Padasalai’s Telegram Groups!

- Padasalai's NEWS - Group
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- Lesson Plan - Group
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- 12th Standard - Group
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- 11th Standard - Group
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- 10th Standard - Group
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- 9th Standard - Group
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- 6th to 8th Standard - Group
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- 1st to 5th Standard - Group
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- TET - Group
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- PGTRB - Group
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- TNPSC - Group
  https://t.me/Padasalai_TNPSC
I. ANSWER THE FOLLOWING QUESTIONS

1. What are the Limitations of Arrhenius concept
2. Identify the conjugate acid base pair for the following HF, H₂SO₄, NH₃, HCOOH
3. Define solubility product
5. Define buffer index
6. Write the expression for solubility product of Hg₂Cl₂

II. Knowledge based questions

1. The dimethyl ammonium ion, (CH₃)₂NH₂⁺ is a weak acid and ionizes to a slight degree in water what its conjugate base
2. Arrange the species in order of their increasing basic character: H₂O, OH⁻, CH₃OH, CH₃O⁻
3. Acetic acid is highly soluble in water but still a weak acid. Why?
4. Will pH of water be same or different at 4 °C or 25°C? Explain?
5. How does degree of ionization of weak electrolyte vary with concentration? What is this law called?

III. ANSWER THE FOLLOWING QUESTIONS

1. Explain common ion effect with an example
2. Discuss the Lowery – Bronsted concept of acids and bases.
3. Explain buffer action with example
4. Calculate the pH of 0.1M CH₃COOH solution. Dissociation constant of acetic acid is 1.8 × 10⁻⁵.
5. Calculate the pH of a buffer solution consisting of 0.4M CH₃COOH and 0.4M CH₃COONa. What is the change in the pH after adding 0.01 mol of HCl to 500ml of the above buffer solution. Assume that the addition of HCl causes negligible change in the volume. Given: (Ka = 1.8 × 10⁻⁵)
6. Calculate i) the hydrolysis constant, ii) degree of hydrolysis and iii) pH of 0.1M CH₃COONa solution (pKₐ for CH₃COOH is 4.74).

IV. ANSWER THE FOLLOWING QUESTIONS

1. Derive an expression for Ostwald’s dilution law
2. Derive an expression for the hydrolysis constant and degree of hydrolysis of salt of strong acid and weak base
3. Derive Henderson – Hasselbalch equation for finding out pH of buffer solution
4. Derive an expression for the hydrolysis constant and degree of hydrolysis of salt of weak base and weak acid