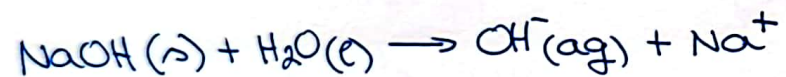
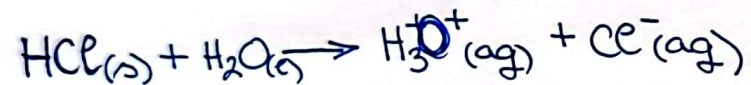




Vaja

Vodne raztopine HCl in NaOH so 0,01 M. Kakšne so koncentracije ionov v posamezni raztopini?



$$[\text{HCl}] = [\text{H}_3\text{O}^+] = [\text{Cl}^-]$$

$$[\text{H}_3\text{O}^+] = 0,01 \text{ M}$$

$$[\text{NaOH}] = [\text{OH}^-] = [\text{Na}^+]$$

$$[\text{OH}^-] = 0,01 \text{ M}$$

} Predpostavim popolno disociacijo

Vaja



Izračunajte koncentracijo hidroksidnih ionov v raztopini, ki ima $\text{pH} = 10$.

$$\text{pH} = 10$$

$$[\text{OH}^-] = 0,0001 \text{ M}$$

$$\text{pH} + \text{pOH} = 14$$

$$\text{pOH} = 14 - \text{pH}$$

$$\text{pOH} = 14 - 10$$

$$\text{pOH} = 4$$

$$\text{pOH} = -\log [\text{OH}^-]$$

$$[\text{OH}^-] = 10^{-4}$$

$$[\text{OH}^-] = 0,0001 \text{ M}$$

Vaja



Koliko je pH 0,05 M raztopine KOH?

$$[\text{KOH}] = 0,05 \text{ M}$$

$$\text{pH} = 12,7$$



$$\text{pH} = -\log[\text{H}_3\text{O}^+]$$

$$\text{pOH} = -\log[\text{OH}^-]$$

$$\text{pOH} = -\log 0,05$$

$$\text{pOH} = 1,3$$

$$[\text{KOH}] = [\text{OH}^-]$$

$$[\text{OH}^-] = 0,05 \text{ M}$$

$$\text{pH} + \text{pOH} = 14$$

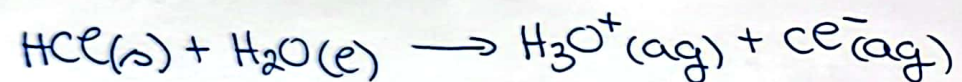
$$\text{pH} = 14 - 1,3$$

$$\text{pH} = 12,7$$



Vaja

Koliko je pH 0,05 M raztopine HCl?



$$[\text{HCl}] = [\text{H}_3\text{O}^+]$$

$$[\text{H}_3\text{O}^+] = 0,05 \text{ M}$$

$$\text{pH} = -\log[\text{H}_3\text{O}^+]$$

$$\text{pH} = -\log 0,05$$

$$\text{pH} = 1,3$$



Vaja

0,5 L 0,01 M raztopine HCl razredčiš z vodo, da dobiš 1,0 L raztopine. Izračunajte pH razredčene raztopine.

$$V_1 = 0,5 \text{ L}$$

$$c_1(\text{HCl}) = 0,01 \text{ M}$$

$$V_2 = 1 \text{ L}$$

$$c_2(\text{HCl}) = 0,005 \frac{\text{mol}}{\text{L}}$$

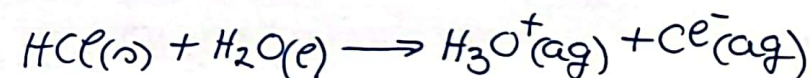
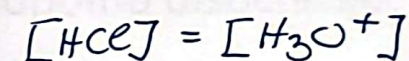
$$\text{pH} = 2,3$$

$$c_1 V_1 = c_2 V_2$$

$$c_2 = \frac{c_1 V_1}{V_2}$$

$$c_2 = \frac{0,01 \frac{\text{mol}}{\text{L}} \cdot 0,5 \text{ L}}{1 \text{ L}}$$

$$c_2 = 0,005 \frac{\text{mol}}{\text{L}}$$



$$[\text{H}_3\text{O}^+] = 0,005 \frac{\text{mol}}{\text{L}}$$

$$\text{pH} = -\log[\text{H}_3\text{O}^+]$$

$$\text{pH} = -\log 0,005$$

$$\text{pH} = 2,3$$



Vaja

V 100 mL raztopine s pH 2,40 dodamo 200 mL raztopine s pH 0,90. Izračunajte pH nastale raztopine. Predpostavite aditivnost prostornin in popolno disociacijo.

$$V_1 = 100 \text{ mL}$$

$$\text{pH}_1 = 2,40$$

$$V_2 = 200 \text{ mL}$$

$$\text{pH}_2 = 0,90$$

$$\text{pH}_3 =$$

$$c_3 = 0,088 \frac{\text{mol}}{\text{L}}$$

$$V_3 = 0,3 \text{ L}$$

$$V_3 = V_1 + V_2$$

$$V_3 = 100 \text{ mL} + 200 \text{ mL}$$

$$V_3 = 300 \text{ mL}$$

$$c_3 = \frac{n_3}{V_3}$$

$$c_3 = \frac{0,0264 \text{ mol}}{0,3 \text{ L}}$$

$$c_3 = 0,088 \text{ M}$$

$$[\text{H}_3\text{O}^+]_3 = c_3$$

$$[\text{H}_3\text{O}^+]_3 = 0,088 \text{ M}$$

$$\text{pH}_3 = -\log [\text{H}_3\text{O}^+]_3$$

$$\text{pH}_3 = 1,05$$

$$c_1 = [\text{H}_3\text{O}^+]$$

$$\text{pH} = -\log [\text{H}_3\text{O}^+]$$

$$[\text{H}_3\text{O}^+]_1 = 10^{-2,4}$$

$$[\text{H}_3\text{O}^+]_1 = 0,004 \text{ M}$$

$$c_1 = 0,004 \frac{\text{mol}}{\text{L}}$$

$$n_1 = c_1 \cdot V_1$$

$$n_1 = 0,004 \frac{\text{mol}}{\text{L}} \cdot 0,1 \text{ L}$$

$$n_1 = 0,0004 \text{ mol}$$

$$[\text{H}_3\text{O}^+]_2 = 10^{-0,90}$$

$$[\text{H}_3\text{O}^+]_2 = 0,1317$$

$$c_2 = 0,13 \frac{\text{mol}}{\text{L}}$$

$$n_2 = c_2 \cdot V_2$$

$$n_2 = 0,13 \frac{\text{mol}}{\text{L}} \cdot 0,2 \text{ L}$$

$$n_2 = 0,026 \text{ mol}$$

$$n_3 = n_1 + n_2 = 0,0264 \text{ mol}$$

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