 11-1

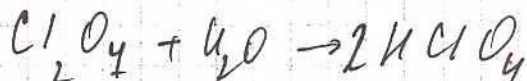
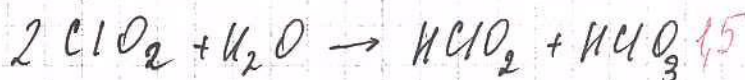
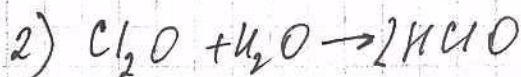
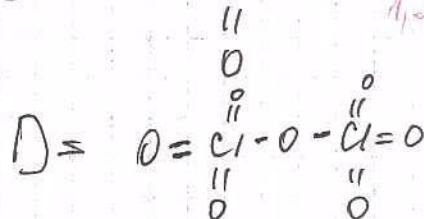
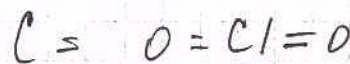
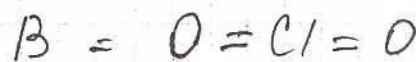
1) X = Cl - хлор

A = $\overset{+1}{\text{Cl}}\overset{-2}{\text{O}}$ - оксид хлора (II)

B = $\overset{+4}{\text{Cl}}\overset{-2}{\text{O}}_2$ - оксид хлора (IV)

C = $\overset{+4}{\text{Cl}}\overset{-2}{\text{O}}_3$ - оксид хлора (VI)

D = $\overset{+7}{\text{Cl}}\overset{-2}{\text{O}}_4$ - оксид хлора (VII)



E = HCl - хлороводородная К-ма

F = HClO_4 - перхлорная К-ма

G = HClO_2 - хлоритовая К-ма

H = HClO_3 - хлорноватая К-ма



$$m_{\text{р-ра}}(\text{NaOH}) = \rho V = 1,1309 \cdot 90 = 101,782$$

$$m(\text{NaOH}) = m_{\text{р-ра}} \cdot \omega = 101,78 \cdot 0,12 = 12,212$$

$$n(\text{ClO}_2) = \frac{V}{V_m} = 0,2 \text{ моль} - \text{недостаёт}$$

$$n(\text{NaOH}) = \frac{m}{M} = \frac{12,21}{40} = 0,31 \text{ моль} - \text{избыток}$$

$$n(\text{NaClO}_2) = n(\text{NaClO}_3) = 0,2 \text{ моль}$$

$$m(\text{NaClO}_2) = 0,2 \cdot (23 + 35,5 + 32) = 18,12$$

$$m(\text{NaClO}_3) = 0,2 \cdot (23 + 35,5 + 48) = 21,32$$

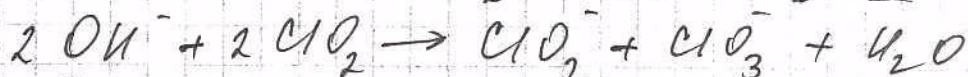
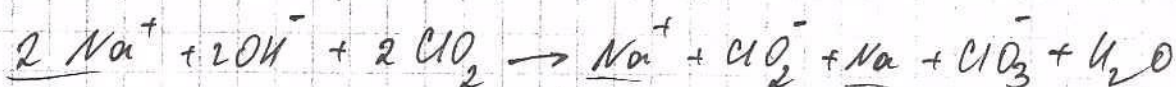
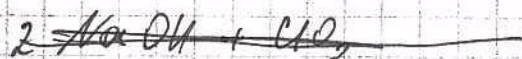
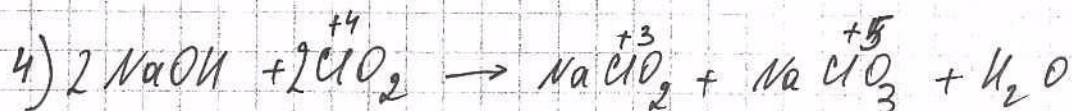
$$m(\text{ClO}_2) = 0,2 \cdot (35,5 + 32) = 13,52$$

$$m(\text{р-ра}) = m(\text{ClO}_2) + m_{\text{р-ра}}(\text{NaOH}) = 13,52 + 101,78 = 115,282$$

$$\omega(\text{NaClO}_2) = \frac{m(\text{в-ва})}{m(\text{р-ра})} = \frac{18,12}{115,282} = 0,157 \text{ или } 15,7\%$$

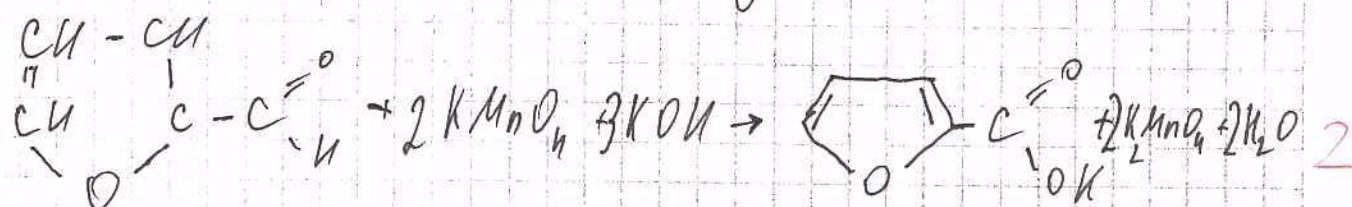
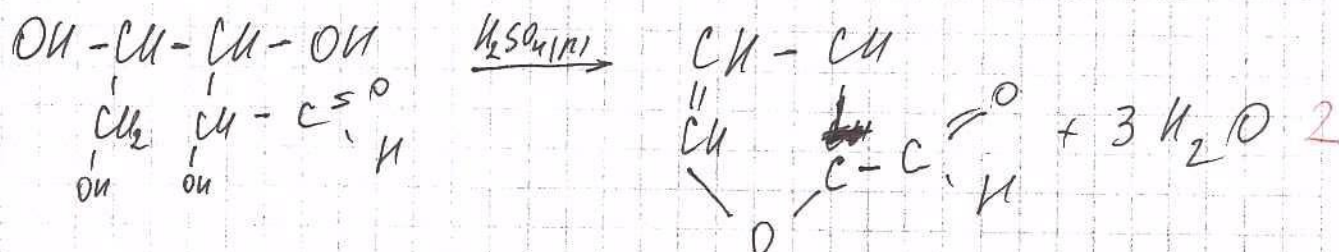
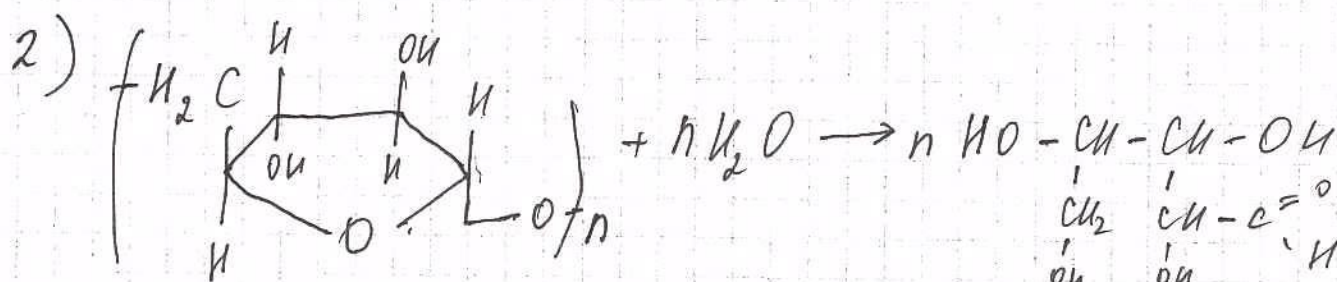
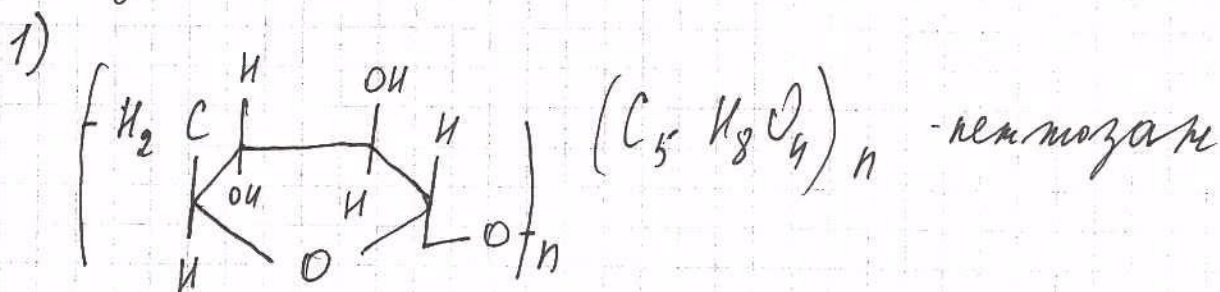
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$$m(\text{NaClO}_3) = \frac{m(\text{б-вал})}{m(\text{н-вал})} = \frac{21,31}{115,282} = 0,1848 \text{ или } 18,48\%$$

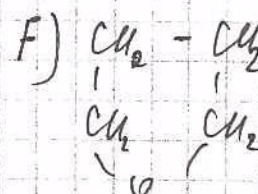
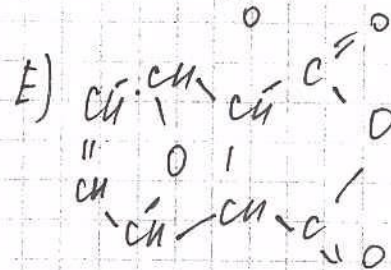
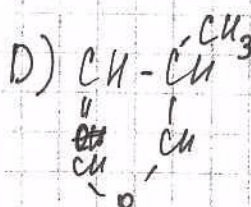
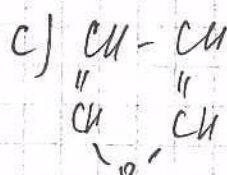
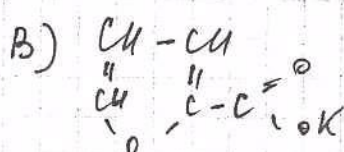
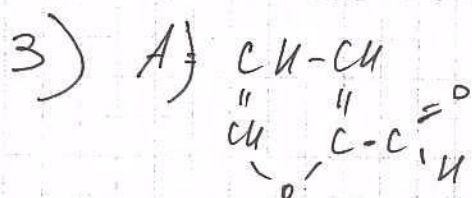
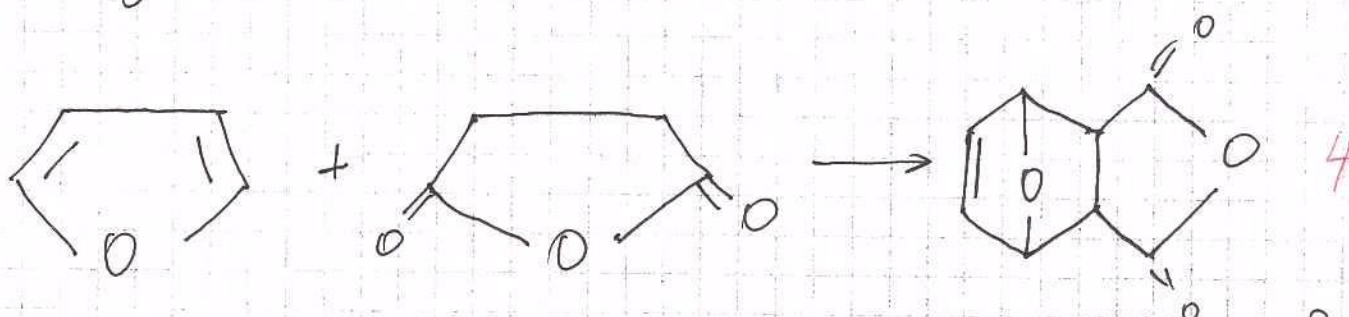
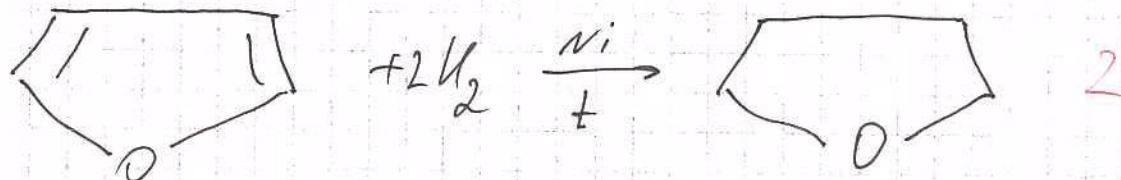
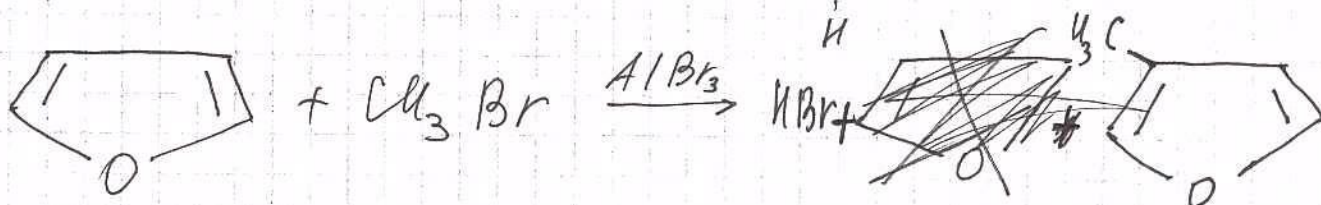
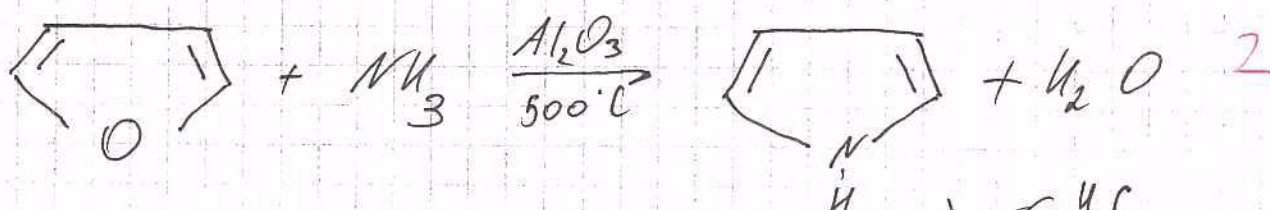
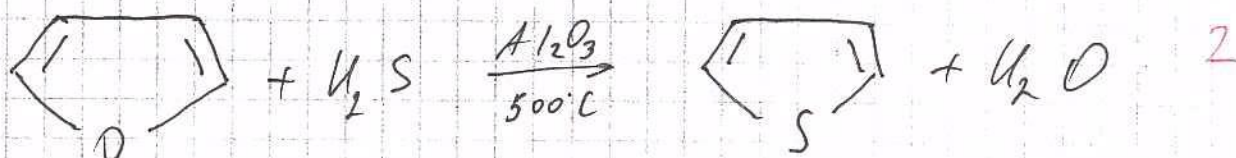
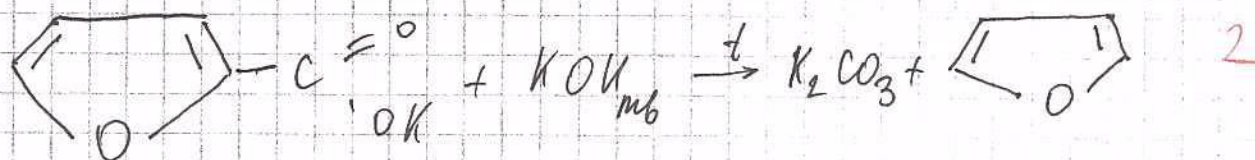


$\text{Cl}^{+4}(\text{ClO}_2)$ - восстановитель и окислитель

Задача 11-2

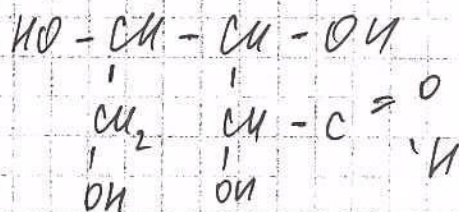
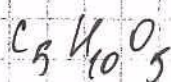
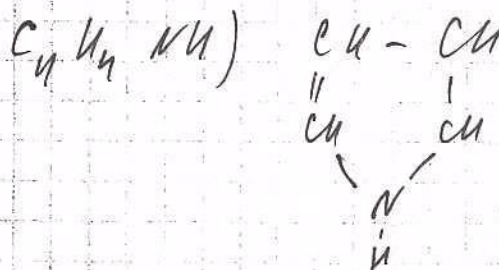
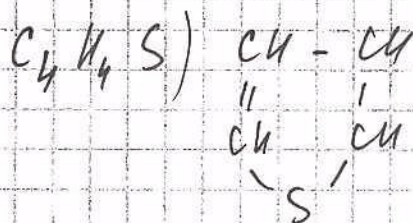


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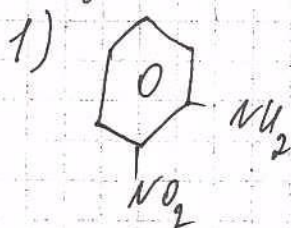


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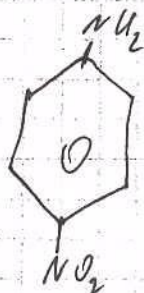
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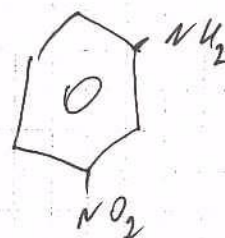
Задача 11.3



2-нитроанилин

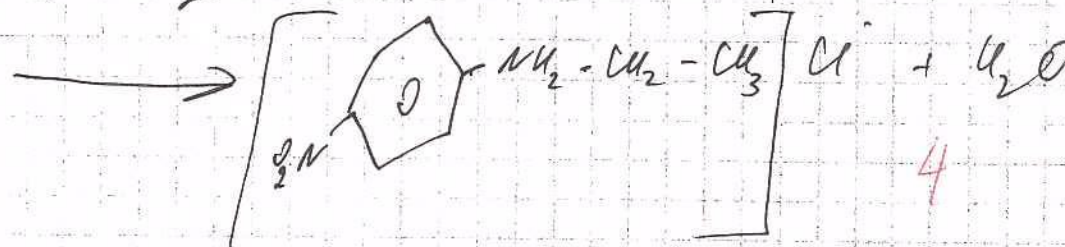
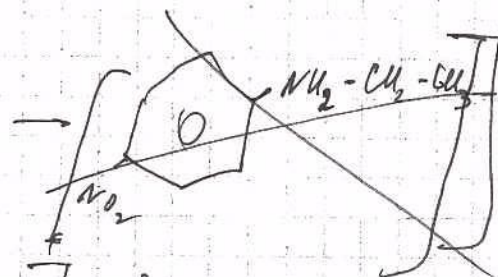
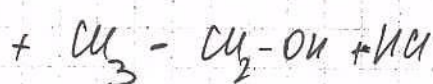
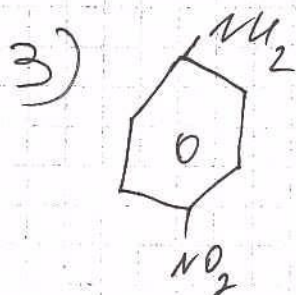


4-нитроанилин

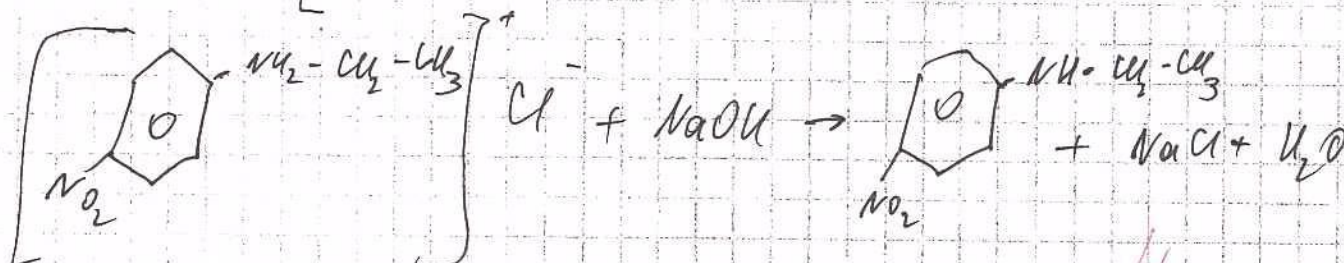


3-нитроанилин

6



4



4