

Kemija na ljetnom roku državne mature 2014.

Ključ za odgovore - ispitna knjižica 1

1.	C
2.	A
3.	A
4.	C
5.	D
6.	B
7.	A
8.	D
9.	C
10.	C
11.	A
12.	A
13.	A
14.	B
15.	D
16.	A
17.	D
18.	C
19.	D
20.	C

21.	C
22.	A
23.	B
24.	C
25.	B
26.	B
27.	D
28.	D
29.	A
30.	D
31.	B
32.	C
33.	D
34.	B
35.	A
36.	D
37.	B
38.	C
39.	B
40.	B

## Ključ za odgovore - ispitna knjižica 2

**1.A.1.** nitritna (dušikasta, dušičasta) kiselina

**1.A.2.** željezov(II) sulfat heptahidrat

**1.A.3.** fosforov(III) oksid, tetrafosforov heksaoksid

**1.B.4.**  $\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_2\text{OH}$

**1.B.5.**  $\text{C}_{12}\text{H}_{22}\text{O}_{11}$

**1.B.6.**  $\text{H}_2\text{NCH}_2\text{COOH}$

**1 BOD** za svaki točan odgovor

**2.1.** F

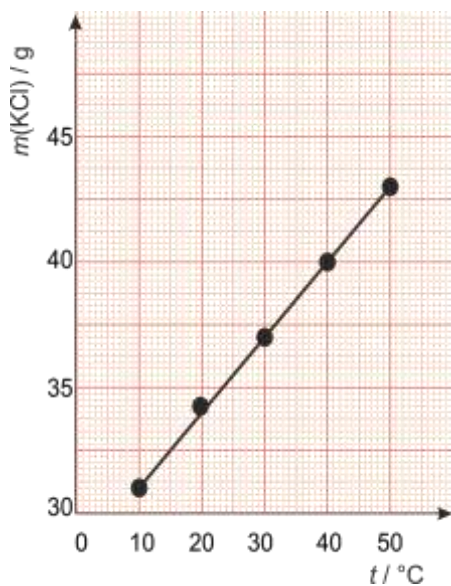
**2.2.** C

**2.3.** E

**2.4.** A

**1 BOD** za svaki točan odgovor

**3. 1.**



**1 BOD** za točan grafički prikaz

**3.2.** 35,5 g ( $\pm 1,0$  g)

**1 BOD** za točno određenu vrijednost

**3.3.** 25,9 g

$$w(\text{KCl}, 40^\circ\text{C}) = \frac{m(\text{KCl})}{m(\text{otopina})} = \frac{40,0 \text{ g}}{140,0 \text{ g}} = 0,286$$

$$m(\text{KCl}, 40^\circ\text{C}) = w \times m(\text{otopina}) = 0,286 \times 600 \text{ g} = 171,6 \text{ g}$$

$$m(\text{voda}) = 600 \text{ g} - 171,6 \text{ g} = 428,4 \text{ g}$$

$$m(\text{KCl}, 20^\circ\text{C}) = \frac{34,0 \text{ g} \times 428,4 \text{ g}}{100 \text{ g}} = 145,7 \text{ g}$$

$$m(\text{talog}) = 171,6 \text{ g} - 145,7 \text{ g} = 25,9 \text{ g}$$

**1 BOD** za izračun mase soli u otopini pri 40 °C

**1 BOD** za izračun mase istaložene soli pri 20 °C

**4.1.**  $10^{-14} \text{ mol}^2 \text{ dm}^{-6}$

**1 BOD**

**4.2.**  $20 \text{ cm}^3$

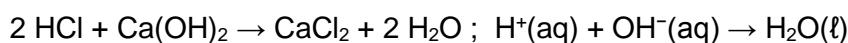
$$c_1(\text{HCl}) \times V_1(\text{HCl}) = c_2(\text{HCl}) \times V_2(\text{HCl})$$

$$V_1(\text{HCl}) = \frac{c_2(\text{HCl}) \times V_2(\text{HCl})}{c_1(\text{HCl})} = \frac{2 \times 10^{-4} \text{ mol dm}^{-3} \cdot 100 \times 10^{-3} \text{ dm}^3}{1 \times 10^{-3} \text{ mol dm}^{-3}} = 20 \times 10^{-3} \text{ dm}^3 = 20 \text{ cm}^3$$

**1 BOD** za izraz  $c_1 V_1 = c_2 V_2$

**1 BOD** za volumen klorovodične kiseline

**4.3.** 50 mL



$$n(\text{HCl}) = 2n(\text{Ca}(\text{OH})_2)$$

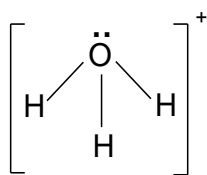
$$c(\text{HCl}) \times V(\text{HCl}) = 2 \times c(\text{Ca}(\text{OH})_2) \times V(\text{Ca}(\text{OH})_2)$$

$$V(\text{Ca}(\text{OH})_2) = \frac{c(\text{HCl}) \times V(\text{HCl})}{2 \times c(\text{Ca}(\text{OH})_2)} = 50 \text{ mL}$$

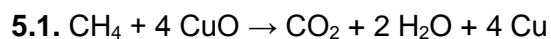
**1 BOD** za odnos množina  $\text{H}^+$  i  $\text{OH}^-$  (ili samo JKR)

**1 BOD** za volumen utrošene kalcijeve lužine

4.4.



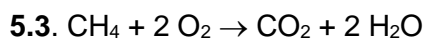
1 BOD



1 BOD za jednadžbu kemijske reakcije

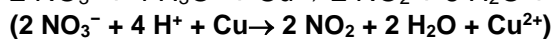
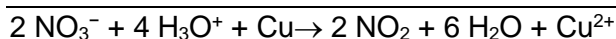
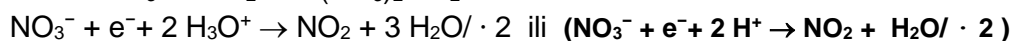
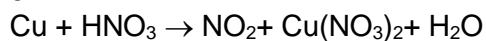


1 BOD

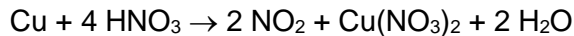


1 BOD

5.4.



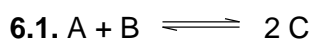
ili



1 BOD za izjednačenu parcijalnu jednadžbu oksidacije (AS se ne razmatraju)

1 BOD za izjednačenu parcijalnu jednadžbu redukcije (AS se ne razmatraju)

1 BOD za izjednačenu JKR (AS se ne razmatraju)

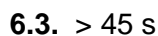


1 BOD

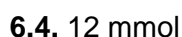
6.2.

$$K_c = \frac{[\text{C}]^2}{[\text{A}][\text{B}]}$$

1 BOD



1 BOD



$$n(\text{B}) = c(\text{B}) \times V$$

$$n(\text{B}) = 6 \text{ mmol L}^{-1} \times 2 \text{ L} = 12 \text{ mmol}$$

1 BOD

6.5

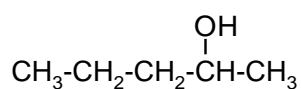
$$v(C) = \frac{\Delta c(C)}{\Delta t} = \frac{(6 - 0) \text{ mmol L}^{-1}}{(20 - 0) \text{ s}} = 0,3 \text{ mmol L}^{-1} \text{ s}^{-1}$$

1 BOD

6.6. nema promjene

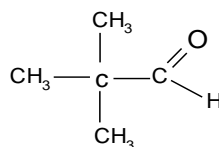
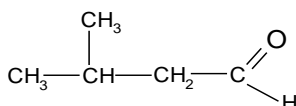
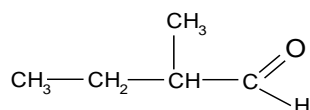
1 BOD

7.1.



1 BOD

7.2



1 BOD za svaku točnu kemijsku formulu

	SPOJ	KEMIJSKA FORMULA SPOJA
8.1.	A	$\text{CH}_3\text{CH}_2\text{CH}_2\text{CH}_3$
8.2.	B	$\text{CH}_3\text{CH}_2\text{CH}=\text{CH}_2$
8.3.	C	$\text{CH}_3\text{CH}_2\text{CHClCH}_3$
8.4.	D	$\text{CH}_3\text{CH}_2\text{COCH}_3$
8.5.	E	$\text{CH}_3\text{CH}_2\text{CH}_2\text{CHO}$
8.6.	F	$\text{CH}_3\text{CH}_2\text{CH}_2\text{COOH}$

1 BOD za svaku točnu kemijsku formulu

9.1. B

9.2. D

9.3. A

9.4. E

1 BOD za svaki točan odgovor

10.1.  $C_{10}H_8$

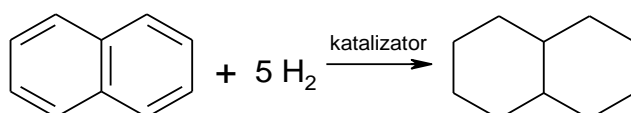
1 BOD

10.2. 6,3 % ili 0,063

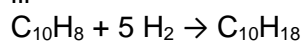
$$w(H, C_{10}H_8) = \frac{8 \cdot 1,01}{128,1} = 0,063 = 6,3 \%$$

1 BOD

10.3.



ili



1 BOD

10.4. sublimacija

1 BOD

11.1. A.  $Cu \rightarrow Cu^{2+} + 2 e^-$  1 BOD

11.1. B.  $Ag^+ + e^- \rightarrow Ag$  1 BOD

11.2.  $Cu(s) | Cu^{2+}(aq) || Ag^+(aq) | Ag(s)$  1 BOD

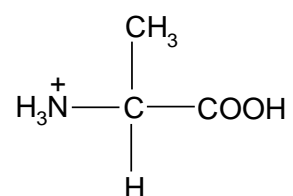
11.3. 0,46 V

$$\Delta E^\circ = E^\circ(Ag^+(aq) | Ag(s)) - E^\circ(Cu^{2+}(aq) | Cu(s)) = 0,80 V - 0,34 V = 0,46 V$$

1 BOD, sa ili bez postupka

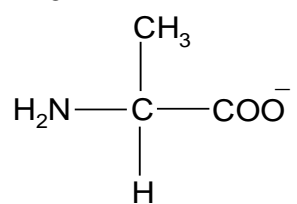
12.1. izoelektrična točka 1 BOD

12.2.



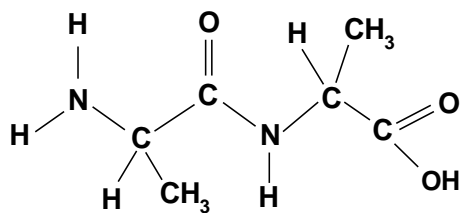
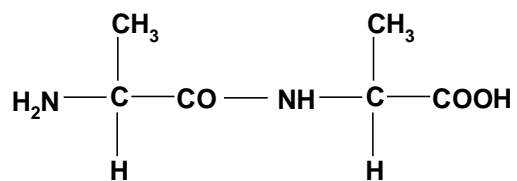
1 BOD

12.3.



1 BOD

12.4.



1 BOD (za oblik u kojem se prepoznaje peptidna veza i molekulska struktura dipeptida)

12.5. biuret reakcija

1 BOD

12.6. primarna struktura (slijed aminokiselina povezanih peptidnim vezama)

1 BOD