Exercise 7.53 – Weak acids and bases

Q753-01 Benzene carboxylic (benzoic) acid has a Ka = 6.6×10^{-5}. What is the pH of a 0.30 M aqueous solution of benzene carboxylic acid?

A. 0.52
B. 2.4
C. 4.2
D. 4.7

Q753-02 What is the relationship between Ka and pKa?

A. pKa = -logKa
B. pKa = 1.0×10^{-14} Ka
C. pKa = logKa
D. pKa = 1.0 Ka

Q753-03 If a weak monoprotic acid is 5.0% dissociated in a 0.10 M aqueous solution of the acid, what is the acid equilibrium constant, Ka, for this acid?

A. 2.5×10^{-5}
B. 2.5×10^{-4}
C. 5.0×10^{-3}
D. 5.0×10^{-2}

Q753-04 What are the [H+] and [OH^-] in a 0.10 mol dm^{-3} solution of a weak acid (Ka = 1.0×10^{-3})?

	[H+]	[OH^-]
A	1.0×10^{-1}	1.0×10^{-13}
B	1.0×10^{-3}	1.0×10^{-11}
C	1.0×10^{-2}	1.0×10^{-12}
D	1.0×10^{-6}	1.0×10^{-8}

Q753-05 The Ka value for an acid is 1.0×10^{-2}. What is the Kb value for its conjugate base?

A. 1.0×10^{-2}
B. 1.0×10^{-6}
C. 1.0×10^{-10}
D. 1.0×10^{-12}

Q753-06 What is the Ka of a 0.10 mol dm^{-3} solution of a weak monoprotic acid if the [H+] = 2.0×10^{-3} mol dm^{-3}?

A. 2.0×10^{-2} mol dm^{-3}
B. 2.0×10^{-4} mol dm^{-3}
C. 4.0×10^{-5} mol dm^{-3}
D. 4.0×10^{-7} mol dm^{-3}

Q753-07 A 0.1 mol dm^{-3} solution of a weak acid has a pH of 3.0. What is Ka for this acid?

A. 1×10^{-1}
B. 1×10^{-3}
C. 1×10^{-5}
D. 1×10^{-6}

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Q753-08 Find the concentration of an ethanoic acid solution whose pH is measured at 3.5 (Ka = 1.78×10^{-5})

Q753-09 The pH of a solution of vinegar is 3.00. The concentration of OH^- ion in this solution is:

A. 3.00 M
B. 1×10^{-3} M
C. 1×10^{-11} M
D. 17 M

Q753-10 $25cm^3$ of a 0.1 mol dm^{-3} solution of hydrochloric acid reacts with $75cm^3$ of a 0.10 mol dm^{-3} solution of sodium hydroxide. Calculate the pH of the final solution.
