

Chemistry Practical Class 11 Study of pH change by common-ion effect in case of weak acids and weak bases Viva Questions with Answers

Q1. What is pH in chemistry?

Answer: pH, or the potential of hydrogen ions, is a scale used to determine the hydrogen ion (H^+) concentration in the solution. It is equivalent to the negative logarithm of hydrogen ion (H^+) concentration.

$$pH = -\log [H^+]$$

Q2. What is pOH in chemistry?

Answer: pOH, or the potential of hydroxide ions, is a scale used to determine the hydroxide ion (OH^-) concentration in the solution. It is equivalent to the negative logarithm of hydroxide ion (OH^-) concentration.

$$pH = -\log [OH^-]$$

Q3. What does the pH of a solution indicate?

Answer: The pH of a solution indicates the concentration of hydrogen ions (H^+) in the solution.

Q4. Does the pH of the solution change on adding a common ion to the weak acid solution?

Answer: Yes, the pH of the solution change by adding a common ion to the weak acid solution. It will increase.

Q5. What happens to the pH of the solution if little acid is added to the water?

Answer: The pH of the solution will decrease if little acid is added to the water. Acid liberates hydrogen ions on hydrolysis. Thus, the concentration of hydrogen ions will certainly increase, leading to a decrease in the pH of the solution.

Q6. What is the ionic product of water?

Answer: The ionic product of water is equivalent to the product of hydronium ions concentration and hydroxide ions concentration.

$$K_w = [H_3O^+] [OH^-].$$

Q7. What is the value of an ionic water product at 298 K?

Answer: The value of an ionic water product at 298 K is equal to $1.0 \times 10^{-14} \text{ mol}^2 \text{ L}^{-2}$.

Q8. What is the common ion effect in chemistry?

Answer: It is the decrease in one ion's solubility by adding another ion as a common ion is known as the common ion effect.

Q9. What is a buffer solution?

Answer: A buffer solution is an aqueous solution that resists change in pH. It consists of a mixture of a weak acid and its conjugate base or a weak base and its conjugate acid.

Q10. How does the pH of acetic acid change with the addition of sodium acetate to it?

Answer: The pH of acetic acid increase with the addition of sodium acetate to it. Sodium acetate is a salt of a weak acid and a strong base. Thus, it increases the hydroxide ion concentration in the solution, thereby raising the pH.

Q11. What is the pH of sodium bicarbonate?

Answer: Sodium bicarbonate is an alkaline solution, so its pH will be more than 7.

Q12. How does the pH of NH_4OH change with the addition of NH_4Cl to it?

Answer: The pH of NH_4OH decreases with the addition of NH_4Cl to it. NH_4Cl is a salt of a strong acid and a weak base. Thus, it increases the hydrogen ion concentration in the solution, thereby decreasing the pH.

Q13. Does the ionic product value of water change by adding an acid or a base?

Answer: No, the ionic product value of water does not change by adding an acid or a base.

Q14. Does adding a salt having a common ion to a weak acid change the pH of the solution?

Answer: Yes, adding a salt having a common ion to a weak acid increase the pH of the solution.