

10 Equal amounts of ethanoic acid and methanoic acid are mixed.

[pK_a values: ethanoic acid = 4.8 methanoic acid = 3.8]

What are the conjugate acid-base pairs in the mixture?

	acid 1	base 1	acid 2	base 2
<input type="checkbox"/> A	HCOOH	HCOO ⁻	CH ₃ COOH ₂ ⁺	CH ₃ COOH
<input type="checkbox"/> B	CH ₃ COOH	CH ₃ COO ⁻	HCOOH ₂ ⁺	HCOOH
<input type="checkbox"/> C	HCOOH	CH ₃ COOH	CH ₃ COOH ₂ ⁺	HCOO ⁻
<input type="checkbox"/> D	CH ₃ COOH	HCOOH	HCOOH ₂ ⁺	CH ₃ COO ⁻

(Total for Question 10 = 1 mark)

6 A buffer solution contains CH₃COOH and CH₃COONa in the ratio, 1:4.

What is the pH of this buffer solution?

[$K_a(\text{CH}_3\text{COOH}) = 1.7 \times 10^{-5} \text{ mol dm}^{-3}$]

A 2.4

B 4.2

C 4.8

D 5.4

15 Which is **not** a conjugate acid-base pair?

A NH₃, NH₂⁻

B NH₄⁺, NH₃

C H₂CO₃, CO₃²⁻

D H₂CO₃, HCO₃⁻

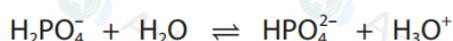
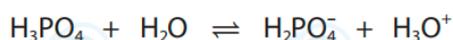
(Total for Question 15 = 1 mark)

6 Which indicator can be used to show the end-point of a titration between hydrochloric acid, $\text{HCl}(\text{aq})$, and ammonia solution, $\text{NH}_3(\text{aq})$?

- A universal indicator
- B phenolphthalein
- C phenol red
- D methyl orange

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9 Some equations for acid-base equilibria are shown.



What is the conjugate acid of HPO_4^{2-} ?

- A H_3PO_4
- B H_3O^+
- C H_2PO_4^-
- D PO_4^{3-}

(Total for Question 9 = 1 mark)

5 Ethanoic acid, CH_3COOH , can react with a hydrogensulfite ion, HSO_3^- .

Which is a correct acid conjugate-base pair for this reaction?

$[K_a \text{ for ethanoic acid} = 1.7 \times 10^{-5} \text{ mol dm}^{-3}]$

$K_a \text{ for hydrogensulfite ion} = 6.2 \times 10^{-8} \text{ mol dm}^{-3}]$

- A
- B
- C
- D

	Acid	Conjugate-base
A	HSO_3^-	SO_3^{2-}
B	HSO_3^-	H_2SO_3
C	CH_3COOH	CH_3CO_2^-
D	CH_3COOH	$\text{CH}_3\text{COOH}_2^+$