Maximum Marks: 10   **(OBJECTIVE TYPE)**   Time Allowed: 10 Min.

NOTE: Tick The Correct Option:

1. Ionic product of water (K_w) increases _____ when temperature increases from 0°C to 100°C:
   (a) 22 times   (b) 75 times   (c) 55 times   (d) 65 times

2. In the presence of common ion, the ionization of an electrolyte will:
   (a) Increase   (b) Decrease   (c) No effect   (d) Moderate change

3. Pure water is _____ conductor of electricity.
   (a) Non   (b) Poor   (c) Good   (d) Super

4. Molar concentration of water is:
   (a) 1 mole dm^{-3} (b) 18 moles dm^{-3} (c) 55.5 moles dm^{-3} (d) 1.8×10^{-16} moles dm^{-3}

5. The greater is the dilution of the solution, the greater is:
   (a) The number of ions   (b) Percentage ionization
   (c) Dissociation constant (K_a)   (d) All

6. Which has the smallest value of K_b?
   (a) $Ca(OH)_2$ (b) $C_6H_5NH_2$ (c) CH_3NH_2 (d) NH_4OH

7. K_a and K_b of a conjugate acid base pair are _____ proportional to each other.
   (a) Directly   (b) Inversely   (c) Both   (d) None

8. When HCl is added to the solution of H_2S in water, then:
   (a) The solubility of H_2S increases   (b) The solubility of HCl increases
   (c) The solubility of H_2S decreases   (d) The solubility of HCl decreases

9. Buffer is the application of:
   (a) Law of mass action   (b) Le-Chatelier's Principle
   (c) Common ion effect   (d) All

10. The best buffer is prepared by mixing salt and acid in a ratio:
    (a) 1 : 1   (b) 1 : 10   (c) 10 : 1   (d) 2 : 1

Maximum Marks: 20   **(SUBJECTIVE TYPE)**   Time Allowed: 40 Min.

SECTION-I

Q.2: Give brief answers to the following questions: (12)

  i. What is ionic product of water? How does K_w vary with the change in temperature?

 ii. Calculate the pH of 10^{-4} mole dm^{-3} of $Ba(OH)_2$ solution.

iii. Define acid and base according to Lowry Bronsted concept.

 iv. How does a buffer act? Explain with an example.

  v. Write Henderson equation for acids and bases.

 vi. How can solubility product be determined from solubility? Give an example.

SECTION-II

NOTE: Attempt All Questions: (08)

Q.3: Define pH and pOH. How are they related with pK_w?

Q.4: Define common ion effect. Give its two applications.