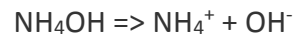


Question #51215, Chemistry, Physical Chemistry

What is the molarity of an aqueous solution of ammonia for which the OH^- concentration is $1.0 \times 10^{-3} \text{ M}$?

a. $1.8 \times 10^{-5} \text{ M}$
b. $1.8 \times 10^{-3} \text{ M}$
c. $1.8 \times 10^{-4} \text{ M}$
d. $1.8 \times 10^{-2} \text{ M}$

Answer:



$$K(\text{NH}_3 \cdot \text{H}_2\text{O}) = 1,8 \times 10^{-5}$$

$$\alpha = (K/C)^{1/2}$$

$$[\text{OH}^-] = \alpha C$$

$$C = [\text{OH}^-]^2 / K$$

$$C = (1,0 \times 10^{-3})^2 / 1,8 \times 10^{-5} = \mathbf{0.055 \text{ M}}$$

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