Question #72380, Chemistry / General Chemistry

Use the Henderson-Hasselbach equation to fing the pH of a buffer made from 25.00 mL of 0.1000M acetic acid and 0.35 grams of sodium acetate.

Solution

The Henderson-Hasselbach equation;

$$\mathrm{pH} = \mathrm{p}K_\mathrm{a} + \log_{10}\left(\frac{[\mathrm{A}^-]}{[\mathrm{HA}]}\right)$$

pK_a (CH_3COOH) = 4,76
$n(CH_3COOH) = 0{,}025*0{,}1=2{,}5*10^{-3}$ mol
$Mr(CH_3COONa)$ = 82g/mol
$n(CH_3COONa) = 0{,}35*/82=4{,}27*10^{-3}$ mol

pH= 4,76+lg(4,27/2,5) = 4,992≈5

Answer
pH≈5