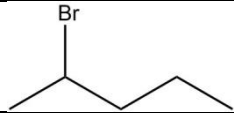
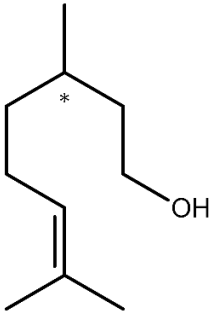


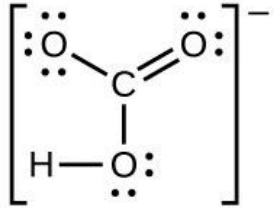
RJEŠENJA INČICE 56 ISPITA DRŽAVNE MATURE IZ KEMIJE
U ŠKOLSKOJ GODINI 2022./2023.

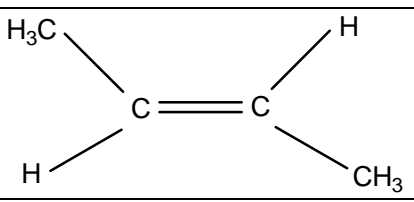
ISPITNA KNJIŽICA 1

Redni broj zadatka	ODGOVOR
1.	B
2.	B
3.	C
4.	C
5.	B
6.	B
7.	B
8.	C
9.	B
10.	A
11.	B
12.	A
13.	B
14.	D
15.	C
16.	A
17.	D
18.	D
19.	D
20.	C
21.	D
22.	C
23.	B
24.	C
25.	D
26.	D
27.	C
28.	B
29.	D
30.	A
31.	C
32.	B
33.	C
34.	C
35.	D

ISPITNA KNJIŽICA 2

Redni broj zadatka	ODGOVOR	BOD
1.1.		1 BOD
1.2.	kalcijev fluorid	1 BOD
2.1.	$w(\text{NaCl}) = \frac{m(\text{NaCl})}{m(\text{NaCl}) + m(\text{H}_2\text{O})}$ $w(\text{NaCl}) \cdot (m(\text{NaCl}) + m(\text{H}_2\text{O})) = m(\text{NaCl})$ $w(\text{NaCl}) \cdot m(\text{NaCl}) + w(\text{NaCl}) \cdot m(\text{H}_2\text{O}) = m(\text{NaCl})$ $m(\text{NaCl}) - w(\text{NaCl}) \cdot m(\text{NaCl}) = w(\text{NaCl}) \cdot m(\text{H}_2\text{O})$ $m(\text{NaCl}) - 0,009 \cdot m(\text{NaCl}) = 2,34 \text{ g}$ $0,991 \cdot m(\text{NaCl}) = 2,34 \text{ g}$ $m(\text{NaCl}) = 2,36 \text{ g}$	1 BOD
2.2.	$\Delta T = K_f \cdot b \cdot i = \frac{K_f \cdot n(\text{NaCl}) \cdot i}{m(\text{H}_2\text{O})} = \frac{K_f \cdot m(\text{NaCl}) \cdot i}{m(\text{H}_2\text{O}) \cdot M(\text{NaCl})} =$ $\frac{1,86 \text{ K kg mol}^{-1} \cdot 18 \text{ g} \cdot 2}{1,982 \text{ kg} \cdot 58,5 \text{ g mol}^{-1}} = 0,58 \text{ K} = 0,58 \text{ }^\circ\text{C}$ $t_f = -0,58 \text{ }^\circ\text{C}$	1 BOD
3.1.	$K_c = \frac{c^2(\text{B})}{c(\text{A})} = \frac{4^2 \text{ mol}^2 \text{ dm}^{-6}}{3 \text{ mol dm}^{-3}} = 5,33 \text{ mol dm}^{-3}$	1 BOD
3.2.	Reakcija je endotermna.	1 BOD
4.	$\text{Ag}^+(\text{aq}) + \text{e}^- \rightarrow \text{Ag}(\text{s})$ $n(\text{Ag}) = \frac{m(\text{Ag})}{M(\text{Ag})} = \frac{2,00 \text{ g}}{108 \text{ g mol}^{-1}} = 1,85 \times 10^{-2} \text{ mol}$ $Q = n \cdot z \cdot F = 1,85 \times 10^{-2} \text{ mol} \cdot 1 \cdot 9,65 \times 10^4 \text{ A s mol}^{-1} = 1,79 \times 10^3 \text{ A s}$ $I = \frac{Q}{t} = \frac{1,79 \times 10^3 \text{ A s}}{43200 \text{ s}} = 0,0414 \text{ A}$	<p>1 BOD za točno izračunat naboj</p> <p>1 BOD za točan izračun jakosti struje</p>
5.1.		1 BOD
5.2.	adicipi	1 BOD

6.1.	$\frac{c(\text{H}_3\text{O}^+)}{c(\text{OH}^-)} = 1,024 \times 10^7 \Rightarrow c(\text{OH}^-) = \frac{c(\text{H}_3\text{O}^+)}{1,024 \times 10^7}$ $c(\text{H}_3\text{O}^+) \cdot c(\text{OH}^-) = 1 \times 10^{-14} \text{ mol}^2 \text{ dm}^{-6}$ $c(\text{H}_3\text{O}^+) \cdot \frac{c(\text{H}_3\text{O}^+)}{1,024 \times 10^7} = 1 \times 10^{-14} \text{ mol}^2 \text{ dm}^{-6}$ $c^2(\text{H}_3\text{O}^+) = 1,024 \times 10^{-7} \text{ mol}^2 \text{ dm}^{-6}$ $c(\text{H}_3\text{O}^+) = \sqrt{1,024 \times 10^{-7} \text{ mol}^2 \text{ dm}^{-6}} = 3,2 \times 10^{-4} \text{ mol dm}^{-3}$ $\text{pH} = -\log\left(\frac{c(\text{H}_3\text{O}^+)}{\text{mol dm}^{-3}}\right) = -\log\left(\frac{3,2 \times 10^{-4} \text{ mol dm}^{-3}}{\text{mol dm}^{-3}}\right) = 3,5$	1 BOD
6.2.	$c(\text{H}_3\text{O}^+) = 10^{-\text{pH}} \text{ mol dm}^{-3} = 6,31 \times 10^{-5} \text{ mol dm}^{-3}$	1 BOD
6.3.	CO ₂ (priznati i rješenje riječima)	1 BOD
7.1.	$E^\circ = E^\circ(\text{X}^{2+} \text{X}) - E^\circ(\text{Mg}^{2+} \text{Mg})$ $2,23 \text{ V} = E^\circ(\text{X}^{2+} \text{X}) - (-2,37 \text{ V})$ $E^\circ(\text{X}^{2+} \text{X}) = -0,14 \text{ V}$ <p>Odgovor: Sn (kositar)</p>	1 BOD
7.2.	$\text{Mg} + \text{X}^{2+} \rightarrow \text{Mg}^{2+} + \text{X}, \text{Mg} + \text{Sn}^{2+} \rightarrow \text{Mg}^{2+} + \text{Sn}$	1 BOD
7.3.	$\text{Mg} \text{Mg}^{2+} \text{X}^{2+} \text{X}, \text{Mg} \text{Mg}^{2+} \text{Sn}^{2+} \text{Sn}$	1 BOD
8.1.	polimorfija	1 BOD
8.2.	ionskim kristalima	1 BOD
8.3.	$\text{CaCO}_3(\text{s}) + \text{CO}_2(\text{aq}) + \text{H}_2\text{O}(\ell) \rightleftharpoons \text{Ca}(\text{HCO}_3)_2(\text{aq})$	1 BOD
9.1.	$V(\text{CO}_2) = \frac{n \cdot R \cdot T}{p} = \frac{0,18 \text{ mol} \cdot 8,31 \text{ J K}^{-1} \text{ mol}^{-1} \cdot 298 \text{ K}}{1 \times 10^5 \text{ Pa}} =$ $4,46 \times 10^{-3} \text{ m}^3 = 4,46 \text{ dm}^3$	1 BOD
9.2.	lužnata, bazična	1 BOD
9.3.		1 BOD
9.4.	$2 \text{ NaHCO}_3(\text{s}) \rightarrow \text{Na}_2\text{CO}_3(\text{s}) + \text{H}_2\text{O}(\ell) + \text{CO}_2(\text{g})$	1 BOD
10.1.	$2 \text{ H}_2 + \text{O}_2 \rightarrow 2 \text{ H}_2\text{O}$	1 BOD
10.2.	<p>prema H₂: $\xi = \frac{\Delta n(\text{H}_2)}{\nu(\text{H}_2)} = \frac{\Delta m(\text{H}_2)}{\nu(\text{H}_2) \cdot M(\text{H}_2)} = \frac{-2000 \text{ g}}{-2 \cdot 2,02 \text{ g mol}^{-1}} = 495,05 \text{ mol}$</p> <p>prema O₂: $\xi = \frac{\Delta n(\text{O}_2)}{\nu(\text{O}_2)} = \frac{\Delta m(\text{O}_2)}{\nu(\text{O}_2) \cdot M(\text{O}_2)} = \frac{-2000 \text{ g}}{-1 \cdot 32 \text{ g mol}^{-1}} = 62,5 \text{ mol}$</p> <p>Mjerodavni reaktant je kisik.</p>	1 BOD za točno određen mjerodavni reaktant

	$n(\text{H}_2\text{O}) = \xi \cdot \nu(\text{H}_2\text{O}) \cdot m(\text{H}_2\text{O}) = \xi \cdot \nu(\text{H}_2\text{O}) \cdot M(\text{H}_2\text{O}) = 62,5 \text{ mol} \cdot 2 \cdot 18,02 \text{ g mol}^{-1} = 2252,5 \text{ g} = 2,25 \text{ kg}$	1 BOD za masu vode
10.3.	metan	1 BOD
11.1.	HBr	1 BOD
11.2.	$\text{H}_3\text{C} - \text{CH}_2 - \text{CH}_2 - \text{CH}_3$	1 BOD
11.3.	$\text{C}_4\text{H}_8 + 6 \text{ O}_2 \rightarrow 4 \text{ CO}_2 + 4 \text{ H}_2\text{O}$	1 BOD
11.4.		1 BOD
12.1.	$2 \text{ ClO}^- + 4 \text{ H}^+ + 2 \text{ e}^- \rightarrow \text{Cl}_2 + 2 \text{ H}_2\text{O}$	1 BOD
12.2.	$V(\text{Cl}_2) = n(\text{Cl}_2) \cdot V_m = \frac{1}{2} \cdot n(\text{HCl}) \cdot V_m = \frac{1}{2} \cdot 2,85 \text{ mol} \cdot 22,4 \text{ dm}^3 \text{ mol}^{-1} = 31,92 \text{ dm}^3$	1 BOD
12.3.	I	1 BOD
12.4.	Smanjit će se.	1 BOD