

Exercise 7.61 – Buffer solutions

Q761-01 A "buffered" solution:

- A. contains an insoluble solid.
 - B. resists a change in its pH.
 - C. contains a salt of a strong acid and a strong base.
 - D. contains a concentrated strong acid
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Q761-02 The body needs to maintain a constant pH of around about 7.4 to operate correctly. It does this by using a weak acid, carbonic acid (H_2CO_3) and another chemical. Which of the following substances could be suitable for creating a buffer in conjunction with carbonic acid in the blood.

- A. sodium phosphate
 - B. sodium hydrogen carbonate
 - C. sodium sulphate
 - D. sodium chloride
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Q761-03 Which mixture is a buffer solution?

- A. 0.10 M HI + 0.10 M KI
 - B. 0.10 M KCl + 0.10 M NaCl
 - C. 0.10 M NaCN + 0.10 M HCN
 - D. 0.10 M NaOH + 0.10 M KOH
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Q761-04 Which of the following mixtures would produce a buffer solution when dissolved in 1.0 dm^3 of water?

- A. 0.50 mol of CH_3COOH and 0.50 mol of NaOH
 - B. 0.50 mol of CH_3COOH and 0.25 mol of NaOH
 - C. 0.50 mol of CH_3COOH and 1.00 mol of NaOH
 - D. 0.50 mol of CH_3COOH and 0.25 mol of $\text{Ba}(\text{OH})_2$
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Q761-05 Which of the following combinations will produce a buffer solution?

- I 20cm^3 0.10 mol dm^{-3} CH_3COOH and 10cm^3 0.10 mol dm^{-3} CH_3COONa
 - II 20cm^3 0.10 mol dm^{-3} CH_3COOH and 10cm^3 0.10 mol dm^{-3} NaOH
- A. I only
 - B. II only
 - C. Both I and II
 - D. Neither I nor II
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Q761-06 Which of the following is a buffer solution?

- I 0.01 mol dm^{-3} HCl, 0.01 mol dm^{-3} NaCl
 - II 0.01 mol dm^{-3} CH_3COOH , 0.01 mol dm^{-3} CH_3COONa
- A. I only
 - B. II only
 - C. Both I and II
 - D. Neither I nor II
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Q761-07 A buffer solution can be prepared by adding which of the following to 50cm^3 of 0.10 mol dm^{-3} $\text{CH}_3\text{COOH}(\text{aq})$?

- I 50cm^3 of a 0.10 mol dm^{-3} $\text{CH}_3\text{COONa}(\text{aq})$
 - II 25cm^3 of a 0.10 mol dm^{-3} NaOH(aq)
 - III 50cm^3 of a 0.10 mol dm^{-3} NaOH(aq)
- A. I only
 - B. II only
 - C. II and III only
 - D. I, II and III
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Exercise 7.61 – Buffer solutions

Q761-08 Which of the following must be mixed with ammonia solution to produce a solution with buffer action?

- A. Ammonium hydroxide
 - B. Sodium hydroxide
 - C. Sodium chloride
 - D. Ammonium chloride
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Q761-09 Which of the following will produce a buffer solution when mixed with 25cm^3 of 0.1 mol dm^{-3} ammonia solution?

- A. 25cm^3 of 0.1 mol dm^{-3} hydrochloric acid
 - B. 25cm^3 of 0.1 mol dm^{-3} ethanoic acid
 - C. 15cm^3 of 0.1 mol dm^{-3} hydrochloric acid
 - D. 15cm^3 of 0.1 mol dm^{-3} sodium hydroxide
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Q761-10 Which of the following combinations produce a buffer solution when equal volumes are mixed?

- I 0.1 M HCl and 0.1 M NH_4Cl
 - II 0.1 M HCl and 0.2 M NH_3
 - III 0.1 M NH_3 and 0.1 M NH_4Cl
- A. I only
 - B. III only
 - C. II and III only
 - D. I, II and III
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