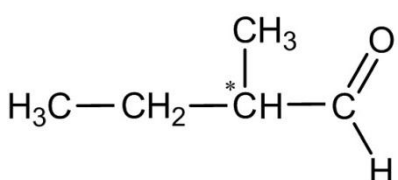
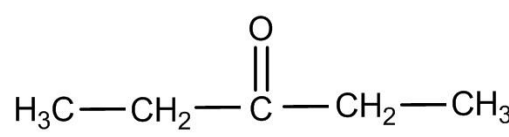


RJEŠENJA ISPITA DRŽAVNE MATURE IZ KEMIJE
U ŠKOLSKOJ GODINI 2021./2022. (ljetni rok)

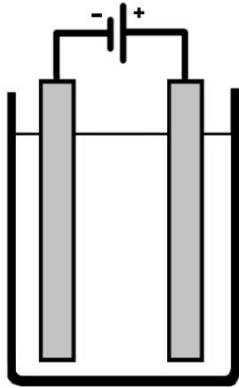
ISPITNA KNJIŽICA 1

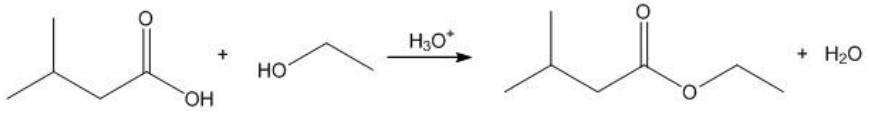
Redni broj	Odgovor
1.	D
2.	C
3.	D
4.	A
5.	A
6.	B
7.	C
8.	B
9.	D
10.	A
11.	D
12.	A
13.	B
14.	C
15.	C
16.	A
17.	D
18.	B
19.	A
20.	C
21.	D
22.	B
23.	A
24.	A
25.	C
26.	A
27.	C
28.	B
29.	D
30.	A
31.	D
32.	C
33.	D
34.	B
35.	D

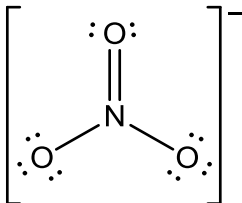
ISPITNA KNJIŽICA 2

Redni broj	Odgovor	Bod
1.1.	$\text{ClCH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{Cl}$	1 BOD
1.2.	$\text{FeSO}_4 \cdot 7 \text{H}_2\text{O}$	1 BOD
2.	<p>Empirijska formula: C_4H_5</p> <p>Molekulska formula: C_8H_{10}</p> $N(\text{C}) : N(\text{H}) = \frac{w(\text{C}) \cdot M_r(\text{spoj})}{A_r(\text{C})} : \frac{w(\text{H}) \cdot M_r(\text{spoj})}{A_r(\text{H})}$ $= \frac{0,9048 \cdot 106,1}{12,0} : \frac{0,0952 \cdot 106,1}{1,01}$ $= 8 : 10$ <p>2 BODA za točno napisanu molekulsku formulu s ispravnim postupkom ili samo 1 BOD za empirijsku formulu ili usporedbu brojnosti pojedinih atoma</p>	<p>1 BOD</p> <p>1 BOD</p>
3.1.		1 BOD
3.2.		1 BOD
4.1.	Snizit će se temperatura otopine.	1 BOD
4.2.	<p>nezasićena otopina</p> $m(\text{Pb}(\text{NO}_3)_2) = \frac{67,1 \text{ g} \cdot 64 \text{ g}}{100 \text{ g}} = 42,9 \text{ g}$	1 BOD
5.1.	$\bar{v} = -\frac{1}{4} \frac{\Delta c(\text{PH}_3)}{\Delta t}$	1 BOD



5.2.	$v(\text{H}_2) = 9,36 \times 10^{-3} \text{ mol L}^{-1} \text{ s}^{-1}$ $v = \frac{1}{6} \frac{\Delta c(\text{H}_2)}{\Delta t} \quad v(\text{H}_2) = \frac{\Delta c(\text{H}_2)}{\Delta t}$ $v = \frac{1}{6} v(\text{H}_2)$ $v(\text{H}_2) = 6 \cdot v = 6 \cdot 1,56 \times 10^{-3} \text{ mol L}^{-1} \text{ s}^{-1} = 9,36 \times 10^{-3} \text{ mol L}^{-1} \text{ s}^{-1}$	1 BOD
6.1.	pH = 3,7 $c_1 \cdot V_1 = c_2 \cdot V_2$ $c_2 = \frac{c_1 \cdot V_1}{V_2}$ $c_2 = \frac{0,001 \text{ mol L}^{-1} \cdot 50 \text{ mL}}{250 \text{ mL}} = 2 \times 10^{-4} \text{ mol L}^{-1}$ $c(\text{HClO}_4) = c(\text{H}^+) = 2 \times 10^{-4} \text{ mol L}^{-1}$ $\text{pH} = -\frac{\log c(\text{H}^+)}{\text{mol L}^{-1}} = -\frac{\log 2 \times 10^{-4} \text{ mol L}^{-1}}{\text{mol L}^{-1}} = 3,7$	1 BOD
6.2.	crvene	1 BOD
6.3.	ClO_4^- ili perkloratni ion	1 BOD
7.1.		1 BOD
7.2.	Nastaju mjehurići plina.	1 BOD
7.3.	$V(\text{H}_2) = 0,22 \text{ dm}^3$ $V(\text{H}_2) = \frac{I \cdot t \cdot V_m}{z \cdot F} = \frac{4 \text{ A} \cdot 480 \text{ s} \cdot 22,4 \text{ dm}^3 \text{ mol}^{-1}}{2 \cdot 96\,500 \text{ C mol}^{-1}} = 0,22 \text{ dm}^3$	1 BOD

8.	<p>Mjerodavni reaktant: Cl_2</p> <p>$m(\text{FeCl}_3)_{\text{teoretska}} = 1298,4 \text{ g}$</p> <p>$\eta = 85 \%$</p> <p>$\frac{n(\text{Fe})}{2} = 6 \text{ mol}$</p> <p>$\frac{n(\text{Cl}_2)}{3} = 4 \text{ mol} \Rightarrow \text{mjerodavni reaktant}$</p> <p>$n(\text{FeCl}_3) : n(\text{Cl}_2) = 2 : 3$</p> <p>$n(\text{FeCl}_3) = \frac{2}{3} n(\text{Cl}_2) = \frac{2}{3} \cdot 12 \text{ mol} = 8 \text{ mol}$</p> <p>$m(\text{FeCl}_3)_{\text{teoretska}} = n(\text{FeCl}_3) \cdot M(\text{FeCl}_3)$</p> <p>$m(\text{FeCl}_3)_{\text{teoretska}} = 8 \text{ mol} \cdot 162,3 \text{ g mol}^{-1} = 1298,4 \text{ g}$</p> <p>$\eta = \frac{m(\text{dobivena})}{m(\text{teoretska})} = \frac{1103,6 \text{ g}}{1298,4 \text{ g}} = 0,85 \cdot 100 \% = 85,0 \%$</p>	<p>1 BOD</p> <p>1 BOD</p> <p>1 BOD</p>
9.1.		1 BOD
9.2.	oksidaciji	1 BOD
9.3.	solima	1 BOD
9.4.	-1, -I	1 BOD
10.1.	nagrizajuće	1 BOD
10.2.	NO	1 BOD
10.3.	$\text{Cu} + 4 \text{HNO}_3 \rightarrow \text{Cu}(\text{NO}_3)_2 + 2 \text{NO}_2 + 2 \text{H}_2\text{O}$	1 BOD

10.4.		1 BOD
11.1.	HPO_4^{2-}	1 BOD
11.2.	otopina je lužnata, $\text{pH} > 7$	1 BOD
11.3.	puferi, puferske otopine	1 BOD
11.4.	$\text{HPO}_4^{2-} + \text{H}_3\text{O}^+ \rightleftharpoons \text{H}_2\text{PO}_4^- + \text{H}_2\text{O}$	1 BOD
12.1.	Vrijednost vrelišta vodene kupelji raste dodatkom soli.	1 BOD
12.2.	<p>$m(\text{H}_2\text{O}) = 588 \text{ g}$</p> <p>$b = 6,16 \text{ mol kg}^{-1}$</p> <p>$t_v = 106,4 \text{ }^\circ\text{C}$</p> $w = \frac{m(\text{NaCl})}{m(\text{H}_2\text{O}) + m(\text{NaCl})}$ $0,265 = \frac{212 \text{ g}}{m(\text{H}_2\text{O}) + 212 \text{ g}}$ <p>$m(\text{H}_2\text{O}) = 588 \text{ g}$</p> $b = \frac{n(\text{NaCl})}{m(\text{H}_2\text{O})} = \frac{m(\text{NaCl})}{M(\text{NaCl}) \cdot m(\text{H}_2\text{O})}$ $b = \frac{212 \text{ g}}{58,5 \text{ g mol}^{-1} \cdot 0,588 \text{ kg}}$ <p>$b = 6,16 \text{ mol kg}^{-1}$</p> <p>$\Delta T = i \cdot b \cdot K_b$</p> <p>$\Delta T = 2 \cdot 6,16 \text{ mol kg}^{-1} \cdot 0,520 \text{ K kg mol}^{-1}$</p> <p>$\Delta T = 6,4 \text{ K}$</p> <p>$t_v = t_1 + \Delta t$</p> <p>$t_v = 100 \text{ }^\circ\text{C} + 6,4 \text{ }^\circ\text{C} = 106,4 \text{ }^\circ\text{C}$</p>	<p>1 BOD</p> <p>1 BOD</p> <p>1 BOD</p>