КОД 11-1-3

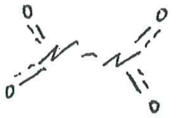
№ задачи	Баллы/20	Подписи членов жюри
1.	5	
2.	2	
3.	0	
4.	15,5	
5.	4,5	
	27	

$KI + 2H_2SO_4(конц) \to I_2 + K_2SO_4 + SO_2 + 2H_2O$ 1

$A_2 - I_2$ I – I 1

$Cu + 4HNO_3(к) \to Cu(NO_3)_2 + N_2O_4 + 2H_2O$ 1

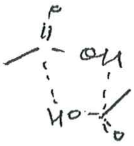
$B_2 - N_2O_4$



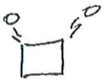
1

) $2CH_3COONa + H_2SO_4 \xrightarrow{t} Na_2SO_4 + (CH_3COOH)_2$ 0

$F_2 - (CH_3COOH)_2$



1

) ~~$2CH_3COOH \xrightarrow{t} (CH_2-C=O)_2 + 2H_2O$~~ $2CH_3COOH \xrightarrow{t}$  $+ 2H_2O$ 0.

$G_2 - (CH_2=C=O)_2$

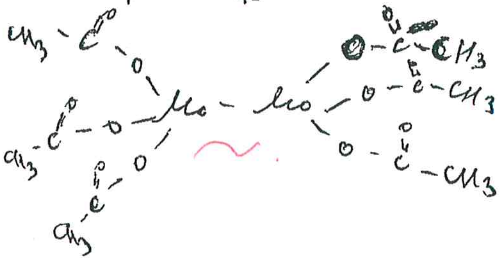
0.

5) $PCl_2 \to P_2Cl_6$ 0

$I_2 - P_2Cl_6 - [PCl_2]^+[PCl_4]^-$ 0

6) ~~$2Mo(CO)_6 + 6CH_3COOH \to 6CO + 3H_2 + Mo_2(OOCCH_3)_6$~~ $2Mo(CO)_6 + 6CH_3COOH \to 12CO + 3H_2 + $ ~~[illegible]~~ $Mo_2(OOCCH_3)_6$ 0

$H_2 - Mo_2(OOCCH_3)_6$



0.

11.1 5.5

11-2 2б.

Мизевой Сторона

1 Хлор выделяется т.к. HCl реагирует с MnO_2 1

$MnO_2 + 4HCl \rightarrow MnCl_2 + Cl_2 + 2H_2O$ 1

~~) B - Be~~
~~H - BeO~~
~~K - $BeCl_2$~~
~~I - $Na[BeCl_2]$~~
~~J - $H_2[BeCl_2]$~~
~~E - $Be[HF_2]_2$~~

B - Bi
Г - $BiCl_5$
Ф - Bi_2O_5
Б - $HBiO_3$
~~I - Na_2BiCO_4~~ ~~$Na_2[BiCl_4]$~~
~~J - $H_2[BiCl_4]$~~

A -

I - $Na_2[BiCl_4]$
J - $H_2[BiCl_4]$

) $Bi + Cl_2 \rightarrow BiCl_5$

) $BiCl_5 + 3H_2O \rightarrow HBiO_3 + 5HCl$

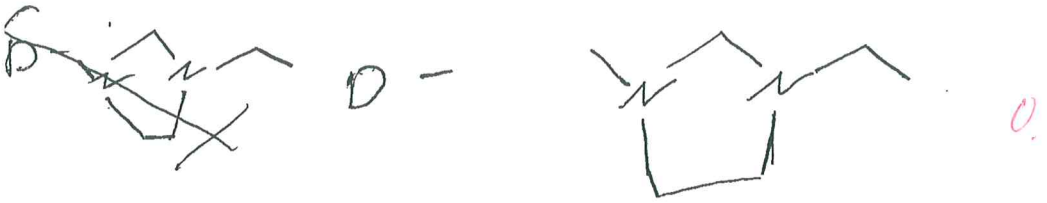
) $2HBiO_3 \xrightarrow{t} Bi_2O_5 + H_2O$

~~5) $BiCl_5 + NaCl + Bi \rightarrow Na_2[BiCl_6] + BiCl_4$~~

6) $Na_2[BiCl_4] + 2HCl \xrightarrow{t} 2NaCl + H_2[BiCl_4]$

5) $BiCl_5 + 2NaCl + Bi \rightarrow Na_2[BiCl_4] + BiCl_3$

Лицевая сторона 11-3

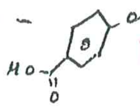


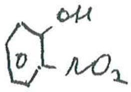
Лицевая сторона

11-4

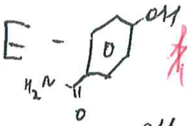
11-1-3

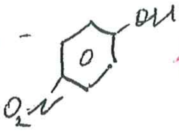
A -  1б.

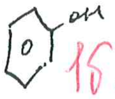
D -  ~~1б~~ 1,5б.

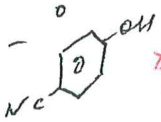
F -  1б.

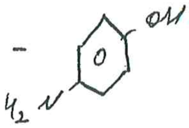
B -  1б.

E -  ~~1б~~ 1,5б

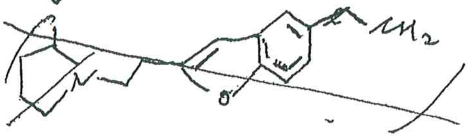
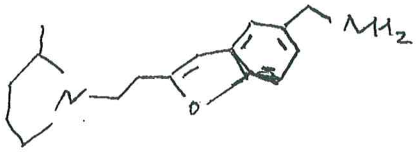
G -  1,5б

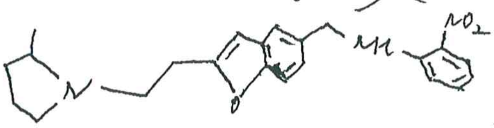
C -  1б.

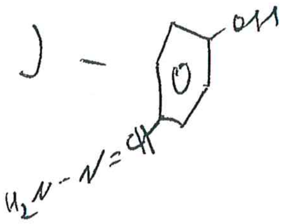
I -  ~~1б~~ 1,5б

H -  1,5б

K -  1,5б.

L -   1,5б.

X -  0,5б

J -  0б

Σ 15,5б.

~~Чистовик~~ Черновая сторона 11-5 11-1-5

1) $T = 765$ K

$\lg K = 0 \Rightarrow \ln K = 0$

$\Delta G^\circ = -8{,}314 \cdot 765 \cdot 0 = 0$ —

$\Delta H^\circ - 765 \Delta S^\circ = 0$ —

$\Delta H = 765 \Delta S$

$T = 720$

$\lg K = 0{,}15 \Rightarrow \ln K = 0{,}346$

$\Delta G^\circ = -8{,}314 \cdot 720 \cdot 0{,}346 = -2071{,}184$

$\Delta H^\circ - 720 \Delta S^\circ = -2071{,}184$ 1б

$765 \Delta S - 720 \Delta S = -2071{,}184$

$45 \Delta S = -2071{,}184$

~~$\Delta S = -46{,}03$~~ $\Delta S = -46{,}03$ 3б

$\Delta H = -35212{,}95$

$\Delta G^\circ(298) = -35212{,}95 + 298 \cdot 46{,}03 = -21496$

2) $\bar{M}$(смеси газов) $= 51{,}5$

$\bar{M} = (1-x) \cdot 32 + 67x = 51{,}5$

$x = 0{,}5$ 0,5

	$MgCl_2$	MgO	Cl_2	O_2
n(0)	$25 \cdot 10^{-4}$ +	$18 \cdot 10^{-4}$ +	$18 \cdot 10^{-3}$	$18 \cdot 10^{-3}$
	$-x$	$+x$	$-x$	$+\frac{1}{2}x$
n(кт)	$25 \cdot 10^{-4} - x$	$11 \cdot 10^{-4} + x$	$18 \cdot 10^{-3} - x$	$18 \cdot 10^{-3} + \frac{1}{2}x$

~~$pV = nRT$~~

~~$n = \frac{pV}{RT}$~~

~~$n = 0{,}036$~~

~~$n(Cl_2) = 0{,}018$ (моль)~~

~~$n(O_2) = 0{,}018$ (моль)~~

~~$K = \frac{[MgCl_2][O_2]^{\frac{1}{2}}}{[MgO][Cl_2]}$~~

5) MgO + еще ... $\rightarrow H_2[MgCl_4] + \frac{1}{2}O_2$ —

$H_2[MgCl_4] \xrightarrow{t} MgCl_2 + 2HCl$

$\Sigma = 4{,}5$ б