Answer on Question #73905, Chemistry / General Chemistry :

PH of a solution A is 3 and it is mixed with another solution B having pH 2 keeping the volume same .If both are mixed ,then resultant pH of the solution will be:

Solution.

$pH_1 = 3$
$pH_1 = 2$
$V_1 = V_2$

$pH - ?$

pH is defined as the decimal logarithm of the reciprocal of the hydrogen ion activity, aH⁺, in a solution.

pH:

$$pH = -\log\left[H^+\right]$$

And:

$$\left[H^+\right]_1 = 10^{-3} = 0,001M$$
$$\left[H^+\right]_2 = 10^{-2} = 0,01M$$

And: V = V₁ + V₂ = 2V₁

$$\left[H^+\right] = \left[H^+\right]_1 + \left[H^+\right]_2 = 0,001M + 0,01M = 0,011M$$

pH:

$$pH = -\log\left[H^+\right] = -\log\frac{0.01 + 0.001}{2} = 2.26$$
$$pH = 2.26$$

Answer: $pH = 2.26$.