

Q7] How many Litres of water be added to 1L of an aqueous solⁿ of HCl with a pH of 1 to create an aqueous solⁿ of pH 2? [2013]

Solⁿ pH = 1 ∴ $[H^+] = 10^{-1} = 0.1 M$

pH = 2 ∴ $[H^+] = 10^{-2} = 0.01 M$

For dilution of HCl, $M_1 V_1 = M_2 V_2$

$$0.1 \times 1 = 0.01 \times V_2$$

$$\Rightarrow V_2 = 10 L$$

Volume added = $(10 - 1) = 9 L$