

Answer on Question #63352, Chemistry / General Chemistry

1. Calculate the pH of a 0.86 M solution of C<sub>2</sub>H<sub>5</sub>CO<sub>2</sub>H (see Appendix E for K<sub>a</sub> values).

**Solution:**

$$[\text{H}^+] = \sqrt{C \times K_a}$$

$$K_a(\text{C}_2\text{H}_5\text{COOH}) = 1.34 \times 10^{-5}$$

$$[\text{H}^+] = \sqrt{0.86 \times 1.34 \times 10^{-5}} = \sqrt{11.5 \times 10^{-6}} = 3.4 \times 10^{-3}$$

$$\text{pH} = -\log[\text{H}^+]$$

$$\text{pH} = -\log[3.4 \times 10^{-3}] = 2.47$$

**Answer:** pH = 2.47.

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