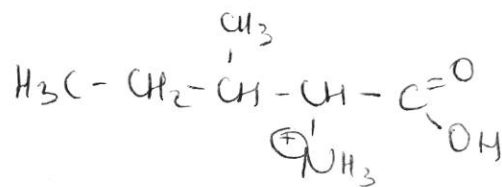
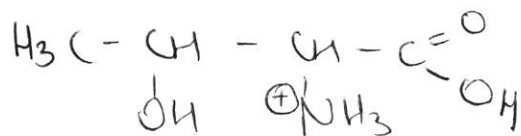
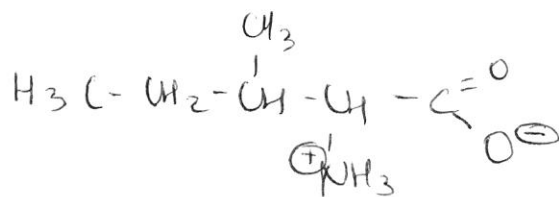
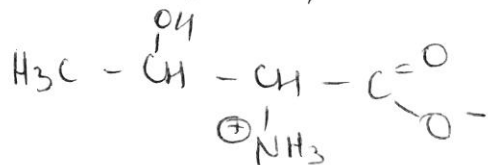


Задача 1.

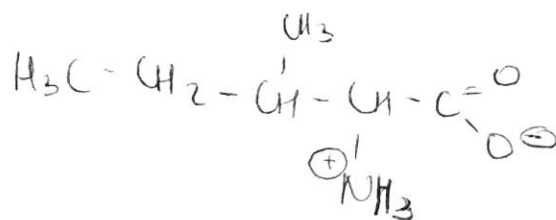
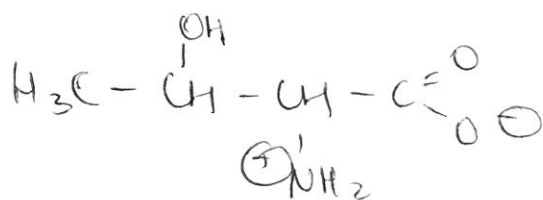
1. При $pH = 10$:



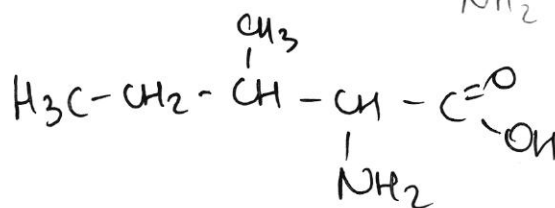
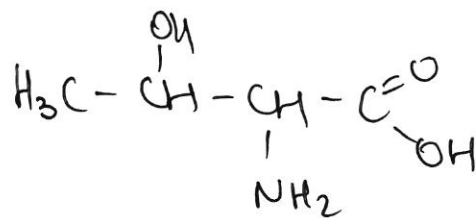
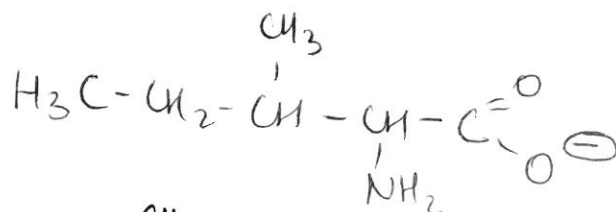
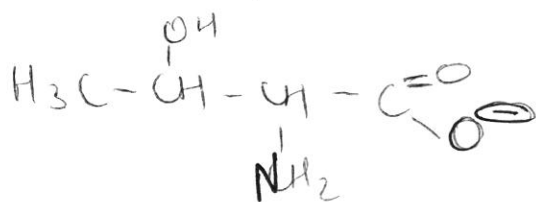
При $pH = 4$:



При $pH = 9,6$



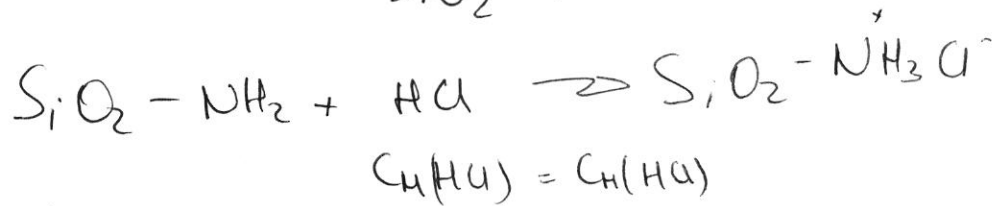
При $pH = 12$



треонин

изолейцин

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$$n(\text{HCl})_{\text{кисл}} = V(\text{HCl}) \cdot C_{\text{HCl}} = 0,01 \text{ л} \cdot 0,01 \text{ М} = 0,0001 \text{ моль}$$

$$n(\text{NaOH}) = V(\text{NaOH}) \cdot C_{\text{NaOH}} = 0,0019 \text{ л} \cdot 0,01 \text{ М} = 0,000019 \text{ моль}$$

$$n(\text{HCl}) = 0,0001 - 0,000019 = 0,000081 \text{ моль} = 0,081 \text{ ммоль}$$

$$\frac{n(\text{HCl})}{n(\text{SiO}_2-\text{NH}_2)} = \frac{1}{1} \Rightarrow n(\text{SiO}_2-\text{NH}_2) = 0,081 \text{ ммоль}$$

$$n(-\text{NH}_2) = 0,081 \text{ ммоль}$$

$$\omega(-\text{NH}_2) = \frac{m(-\text{NH}_2)}{m(\text{SiO}_2-\text{NH}_2)} = \frac{0,081 \text{ ммоль}}{0,12452} = 0,651 \frac{\text{ммоль}}{\text{г}}$$

• кислотно-основное титрование

$$4. n(\text{SiO}_2-\text{NH}_2) = \frac{m}{M} = \frac{12}{782 \text{ г/моль}} = 0,013158 \text{ ммоль}$$

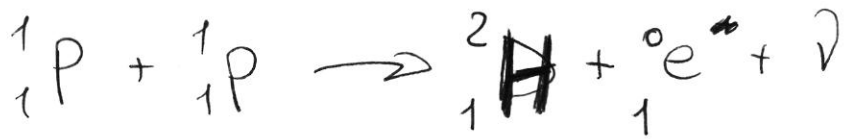
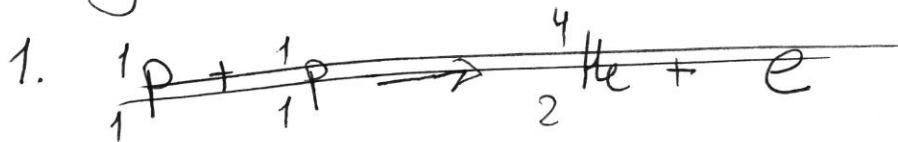
~~0,00039474 ммоль~~

0,00039474 ммоль - 0,3% от навески

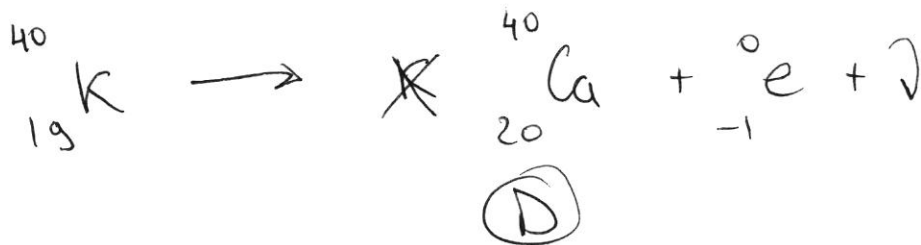
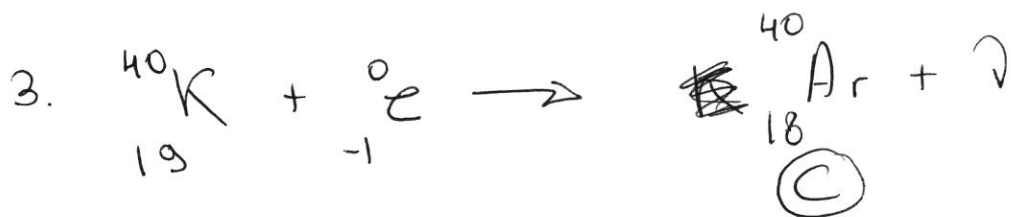
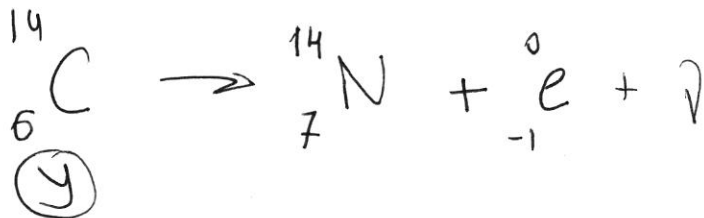
$$n(\text{формовой к-ты}) = n(0,3\% \text{ от навески}) = 0,00039474 \text{ ммоль}$$

$$m(\text{формовой к-ты}) = M \cdot n = 441 \text{ г/моль} \cdot 0,00039474 \text{ ммоль} = 0,1742 = 17,408 \text{ мг}$$

Бешюк Ольга Дмитриевна 11 класс
Загора З. Красноярский край МАОУ Ш ШЧ



2.



2.

$$N = N_0 \cdot 2^{-\frac{t}{T_{1/2}}}$$

$$17,5 = 100 \cdot 2^{-\frac{t}{5700}}$$

$t \approx \text{~~14333~~ 14333}$ лет возраст А

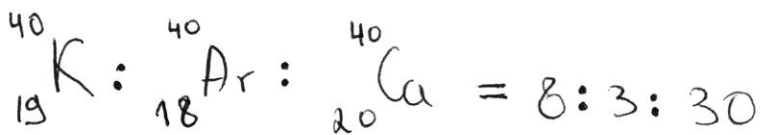
$$2. \quad N = N_0 \cdot 2^{-\frac{t}{5700}}$$

$$25 = 100 \cdot 2^{-\frac{t}{5700}}$$

$$0,25 = 2^{-\frac{t}{5700}}$$

$$t \approx 11400 \text{ лет} - \text{возраст В}$$

3.



Допустим $m({}^{40}_{19}\text{K}) = 100x$

$$m({}^{40}_{18}\text{Ar}) = 40x \Rightarrow m({}^{40}_{19}\text{K})_{\text{ост}} = 100 - 40x$$

$$\frac{40x}{100 - 40x} = \frac{3}{8}$$

$$320x = 300 - 120x$$

$$440x = 300$$

$$x = 0,682$$

$$m({}^{40}_{19}\text{K})_{\text{пор}} = 27,273 \text{ г}$$

$$m({}^{40}_{19}\text{K})_{\text{ост}} = 100 - 27,273 = 72,727 \text{ г}$$

$$N = N_0 \cdot 2^{-\frac{t}{5700}}$$

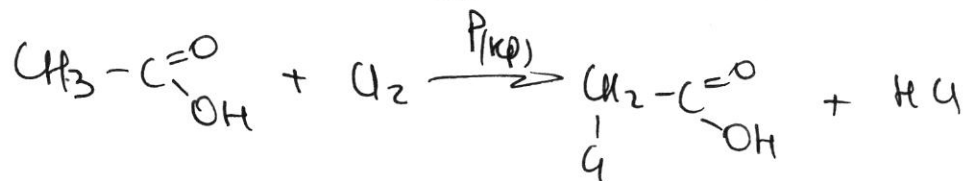
$$72,73 = 100 \cdot 2^{-\frac{t}{1,3 \cdot 10^9}}$$

$$t \approx 5,96 \cdot 10^8 \text{ лет}$$

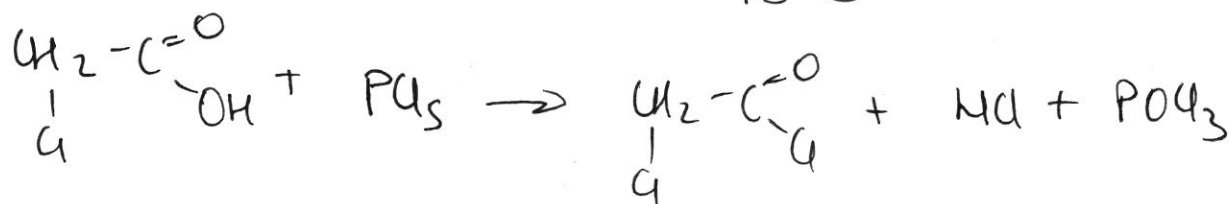
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Задача 4.

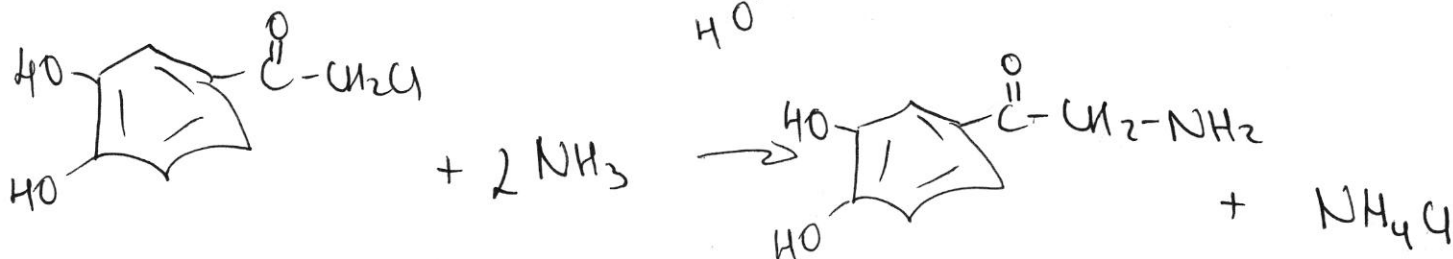
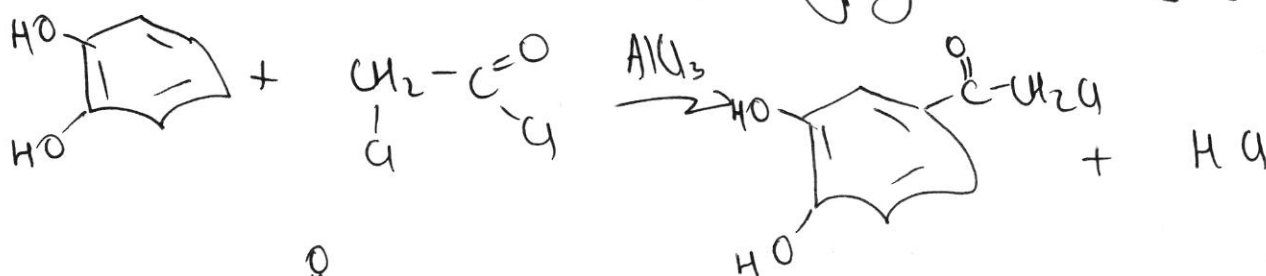
1. Синтез Норадреналина:



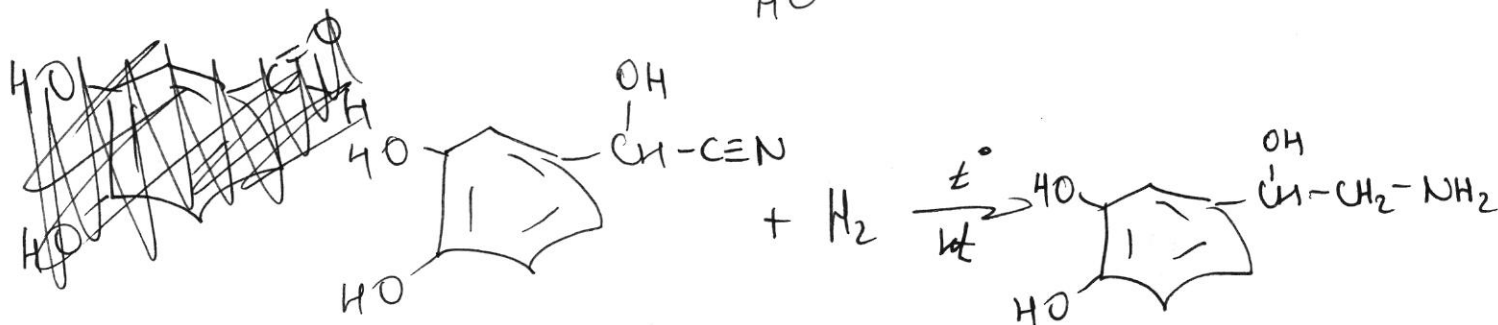
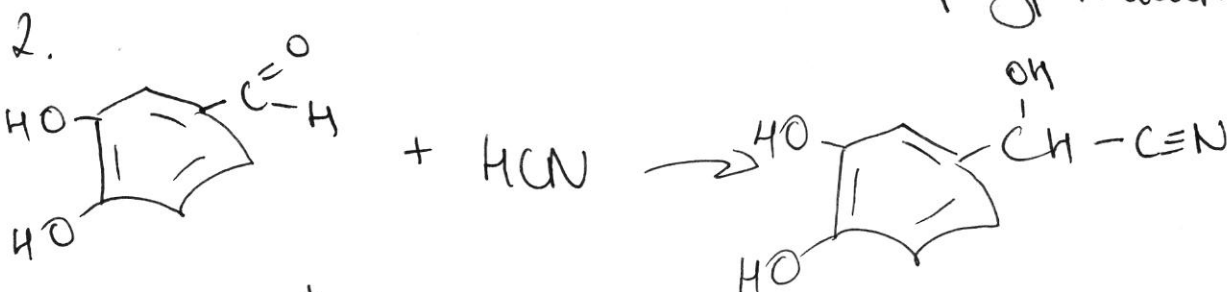
↓-хлоруксусная к-та

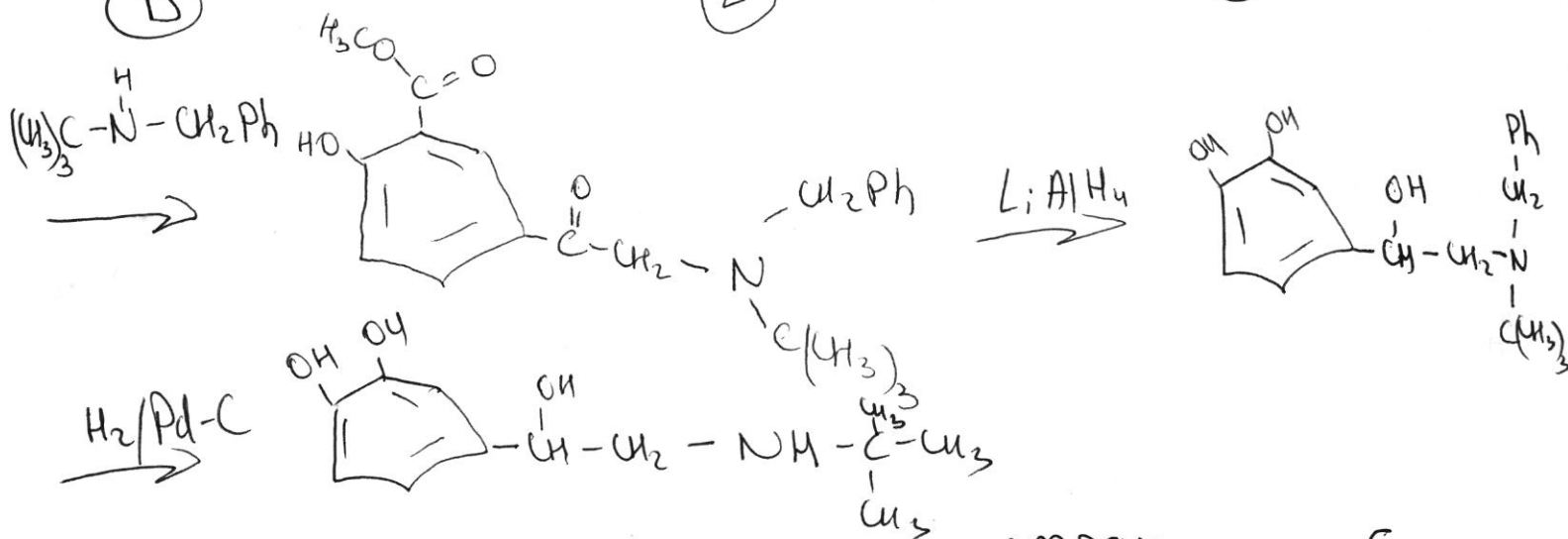
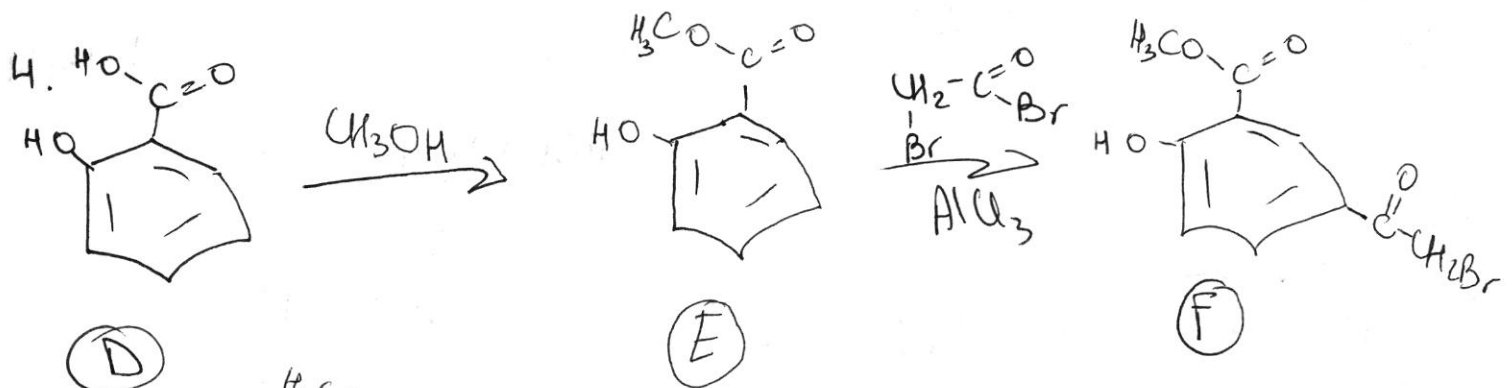
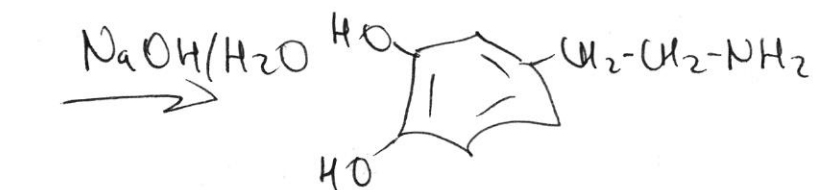
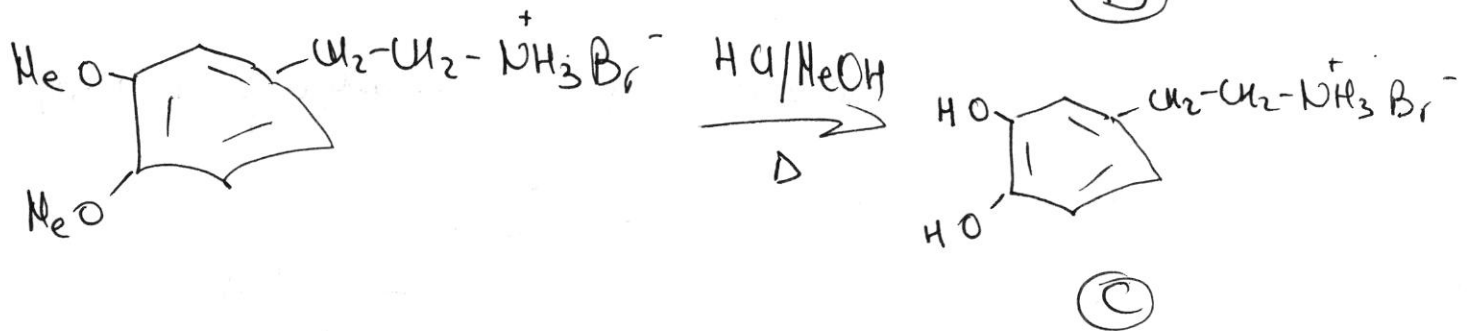
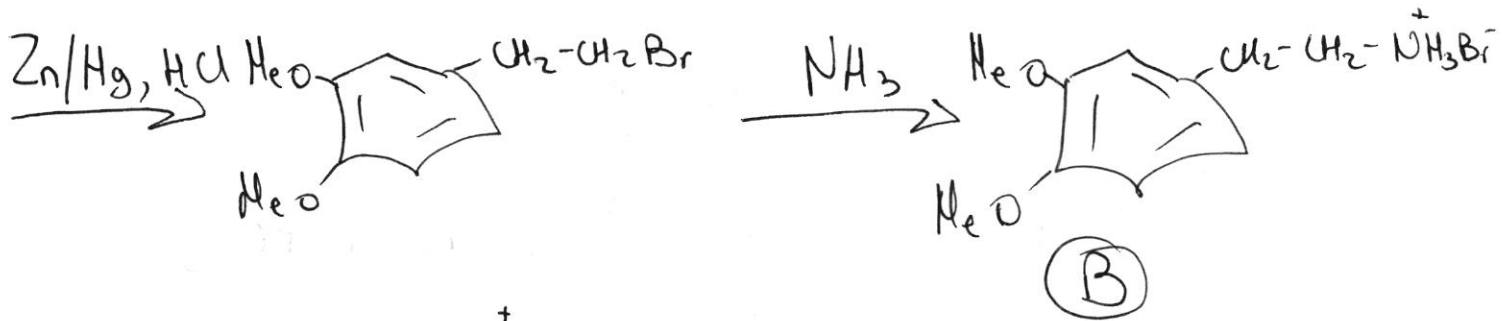
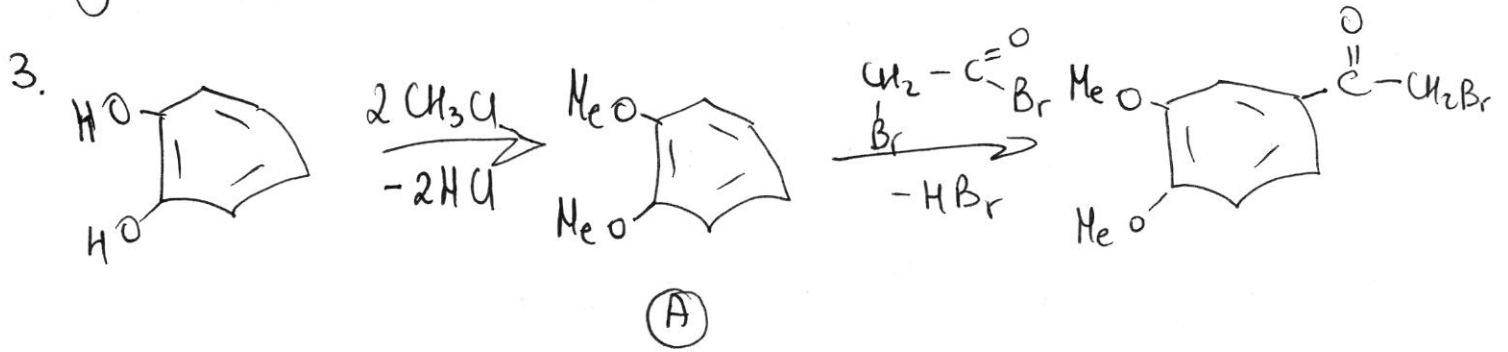


хлорангидрид 2-хлоруксусной к-ты



норадреналин



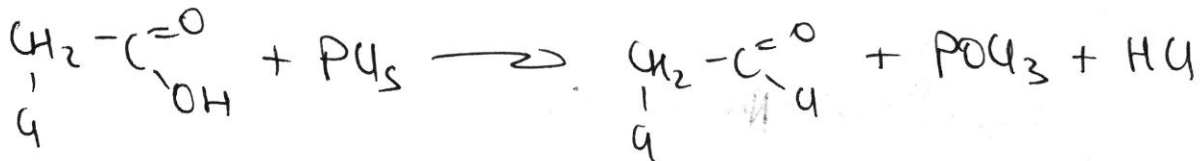


Задача 4.

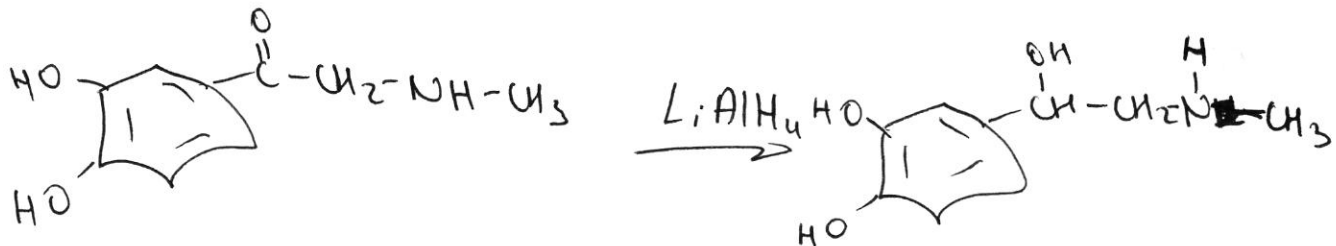
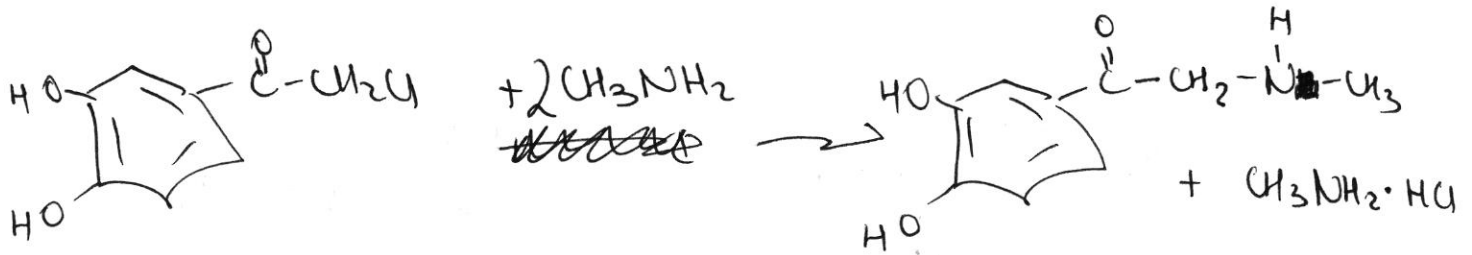
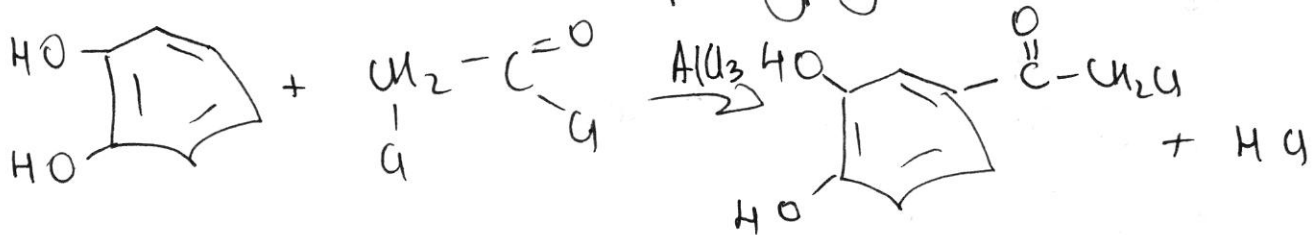
1. Синтез адреналина:



2-хлоруксусная к-та



хлорангидрид 2-хлоруксусной к-ты



адреналин

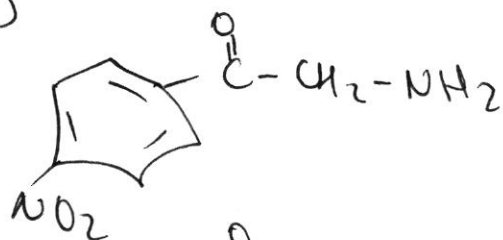
75

Белюк Ольга

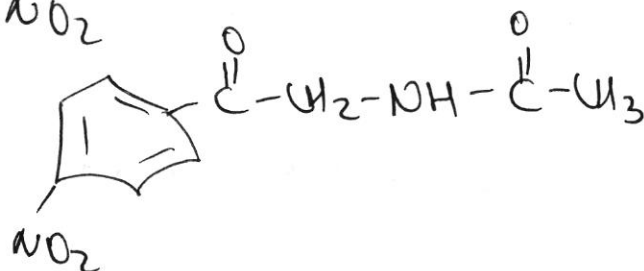
Дмитриевна Красноярский край
11 класс МАОУ Ш ШЧ

Задача 5

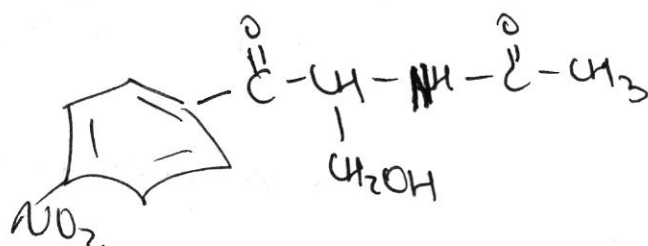
(A)



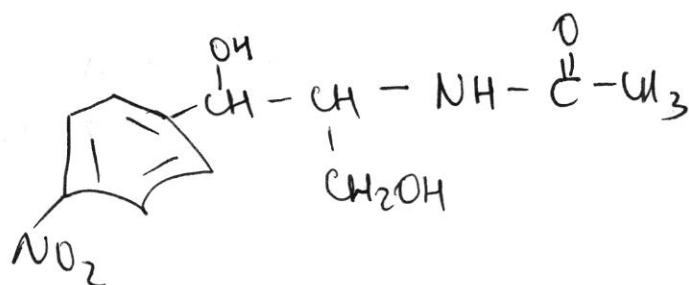
(B)



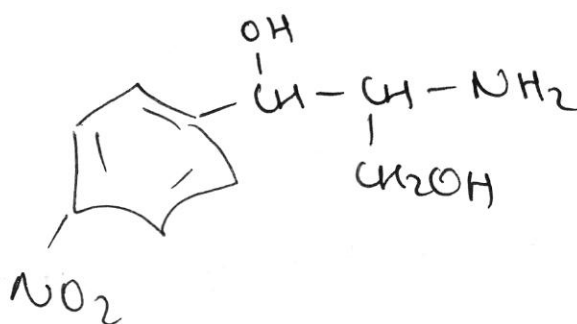
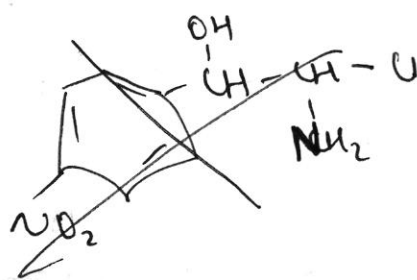
(C)



(D)



(E)



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