

ПИСЬМЕННАЯ РАБОТА

N-10.3 вариант 2

$C_xH_y = A \rightarrow CO_2 + H_2O$

$m = 8 \text{ г } C_xH_y$

$n(CO_2) = 13,44 \text{ л } m(H_2O) = 7,2 \text{ г}$

$n(CO_2) = 0,6 \text{ моль } n(H_2O) = 0,4 \text{ моль}$

$n(C) = 0,6 \text{ моль } n(H) = 0,8 \text{ моль}$

$m(C_xH_y) = 0,6 \cdot 12 + 0,8 \cdot 1 = 8 \text{ г}$  верно

$0,6 : 0,8 = 6 : 8 = 3 : 4$

$C_3H_4$  не симметрично

$C_3H_4 \leftrightarrow \equiv - C - C - C = A$

~~$C_3H_4 + HX \rightarrow C_3H_5X = Y$~~

$w(C) = 0,1785$

$w(H) = 0,03$

$w(X) = 1 - (0,1785 + 0,03) = 0,7915$

~~$\frac{0,1785}{12} : \frac{0,03}{1} : \frac{0,7915}{M(X)} = 0,014875 : 0,03 : \frac{0,7915}{M(X)}$~~

~~$= 1 : 2 : \frac{53,2}{M(X)}$~~

$\frac{17,85}{12} : \frac{3}{1} : \frac{79,15}{M(X)} = 1,4875 : 3 : \frac{79,15}{M(X)}$

$M(Y) = \frac{3M(C)}{0,1785} = 201,7 \text{ г/моль}$ , то  $nM(X) = 201,7$

$\approx 36 - 6 \approx 160 \text{ г/моль } n=2$ , то  $M(X) = 80 \text{ г/моль}$

$\Rightarrow X = Br$

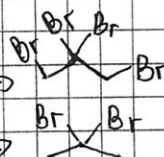
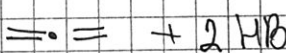
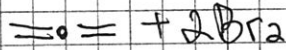
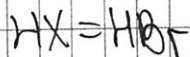
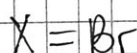
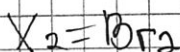
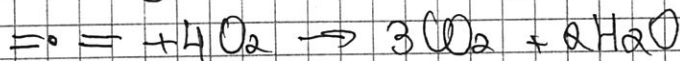
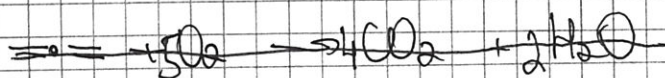
65

45

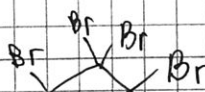
1	2	3	4	5
0	0,5	20	20	130
35,5				

ПИСЬМЕННАЯ РАБОТА

N-10.3. (продолжение)



2  
4  
4



$w(C) = 10,02\%$

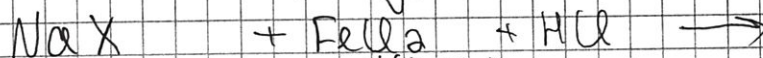
$w(H) = 1,12\%$

$w(Br) = 88,86\%$  верно

$w(Br) = \frac{4M(Br)}{4M(Br) + 4M(H) + 3 \cdot M(C)} = 0,8886$  верно

N-10.5.

A - оксид азота(IV)



$M(NaX) = 69 \text{ г/моль}$

$V(FeCl_2) = 0,1$

$w(FeCl_2 \text{ в р-ле}) = 0,2$

$\rho(FeCl_2) = 1,2 \frac{\text{г}}{\text{мл}} = 1200 \frac{\text{г}}{\text{л}}$

$m(FeCl_2) = V \cdot w \cdot \rho = 2160 \text{ г}$

$n(FeCl_2) = \frac{m}{M} = 17 \text{ моль}$

$M(NaX) = 69 \text{ г/моль}$ , если Na - один, то

под  $M(X) = 69 - 23 = 46 \text{ г/моль}$ , подходит  $NO_2$

$NaNO_2$  (т.е. в дальнейшем в уш. соль в содержит N)



черновик

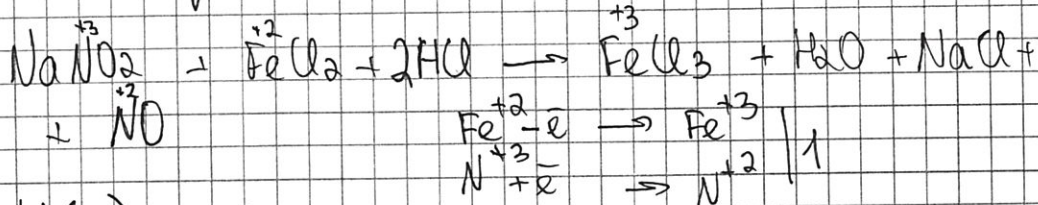


чистовик

(поставьте галочку в нужном поле)

ПИСЬМЕННАЯ РАБОТА

N-10.5 (продолжение)



1-4d.  
2-4d.  
5-2d.

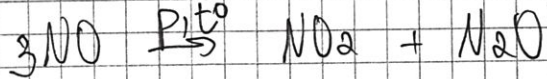
M(B) рассчит.

$$D_{Ar}(B) = \frac{M(B)}{M(Ar)} = \frac{M(B)}{29,95} = 1,1 \Rightarrow M(B) = 43,945 \text{ г/моль} \approx 44 \text{ г/моль}$$

B = N<sub>2</sub>O

В газ:  $\omega(N) = 0,3043$   
 $\omega(O) = 1 - 0,3043 = 0,6957$

$$\omega(N) = \frac{14}{14+32} = 0,3043 \Rightarrow \text{NO}_2 = B$$



A = NO, B = N<sub>2</sub>O, B = NO<sub>2</sub>

$$n(\text{FeCl}_2) = n(\text{NO}) = 17 \text{ моль}$$

$$n(\text{N}_2\text{O}) = 17$$

$$p(B) = 1,825 \cdot 10^6 \text{ Па}$$

$$K_p = \frac{p_{\text{NO}_2} \cdot p_{\text{N}_2\text{O}}}{p_{\text{NO}}^3} = \frac{x^2}{17-3x}$$

$$p_{\text{N}_2\text{O}} = x_{\text{N}_2\text{O}} \cdot p_{\text{общ}}$$

$$pV = \nu RT$$

$$p = \frac{\nu RT}{V} = \frac{17 \cdot 8,31 \cdot 323}{2,5 \cdot 10^{-3}}$$

$$= 18252084 \text{ Па}$$

Вещь	NO	N <sub>2</sub> O	NO <sub>2</sub> (моль)
Объем	17		
Процент	3x	*	*
Сумма	17-3x	x	x

$$\nu_{\text{общ}} = 17 - 3x + 2x = 17 - x$$

$$p_{\text{N}_2\text{O}} = x_{\text{N}_2\text{O}} \cdot 18252084 = 1,825 \cdot 10^6$$

$$x_{\text{N}_2\text{O}} = 0,01$$

$$\frac{n(\text{N}_2\text{O})}{\nu_{\text{общ}}} = 0,01$$

ПИСЬМЕННАЯ РАБОТА

$n = 10.5$  (продолжение)

$\frac{x}{17-x} = 0,01$

$x = 0,1683$

$\checkmark B = 0,1683 \text{ моль}$

$\checkmark B = 0,1683 \text{ моль}$

$\checkmark NO = 16,4951 \text{ моль}$

~~$x A = 0,01$  — пропал~~

$0,1683 \cdot 3 = 0,5049$  пропал. А

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~~$n H$~~

$C KCN = 0,001 \text{ M}$

$KCN + H_2O \rightleftharpoons KOH + HCN$

~~$K^+ CN^- + H_2O \rightleftharpoons K^+ + OH^- + H^+ + CN^-$~~

$H_2O \rightleftharpoons H^+ + OH^-$

$10^6 C_{CN} = C(OH^-)$

$\frac{[H^+][OH^-]}{[H_2O]} \quad K_w = [H^+][OH^-] = 10^{-14}$

$\text{пусть } [H^+] = x$

$C KCN = [H^+] \cdot 10^6 \cdot [OH^-] = 10^6 x \cdot x = 10^6 x^2 = 0,001$

$x = 3,162 \cdot 10^{-5} \text{ M} = [H^+], [OH^-] = 3,162 \text{ M}$

ПИСЬМЕННАЯ РАБОТА

N-10.4 (продолжение)

$$pH = -\lg [H^+] = 4,5$$

$$K_w = [H^+][OH^-] = 3,162 \cdot 10^{-5} \cdot 3,162 = 9,998 \cdot 10^{-10}$$

$$\approx 10 \cdot 10^{-10} = 10^{-9}$$

$d = ?$

$$d = \frac{10^{-3}}{10^{-4}} = 10^{-3} \cdot 10^{-4} = 10^{-7}$$

$$KCN \rightleftharpoons K^+ + CN^-$$

$$H_2O \rightleftharpoons H^+ + OH^-$$
  

N-10.1

$C_2H_2 \xrightarrow[3 H_2O, H^+]{NaOH} A \xrightarrow[и t]{H_2(щел.)} B \xrightarrow[180^\circ C]{H_2SO_4} C \xrightarrow{H_2CO_2} D$

$C \xrightarrow{E} F \xrightarrow[P_2O_5]{\text{анилин}} G$

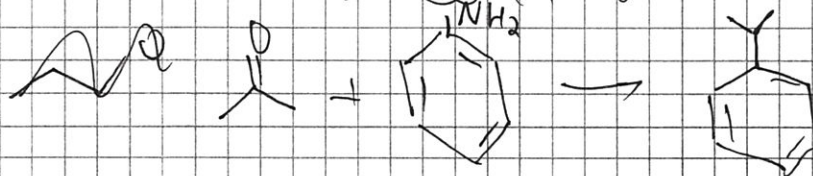
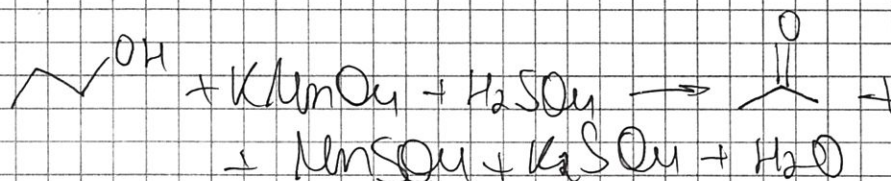
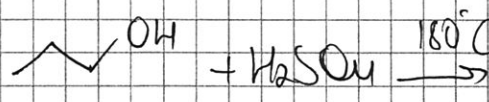
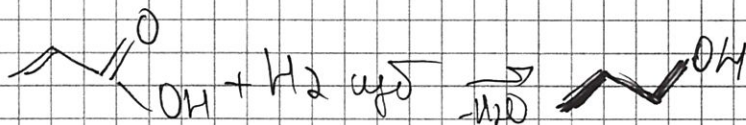
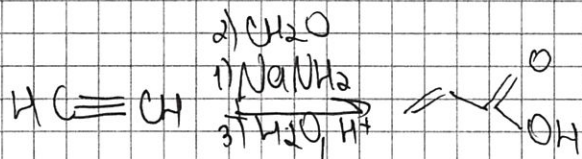
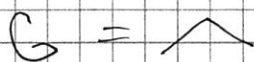
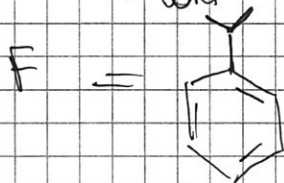
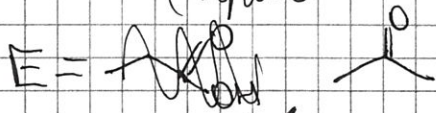
$C_2H_2 \xrightarrow{CO, MnO_2, H_2SO_4} E$

$C_2H_2 \xrightarrow{O_2, Cu} D$

$A = CH_2=CH-C(=O)OH$   
 $B = CH_3-CH_2-OH$   
 $C = CH_2=CH-C(=O)OH$

ПИСЬМЕННАЯ РАБОТА

N-10.1 (продолжение)



ПИСЬМЕННАЯ РАБОТА

~~$n(n-1) = 36$~~   $n = 10.2$

$\text{—}\overset{\text{O}}{\parallel}\text{—}\text{H}$  - ацетальдегид

$\text{R-Mg} + \text{—}\overset{\text{O}}{\parallel}\text{—}\text{H} \xrightarrow{\text{этил}} \text{R—}\overset{\text{O}}{\parallel}\text{—}\text{H} + \text{Mg}$

$\text{Mg} + 2\text{H}_2\text{O} \rightarrow \text{Mg(OH)}_2 + \text{H}_2$

$\text{Mg(OH)}_2 + 2\text{HCl} \rightarrow \text{MgCl}_2 + 2\text{H}_2\text{O}$

↑ на электр-е

$V(\text{HCl}) = 15,6 \text{ мл}$

$N(\text{HCl}) = 0,5 \text{ н} = \text{г/мл}$

$\Delta_{\text{HCl}} = CV = 0,5 \cdot 15,6 \cdot 10^{-3} = 7,8 \cdot 10^{-3} \text{ моль}$

$\Delta V_1 = \Delta V_2$

$\frac{1}{2} \Delta_{\text{HCl}} = \Delta(\text{Mg(OH)}_2) = 3,9 \cdot 10^{-3} \text{ моль}$

$\Delta(\text{Mg(OH)}_2) = \Delta(\text{R-Mg})$

3. эвбувалент. группа водородов

$\text{R} = \text{C}_2\text{H}_5$

$\text{C}_2\text{H}_5\text{Mg}$