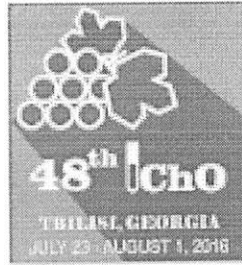
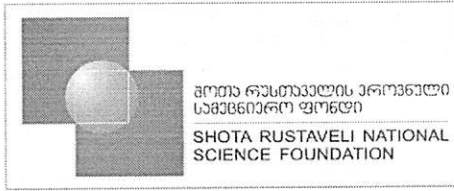


1013

მაგიდის #: 16



მაგიდის #: 16

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

I ტური

სამუშაო ჟურნალი

გვარი: ყვინციანი

სახელი: გიორგი

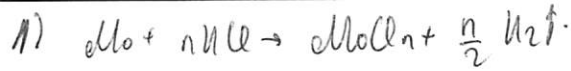
სკოლა: სკოლა №3 ს. ჯ. ჯ. ქ.

კლასი: XII

ტელ: 599-14-08-00

ელ-ფოსტა: qviniani.kvintiani@gmail.com

16 აპრილი, 2016



$x \text{ ზრე} - x \text{ } Al_2O_3 \rightarrow \frac{x \cdot n}{2} = 0,04 \cdot \frac{0,896}{22,4} = 0,004$

$x = \frac{0,008}{n} \quad m(Al_2O_3) = 0,96 = 0,008 \cdot \frac{102}{n}$

$Al_2O_3 = 12n \rightarrow n = 1; 2; 3 \dots \quad Al_2O_3 = 24 \text{ ზრე} \quad (Al_2O_3)$

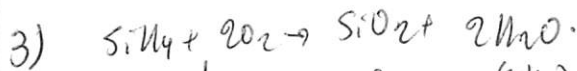
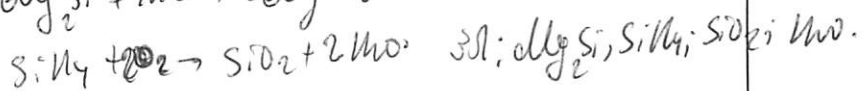
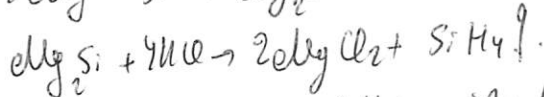
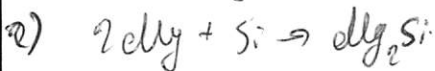
ცოცხლად უზოგოვარ Si , ~~1,486~~ ~~1,486~~ ვიხი ნივთიერება
 ავსოვსივთხოვნი, 1,486 გრამში ნივთი და მოვუხდებოვრ P



y - ანონ(Al) $y = \frac{0,04}{2} = \frac{v(Al)}{2} = 0,02$ \rightarrow ანონი $\frac{1}{2} \frac{v(Al)}{v(H_2)}$ ან $\frac{1}{2} \frac{v(Al)}{v(H_2)}$

$0,56 = y \cdot 102 \quad Al_2O_3 = \frac{0,56}{0,02} = 28 \text{ ზრე} = (Si)$

320 Si ; Al_2O_3



$v(O_2) = \frac{1}{2} \cdot 2 \cdot 0,004 \text{ ზრე} \quad v(SiH_4) = 0,002 \text{ ზრე}$

სივსილ უჭირავსი ზრეში $\frac{1}{2}$ ავსოვსივთხოვნი $v(O_2) = 0,004 = 2 \cdot v(SiH_4) = 0,004 \text{ ზრე}$. $\frac{1}{2}$ ავსოვსივთხოვნი.

$P_1 = P_0 \cdot \frac{0,004 \cdot 22,4}{1} = 0,0896 P_0 \quad \frac{P_0}{P_1} = \frac{1}{0,0896} = 11,16 - \text{ჯიხ}$

<p>ა</p>	<p>ბუნებრივი გზით $1.2 \cdot 10^{-4} M$ Ca^{2+} და $0.1 M$ $NaOH$, $K_{sp}(Ca(OH)_2) = 0.5 \cdot 10^{-6}$ $Ca(OH)_2 + 2NaOH \rightarrow 2NaOH + Ca(OH)_2$ $K_{sp}(Ca(OH)_2) = 0.5 \cdot 10^{-6}$ $Ca(OH)_2 \rightarrow Ca^{2+} + 2OH^-$ $K_{sp} = x \cdot (2x)^2 = 4x^3 = 0.5 \cdot 10^{-6}$ $x = \sqrt[3]{\frac{0.5 \cdot 10^{-6}}{4}} = 0.112 \cdot 10^{-2} M$ $C_1(Ca^{2+}) = 1.2 \cdot 10^{-4} M$ $C_2(Ca^{2+}) = C(Ca(OH)_2) = \frac{0.45}{1+1} = \frac{0.45}{2} = 0.225 M$ $0.225 M > 1.2 \cdot 10^{-4} M$</p>
<p>ბ</p>	<p>ბუნებრივი $Ca(OH)_2$ $K_{sp} = 0.5 \cdot 10^{-6}$</p> <hr/> <p>$Ag^+ + NH_3 \rightarrow Ag(NH_3)^+$ $0.01 - x \quad 2x \quad x$ $Ag(NH_3)^+ + NH_3 \rightarrow Ag(NH_3)_2^+$ $x - y \quad 2 - x - y \quad y$ $\frac{y}{(0.01 - x)(2 - x)} = 2.09 \cdot 10^3$</p> <hr/> <p>$\frac{Ag(NH_3)_2^+}{(x - y)(2 - x - y)} = \beta_2 = 1.62 \cdot 10^7$</p> <hr/> <p>$C(Ag(NH_3)^+) = x - y$</p>
<p>ბ</p>	<p>i. $pH = -\lg[H^+]$</p> <p>$HA \rightarrow H^+ + A^-$ $K_{a2} = \frac{[H^+][A^-]}{[HA]}$ $0.1 M \quad 0 \quad 0$ $0.1 - x \quad x \quad x$ $\frac{x^2}{0.1 - x} = K_{a2} = 6 \cdot 10^{-5}$ $x^2 = 6 \cdot 10^{-6}$ $x = 2.44 \cdot 10^{-3} = [H^+]$</p> <p>ii. $0.1 - x \approx 0.1$ $pH = \lg \frac{10^3}{2.44} = 2.6$</p>



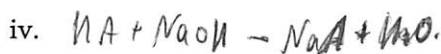
დავადგინო: 16

$n(\text{HA}) = 0,015 - 0,0075 (n\text{NaOH}) = 0,0075$

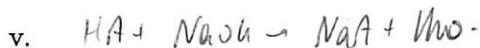
$\text{HA} \rightarrow \text{H}^+ + \text{A}^-$
 $3,3 \cdot 10^{-5} \times x \quad | \quad x \quad | \quad 3,3 \cdot 10^{-5} + x$
 $C(\text{HA}) = \frac{0,0075}{0,1275} = 0,0000333$
 $K_a = 3,3 \cdot 10^{-5}$
 $\text{pH} = 4,95$

2) $n(\text{HA}) = 0,015 \text{ მოლ} \rightarrow n(\text{NaOH}) = 0,01 \cdot 0,1 = 0,001$

$\text{HA} + \text{NaOH} \rightarrow \text{NaA} + \text{H}_2\text{O}$
 $C(\text{HA}) = \frac{0,005}{0,105} = 4,76 \cdot 10^{-5}$
 $n(\text{HA}) = 0,015 - 2(n\text{NaOH}) = 0,011 \text{ მოლ}$
 $K_a = 6 \cdot 10^{-5}$
 $\text{pH} = 4,2$



დავადგინო, რომელიც გეგმიური ზუსტად აღიწერა
 მო, დავადგინო, რომელიც გეგმიური გეგმიური $\text{pH} = 7$



$n(\text{NaOH}) = 0,02 \left(200 \cdot \frac{200 \cdot 0,1}{1000} - 0,015 \right) = 0,008$
 დავადგინო $n(\text{NaOH}) = 2(n\text{HA}) \quad C(\text{OH}) = \frac{0,005}{200 + 180} = 0,0000142$
 $[OH^-] = 1,4 \cdot 10^{-5} \rightarrow \text{pOH} = 4,8$
 $\text{pH} = 14 - 4,8 = 9,2$

$\text{HA} \rightarrow \text{H}^+ + \text{A}^-$
 $0,03 - x \quad | \quad x \quad | \quad 0,03 + x$
 $3,3 \cdot 10^{-5} \times x \quad | \quad x \quad | \quad 3,3 \cdot 10^{-5} + x$
 $\text{pH} = 4,7$

$\frac{(x + 3,3 \cdot 10^{-5})}{0,03 - 3,3 \cdot 10^{-5} - x} = 6 \cdot 10^{-5}$
 $x = 1,34 \cdot 10^{-3}$
 $\text{pH} = 2,8$

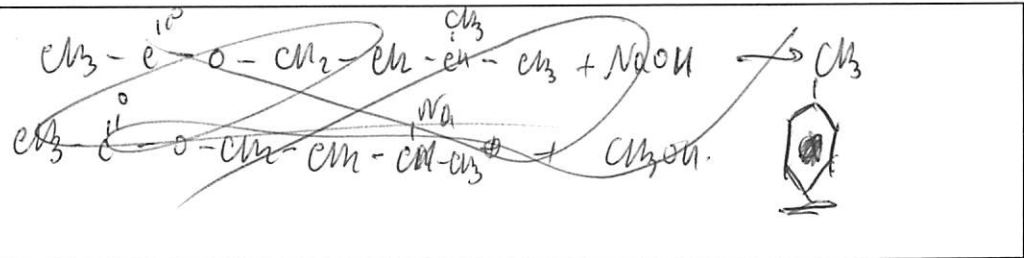
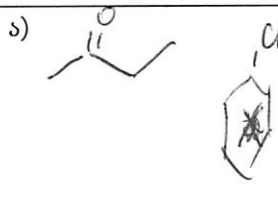
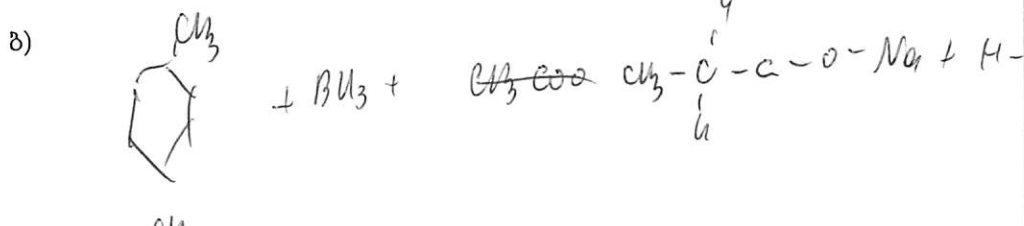
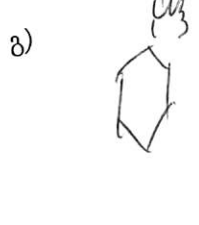
2) $\text{HA} \rightarrow \text{H}^+ + \text{A}^-$
 $4,7 \cdot 10^{-5} \times x \quad | \quad x \quad | \quad 0,01021 + x$
 $0,057 - x \quad | \quad x \quad | \quad 0,01021 + x$
 $\text{pH} = -\lg x = 5,46$

$\frac{(x + 0,021)}{0,057 - x} = 6 \cdot 10^{-5}$
 $x = 0,057 \cdot 6 \cdot 10^{-5} = 0,342 \cdot 10^{-4} = 3,42 \cdot 10^{-6}$

ამოცანა 4.

5 ქულა

A	$\text{CH}_2 = \text{CH} - \text{CH}_3$	
B	$\text{CH}_3 - \text{CHCl} - \text{CH}_3$	
C	$\text{CH}_3 - \underset{\text{CN}}{\underset{ }{\text{CH}}} - \text{CH}_3$	
D	$\text{CH}_3 - \underset{\text{OH}}{\underset{ }{\text{CH}}} - \text{CH}_3$	
E	CH_3Br_2	
F	$\text{CH}_3 - \underset{\text{O}-\text{CH}_2-\text{Br}}{\underset{ }{\text{CH}}} - \text{CH}_3$	
G	$\text{CH}_3 - \text{CH}_2\text{OH} - \text{COOH}$	
H	$\text{K}_2\text{Cr}_2\text{O}_7$	
	პროპანმჟავა ანჰიდრიდის სტრუქტურული ფორმულა $\begin{array}{c} \text{CH}_3 - \text{CH}_2 - \text{C} \begin{array}{l} \nearrow \text{O} \\ \searrow \text{O} \end{array} \\ \text{CH}_3 - \underset{\text{CH}_3}{\underset{ }{\text{CH}}} \end{array}$	

5.1.	 $\begin{array}{c} \text{CH}_3 - \overset{\text{O}}{\parallel} - \text{O} - \text{CH}_2 - \text{CH} - \overset{\text{CH}_3}{\text{CH}} - \text{CH}_3 + \text{NaOH} \rightarrow \text{CH}_3 \\ \text{CH}_3 - \overset{\text{O}}{\parallel} - \text{O} - \text{CH} - \text{CH} - \overset{\text{Na}}{\text{C}} - \text{CH}_3 + \text{CH}_3\text{OH} \end{array}$ 	
5.2.	<p>ა) </p> <p>ბ)  $\text{C}_6\text{H}_5\text{CH}_3 + \text{BU}_3 + \text{CH}_3\text{COO} - \overset{\text{CH}_3}{\text{C}} - \text{O} - \text{Na} + \text{H-OH}$ </p> <p>გ) </p>	
5.3.		
5.4.	<p>ა)</p> <p>ბ)</p>	

