Answer on question #56444 - Chemistry - General Chemistry

Question:

#1. Calculate the [H3O+] of neutral aqueous solution. Express your answer using two significant figures.

#2. Calculate the [OH−] of neutral aqueous solution. Express your answer using two significant figures.

Solution:

#1. The equation of autoprotolysis of water:

$2H_2O=H_3O^+ + OH^-$

The constant of autoprotolysis:

$K_w = [H_3O^+][OH^-] = 10^{-14}$

In neutral aqueous solution $[H_3O^+] = [OH^-]$

So, $[H_3O^+] = \sqrt{10^{-14}} = 10^{-7}$ M

Answer:

$[H_3O^+] = 10^{-7}$ M

Solution:

#2. The equation of autoprotolysis of water:

$2H_2O=H_3O^+ + OH^-$

The constant of autoprotolysis:

$K_w = [H_3O^+][OH^-] = 10^{-14}$

In neutral aqueous solution $[H_3O^+] = [OH^-]$

So, $[OH^-] = \sqrt{10^{-14}} = 10^{-7}$ M

Answer:

$[OH^-] = 10^{-7}$ M