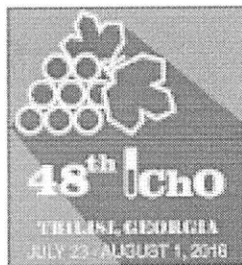
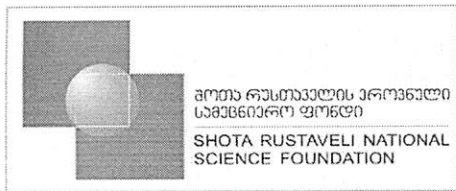


1018

მაგიდის #: 5



მაგიდის #: 5

ქიმიის 48-ე საერთაშორისო ოლიმპიადისთვის საქართველოს ნაკრები გუნდის წევრების  
შესარჩევი კონკურსი

## I ტური

### სამუშაო ჟურნალი

გვარი: მჭვირიძე

სახელი: გიორგი

სკოლა: ქობულეთის სხეილთა ახალი კოლეჯი

კლასი: XII

ტელ: 598-430-140

ელ-ფოსტა: giorgimeshvildishvili@yahoo.com

16 აპრილი, 2016

ბჭიბჳს A რ B ნივთიუბჭიბჳნი.



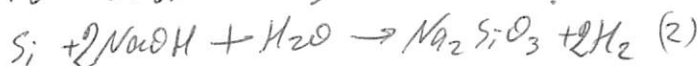
$$v(H_2) = \frac{0,896}{22,4} = 0,04 \quad M(A) = \frac{1,52 - 0,56}{0,04 \cdot 2} =$$

$$M(A) = \frac{0,04 \cdot 2}{x} = \frac{0,08}{x} = 12x$$

$M(A) = 12x$     აუ  $x=1$      $M=12$   
                   აუ  $x=2$      $M=24$   
                   აუ  $x=3$      $M=36$

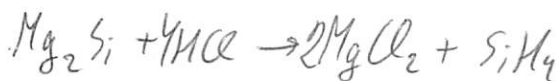
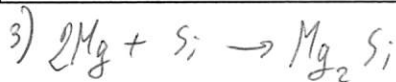
უბჳს, ლმბ A ბნი ბჭიბჳნი, ბბბბბბ  $x=1$  რ  $x=3$  ბბბბბბბბბბ ბბბბბბბბ.  $M(A) = 24 - Mg.$

2) B ბბბ ბბბბბ ბბბბბბბბბბ ბბბბბბბბ, ლპბბბ ბბბბ ბბბბბ ბბბბბბბბბბ ბბბბბბბ. B ბბბბბბ რ ბბბბბბბ ბბბბბბბ ბბბ ბბბბბ ბბბბბბ ბბბბბბ ბბბბბ ბბბბბ ბბბბბ ბბბბბ.



ბბბბბბბბბბ ბბბბბბ ბბბბბბბბბბ:  $v(H_2) = \frac{0,896}{22,4} = 0,04$

$$x(Si) = \frac{v(H_2)}{2} = 0,02 \quad m(Si) = 28 \cdot 0,02 = 0,56. \text{ ლ.რ.ბ.}$$



$V_{\text{ბბბბბ}}, \text{ ბბბბბბბბბ} = 1 + 0,448 = 1,448.$

$SiH_4$  ლპბბბ ბბბბბ ბბბბბბბ რ ბბბბბბ ბბბბბ  $O_2$ .

$V_{\text{ბბბბბ}}(O_2) = 0,448 \cdot 2 = 0,896. \quad V_{\text{ბბბბბ}}(O_2) = 1 - 0,896 = 0,104.$

$\frac{V_{\text{ბბბბბბბბბ}}}{V_{\text{ბბბბბ}}} = \frac{1,448}{0,104} \approx 14. \quad \text{ბბბბბ ბბბბბ ბბბბბბბ 14-ბბბ.}$

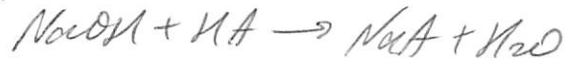
ა	$[Mg^{2+}] = \frac{0,5 \cdot X}{2 \cdot X} = 0,25$ $[OH^-] = \frac{0,1 \cdot X}{2 \cdot X} = 0,05$ $[Mg^{2+}][OH^-]^2 = 0,25 \cdot (0,05)^2 = 6,25 \cdot 10^{-4}$ <p>ნატივი გამოყოფა.</p>	
ბ	$Ag^+ + (M_3) \rightarrow Ag(M_3)^+ \quad \beta_1 = \frac{[Ag(M_3)^+]}{[Ag^+][M_3]}$ $Ag(M_3)^+ + M_3 \rightarrow Ag(M_3)_2^+ \quad \beta_2 = \frac{[Ag(M_3)_2^+]}{[Ag(M_3)^+][M_3]}$ $C_{Ag} = [Ag^+] + [Ag(M_3)^+] + [Ag(M_3)_2^+]$ $[Ag^+] = \frac{[Ag(M_3)^+]}{\beta_1 [M_3]} \quad [Ag(M_3)_2^+] = \beta_2 [Ag(M_3)^+][M_3]$ $C_{Ag} = [Ag(M_3)^+] \left( 1 + \frac{1}{\beta_1 [M_3]} + \beta_2 [M_3] \right)$ $[Ag(M_3)^+] = \frac{C_{Ag} \cdot \beta_1 [M_3]}{1 + \beta_1 [M_3] + \beta_1 \beta_2 [M_3]^2}$ <p>სადაც <math>C_{M_3}</math> პირველი მუდმივ პარამეტრია, ხოლო <math>C_{M_3} = [M_3]</math></p>	
გ	<p>i. <math>[H^+] = \sqrt{K_a C_{HA}} = \sqrt{6 \cdot 10^{-5} \cdot 0,1} = 2,45 \cdot 10^{-3}</math></p> <p><math>pH = 2,6</math></p> <p>ii. <math>NaOH + HA \rightarrow NaA + H_2O</math></p> <p><math>v(NaOH) = 0,004 \quad v_{დასრულებული}(HA) = 0,015</math></p>	

→ 
$$[Ag(M_3)^+] = \frac{10^{-2} \cdot 2,09 \cdot 10^3 \cdot 2}{1 + 2,09 \cdot 10^3 \cdot 2 + 2,09 \cdot 10^3 \cdot 1,62 \cdot 10^4} = 0,3 \cdot 10^{-9} M$$

$$V_{\text{რეზიდუალური}}(\text{HA}) = 0,004 \quad V_{\text{ჰიდროლიზური}}(\text{HA}) = 0,011$$

$$C_{\text{HA}} = \frac{0,011}{0,19} = 5,8 \cdot 10^{-2} \quad \boxed{\text{pH} = 2,73}$$

iii.



$$V(\text{NaOH}) = 0,075 \cdot 0,1 = 0,0075 \text{ მოლ.}$$

$$V_{\text{HA}}(\text{HA}) = 0,015 \quad V_{\text{რეზიდუალური}}(\text{HA}) = 0,0075 \text{ მოლ.}$$

$$C_{\text{HA}} = \frac{0,0075}{0,225} = 0,0333$$

$$\boxed{\text{pH} = \text{pK}_a = 4,22}$$

iv.

$$\text{pH} = 7 - \frac{1}{2} \log K_a + \frac{1}{2} \log \frac{C_{\text{ბაზა}}}{C_{\text{ჰა}}} =$$

$$= 7 + 2,11 + 0 = \boxed{9,11}$$

v.



$$\text{მოძღვრული ჰიდროლიზური რაოდენობა} \quad V(\text{NaOH}) = 0,05 \cdot 0,1 =$$

$$= 0,005 \text{ მოლ.}$$

$$C_{\text{OH}^-} = \frac{0,005}{0,35} = 0,0143$$

$$\text{pOH} = -\log 0,0143 = 1,84 \quad \boxed{\text{pH} = 12,16}$$

ა	$\frac{[A]_2}{[A]_1} = \frac{1,146}{0,576} = 2$ $\frac{[B]_3}{[B]_1} = \frac{0,504}{0,252} = 2$ $\frac{\omega_2}{\omega_1} = \frac{0,0817}{0,0204} = 4$ $\frac{\omega_3}{\omega_1} = \frac{0,0409}{0,0204} = 2$	
ბ	<p>i. <math>2 \cdot \Delta H_f^\circ(CO) - \Delta H_f^\circ(S; O_2) = 689,9</math>  <math>2 \cdot (-110,5) - x = 689,9 \quad x = -910,9</math></p> <p>ii. <math>\Delta S = 2 \cdot S^\circ(CO) + S^\circ(S; O_2) - 2 \cdot S^\circ(C) - S^\circ(S; O_2)</math>  <math>\Delta S = 2 \cdot 197,6 + 5,7 - 2 \cdot 5,7 - 41,8 = 347,7</math></p> <p>iii. <math>\Delta G = \Delta H - T \Delta S = 689,9 - 298 \cdot 347,7 =</math>  <math>= 689900 - 298 \cdot 347,7 = 586128,5</math></p> <p>iv. <math>T = \frac{\Delta H}{\Delta S} = \frac{689,9 \cdot 1000}{347,7} = 1984,18 K</math>  <math>\boxed{1711,18^\circ C}</math></p>	
გ	$E_{A1} = -RT_1 \ln K_1 \quad E_{A2} = -RT_2 \ln K_2$ $E_{A2} - E_{A1} = R(T_1 \ln K_1 - T_2 \ln K_2) =$ $= 8,31(470 \cdot \ln 1,05 \cdot 10^{-3} - 508 \cdot \ln 1,1 \cdot 10^{-2}) =$ $= -7792,53$	
დ	$2C_2H_4 + 6O_2 \rightarrow 4CO_2 + 4H_2O \quad \Delta H_1^\circ = 2 \cdot (-1323)$ $2C_2H_6 \rightarrow 2C_2H_4 + 2H_2 \quad \Delta H_2^\circ = 137$ $2H_2 + O_2 \rightarrow 2H_2O \quad \Delta H_3^\circ = 2 \cdot (-242)$ <p>ამოცანის პირობები გასწავლით:</p> $\Delta H^\circ = 2 \cdot (-1323) + 137 + 2 \cdot (-242) =$ $\boxed{-2993,55 / \text{მოლ}}$	




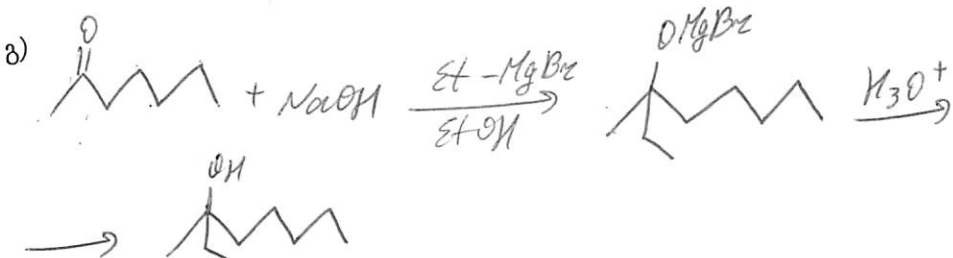
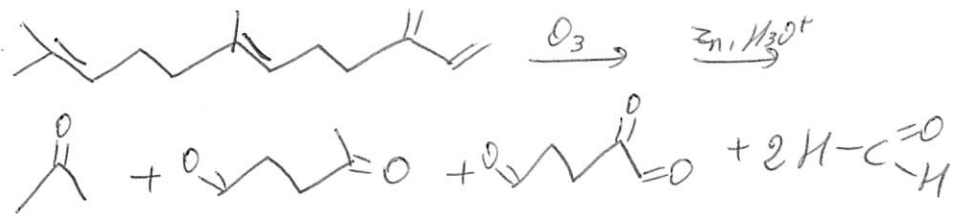
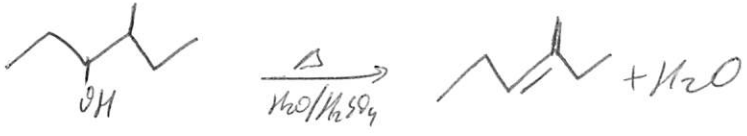
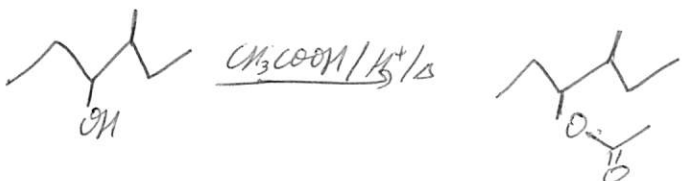
A-ლ პირობის  
 ΔH-ს II პირობის  
 გამო B-ლ პირობის  
 I პირობის.

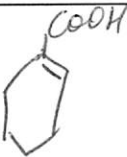
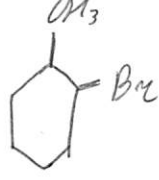
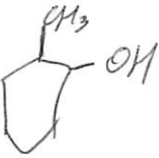

$\omega = k[A]^2[B]$   
 ~~$k = \frac{\omega}{[A]^2[B]}$~~   
 $k = \frac{\omega}{[A]^2[B]} =$   
 $= 24,66 \cdot 10^{-2}$

ამოცანა 4.

5 ქულა

A	$CH_2 = CH_2$	
B	$CH_3 - CH_2 - Cl$	
C	$CH_3 - CH_2 - CN$	
D	$CH_3 - CH_2 - C \begin{matrix} =O \\ -OH \end{matrix}$	
E	$Na$	
F	$CH_3 - CH_2 - C \begin{matrix} =O \\ -ONa \end{matrix}$	
G	$CH_3 - CH_2 - C \begin{matrix} =O \\ -Cl \end{matrix}$	
H	$HCl$	
	პროპანოჟიკის ანჰიდრიდის სტრუქტურული ფორმულა	
	$CH_3 - CH_2 - C \begin{matrix} =O \\ -O \\   \\ O \end{matrix}$ $CH_3 - CH_2 - C \begin{matrix} =O \\ -O \end{matrix}$	

5.1.	 <chem>CC(=O)O.CC(C)CO&gt;&gt;</chem>	
5.2.	<p>ა) </p> <p>ბ) </p> <p>გ)  <chem>CCCCC(=O)CC.O[Na].CC[Mg]Br.CCO&gt;&gt;CCCCC(O)CC</chem> </p>	
5.3.	 <chem>CC(C)=CCCCC(C)=C.O=O&gt;&gt;CC(=O)C.CCCC=O.CCCC=O.C=O</chem>	
5.4.	<p>ა)  <chem>CC(C)C(O)C&gt;&gt;CC(C)=CC.O</chem> </p> <p>ბ)  <chem>CC(C)C(O)C.CC(=O)O&gt;&gt;CC(C)C(OC(=O)C)C</chem> </p>	

5.5.	<p>ა) </p> <p>ბ) </p> <p>გ) </p> <p>დ) </p>	
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