18.2 Calculations Involving Acids & Bases
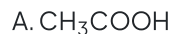
Question Paper

Course	DP IB Chemistry
Section	18. Acids & Bases (HL only)
Topic	18.2 Calculations Involving Acids & Bases
Difficulty	Easy

Time allowed: 10

Score: /5

Percentage: /100

Question 1

Which of the following is the acid dissociation, K_a, constant for ethanoic acid?

A. CH_3COOH

B. $\dfrac{[CH_3COO^-][H^+]}{[CH_3COOH]}$

C. $\dfrac{[CH_3COOH]}{[CH_3COO^-][H^+]}$

D. $[CH_3COO^-][H^+]$

[1 mark]

Question 2

At the same concentration, which acid would have the lowest pH?

A. C_6H_5COOH $K_a = 6.3 \times 10^{-5}$ mol dm^{-3}

B. $HCOOH$ $K_a = 1.8 \times 10^{-4}$ mol dm^{-3}

C. HCN $K_a = 4.9 \times 10^{-10}$ mol dm^{-3}

D. CH_3CH_2COOH $K_a = 1.4 \times 10^{-5}$ mol dm^{-3}
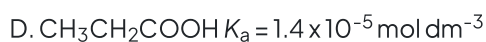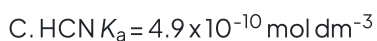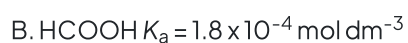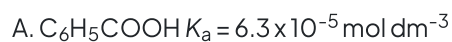
[1 mark]

Question 3

The pK_b value of ethylamine is 3.35 at 298 K. What is the value of the pK_a ethylammonium ion?

A. $\dfrac{10^{-14}}{3.35}$

B. $14 - 3.35$

C. $\dfrac{14}{3.35}$

D. $\dfrac{10^{-14}}{10^{-3.35}}$

[1 mark]

Question 4

Which of the following is the correct equation to calculate the concentration of hydroxide ions?

A. $\dfrac{K_w}{pOH}$

B. $-\log [H^+]$

C. $14 - pOH$

D. 10^{-pOH}

[1 mark]

Question 5

Which shows the correct relationship between K_w, K_a and K_b?

A. $K_w = K_a + K_b$

B. $K_w = K_a K_b$

C. $K_w = \dfrac{K_a}{K_b}$

D. $K_w = \dfrac{K_b}{K_a}$

[1 mark]