
# DPP-8 – [BUFFER SOLUTIONS -1](Identification)

## Chapter: Ionic Equilibrium

*"Assignments don't make you tired... they make you dangerous."*

## EASY LEVEL

**Q1.** **The buffer solution play an important role in :**

(A) Increasing the pH value
(B) Decreasing the pH value
(C) Keeping the pH constant
(D) Solution will be neutral

**Q2.** **Which of the following solutions cannot act as a buffer system?**

(1) $KH_2PO_4/H_3PO_4$
(2) NaClO/ $HClO_4$
(3) $C_5H_5N/C_5H_5NH^+Cl^-$
(4) $Na_2CO_3/NaHCO_3$

**Q3.** **A buffer solution can not be prepared by mixing equimolar amounts of–**

(1) $B(OH)_3$ and $Na_2B_4O_7{\cdot}10H_2O$
(2) $NH_3$ and $NH_4Cl$
(3) HCl and NaCl
(4) $CH_3COOH$ and $CH_3COONa$

**Q4.** **Which of the following salt solution will act as a buffer?**

(1) $CH_3COONH_4$ (aq.)
(2) $NH_4Cl$ (aq.)
(3) $CH_3COONa$ (aq.)
(4) NaCl (aq.)

**Q5.** **Which one of the following pairs of solution is not an acidic buffer?**

(1) $H_2CO_3$ and $Na_2CO_3$
(2) $H_3PO_4$ and $Na_3PO_4$
(3) $HClO_4$ and $NaClO_4$
(4) $CH_3COOH$ and $CH_3COONa$

**Q6.** **Which one of the following is NOT a buffer solution?**

(1) 0.8M $H_2S$ + 0.8M KHS
(2) 2M $C_6H_5NH_2$ + 2M $C_6H_5NH_3Br$
(3) 3M $H_2CO_3$ + 3M $KHCO_3$
(4) 0.05M $KClO_4$ + 0.05M $HClO_4$

**Q7.** **Which of the following will act as buffer?**

(1) $H_2CO_3$ + $Na_2CO_3$
(2) Borax + Boric acid

(3) $NH_4Cl + NH_4OH$

(4) All of these

**Q8. Which of the following pairs constitutes a buffer :-**

(1) $HNO_2$ & $NaNO_2$

(2) NaOH & NaCl

(3) $HNO_3$ & $NH_4NO_3$

(4) HCl & KCl

**Q9. The pH value of blood does not appreciably change by small addition of an acid or base, because the blood :**

(1) Can be easily coagulated

(2) Contains iron as a part of the molecule

(3) Is a body fluid

(4) Contains serum protein which acts as buffer

# MEDIUM LEVEL

**Q10. Which of the following combinations will make a buffer solution(s)?**

(i) $CH_3COONa$ (2 mol) + HCl (1 mol)

(ii) $CH_3COOH$ (2 mol) + NaOH (1 mol)

(iii) $CH_3COOH$ (1 mol) + $CH_3COONa$ (1 mol)

**Q11. The pH of blood circulating in a human body is maintained around 7.4 by the action of which buffer system–**

(1) $CH_3COOH/CH_3COONa$

(2) $NH_4Cl/NH_3$

(3) $H_2PO_4^-$

(4) $H_2CO_3/HCO_3^-$

**Q12. 1 M NaCl and 1 M HCl are present in aqueous solution. The solution is :**

(A) not a buffer solution and with pH $< 7$

(B) not a buffer solution with pH $> 7$

(C) a buffer solution with pH $< 7$

(D) a buffer solution with pH $> 7$

**Q13. Which can act as buffer :-**

(A) $NH_4OH$ + NaOH

(B) HCOOH + $CH_3COONa$

(C) 40 mL of 0.1 M NaCN + 20 mL of 0.1 M HCl

(D) All of them

**Q14. When a small amount of HCl is added to a buffer solution of acetic acid and sodium acetate, then :**

(1) pH decreases slightly

(2) $H^+$ increases slightly

(3) Dissociation of acetic acid decreases

(4) $CH_3COO^-$ decreases

**Q15. A buffer solution can be obtained from :**

(1) HCN and KCN

(2) $CH_3COONH_4$
(3) $NH_4Cl$ and $NH_4OH$
(4) All of these

**Q16. Buffer solutions have constant acidity and alkalinity because :**

(1) they have large excess of $H^+$ or $OH^-$ ions
(2) they have fixed value of pH
(3) they give unionised acid or base on reaction with added acid or alkali
(4) acids and alkalies in these solutions are shielded from attack by other ions

# HARD LEVEL

**Q17. For preparing a buffer solution of pH = 7.0, which buffer system will you choose?**

(1) $H_3PO_4$, $H_2PO_4^-$
(2) $H_2PO_4^-$, $HPO_4^{2-}$
(3) $HPO_4^{2-}$, $PO_4^{3-}$
(4) $H_3PO_4$, $PO_4^{3-}$