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CHEMISTRY · EAPCET (EAMCET)

Ionic Equilibrium

Previous Year Questions with answers

140 questions · **120** papers · **2010–2026** · newest paper first

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What is in this PDF: every Ionic Equilibrium question we hold from past AP and TS EAPCET (called EAMCET until 2020 in Andhra Pradesh and 2023 in Telangana) papers, with its options and answer. Where an answer comes from a source other than the official final key, it says so next to the answer.

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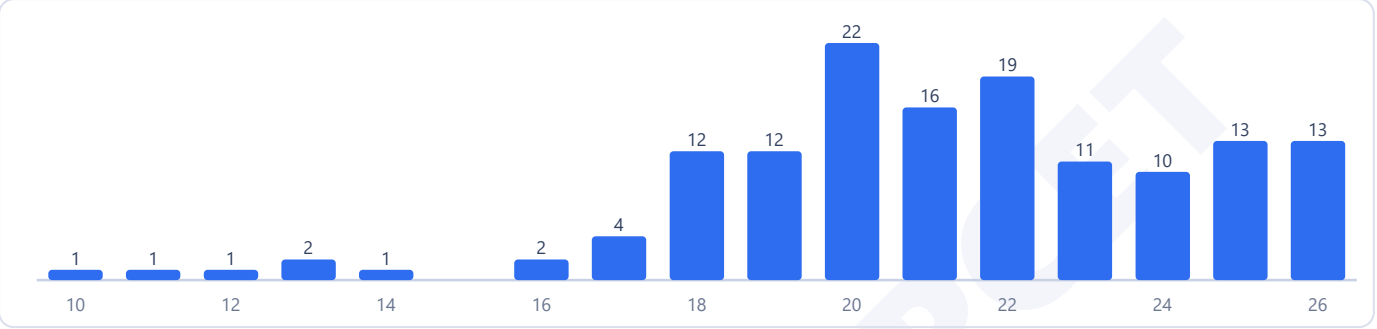
Chapter at a glance

2.1%	140	60 of 77	140 / 0
of Chemistry questions, 2022–2026	questions, 2010–2026	papers asked it, 2022–2026	MCQ / numerical, 2010–2026

Trend. Steady: 0.8 questions per paper in 2024–2026 against 1 in 2022–2023.

Questions per year



Counts are the questions we hold: 140 in 120 papers. No question in this chapter was found repeated across papers.

Most-asked topics in this chapter (2010–2026)

Acids, Bases & pH	72
Solubility Equilibria	34
Buffers & Titrations	23
Salt Hydrolysis	11

How often it comes up

Ionic Equilibrium sits at rank 22 among the 31 chemistry chapters in the modern 2022 to 2026 period. Across our complete collection of past examination papers from 2010 through 2026, the chapter provided 140 questions across 149 papers, appearing in 120 of those tests to account for 2.3 percent of the chemistry section with 0.9 questions per paper. In the recent five-year timeframe from 2022 to 2026, it maintained an identical frequency of 0.9 questions per paper, supplying 66 questions across 77 sittings and appearing in 60 papers to capture a 2.1 percent subject share.

The chapter has appeared in every exam year since 2022, though it was absent from seventeen papers across that interval. State distributions between 2022 and 2026 indicate that AP papers delivered 49 questions across 48 sittings (featuring in 43 papers, 1.0 questions per paper, 2.6 percent share), whereas TS papers carried 17 questions across 29 sittings (featuring in 17 papers, 0.6 questions per paper, 1.5 percent share).

Looking back at earlier papers from 2010 through 2021, examiners set 74 questions across 72 sittings (appearing in 60 tests), yielding 1.0 questions per paper and a 2.6 percent subject share. During the latest three exam years from 2024 to 2026, question banks included 36 questions across 46 sittings (with 35 papers containing questions), generating 0.8 questions per test and a 2.0 percent share. Comparing the early era with the last three years shows a share trend that is down, while comparing the five-year recent window with the last three years shows the share is about the same.

Most-asked topics

Questions in this chapter group into four distinct aqueous solution categories:

- **Acids, Bases & pH** constitutes the largest topic with 72 questions overall and 38 during the recent period through 2026. Frequent problem formats involve pH and pOH determinations for strong or weak monobasic acids

and bases, Ostwald dilution law calculations, polyprotic acid ionization constants, and mixing strong acids with strong bases.

- **Solubility Equilibria** supplied 34 questions across the archive, with 16 appearing between 2022 and 2026. Problems explore solubility product expressions, precipitations governed by ionic product exceedance, common ion suppression of sparingly soluble salts, and selective precipitation.
- **Buffers & Titrations** accounts for 23 questions in total and 10 in the recent window through 2026. Questions test the Henderson-Hasselbalch equation for acidic and basic buffers, buffer capacity principles, and pH changes upon adding strong reagent aliquots.
- **Salt Hydrolysis** rounds out the syllabus with 11 questions overall, including 2 from the recent period (last tested in 2022). Themes include identifying whether salts of weak acids and strong bases, strong acids and weak bases, or weak acids and weak bases yield acidic, neutral, or basic solutions.

What the questions look like

A substantial portion of problems requires fast logarithmic evaluations. For example, a standard problem specifies volumes and molarities of hydrochloric acid and sodium hydroxide, asking for the resultant pH of the mixture after neutralisation and dilution. Other common questions provide the pH of a basic solution and ask you to determine the mass of sodium hydroxide dissolved per litre.

Solubility questions often require calculating the mass of a sparingly soluble salt dissolved in a specified volume of water using its solubility product constant, or calculating how solubility decreases when a common ion electrolyte is added. In buffer chemistry, questions ask candidates to find the ratio of salt to acid required to achieve a designated target pH.

How to practise it

Memorise the fundamental logarithmic values for small integers: log two is zero point three zero one, log three is zero point four seven seven, and log five is zero point six nine nine. Being able to compute logs quickly in your head without a calculator saves crucial minutes during the test.

When solving solubility product questions, always write the dissolution stoichiometry explicitly. If a salt AB dissociates into one cation and one anion, Ksp equals s squared. If a salt AB2 dissociates into one cation and two anions, Ksp equals four s cubed. When common ions are introduced, insert the common ion concentration directly into the equilibrium expression and neglect the contribution from the sparingly soluble salt whenever the solubility product is minute.

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Q1 AP EAPCET 2026 · 18 May · Shift 1 MCQ

Identify the correct statements from the following

I) Conjugate base of nitrous acid is NO_2^-

II) The concentration of OH^- ions in 0.1 M aqueous pyridine solution is $\sqrt{2} \times 10^{-5}$ M. (K_b of pyridine = 2×10^{-9})

III) The acid strength of aqueous hydrogen halides follow the order

$$HF > HCl > HBr > HI$$

The correct answer is

(A) I, II, III
(B) I, II only
(C) I, III only
(D) II, III only

Answer: (B) I, II only · The council's preliminary key

Q2 AP EAPCET 2026 · 15 May · Shift 1 MCQ

A solution is prepared by adding 0.5 L of 0.5 M $NaOH$ to 0.5 L of 0.55 M formic acid. What is the pH of resultant solution?
(K_a of formic acid = 1.8×10^{-4} ; $\log(1.8) = 0.26$)

(A) 3.74
(B) 4.74
(C) 2.74
(D) 3.26

Answer: (B) 4.74 · The council's preliminary key

Q3 AP EAPCET 2026 · 15 May · Shift 1 MCQ

In the reaction given below, water behaves as

$$NH_3 + H_2O \rightleftharpoons NH_4^+ + OH^-$$

(A) A Lewis base
(B) A Bronsted –Lowry acid
(C) A Bronsted –Lowry base
(D) A Lewis acid

Answer: (B) A Bronsted –Lowry acid · The council's preliminary key

Q4 AP EAPCET 2026 · 15 May · Shift 2 MCQ

The minimum volume of water (in L) needed to dissolve $1.5\ g$ of $CaSO_4$ (molar mass $= 136\ g\ mol^{-1}$) at $298\ K$ is

($K_{sp}(\mathrm{CaSO_4})$ at 298 $K = 9 \times 10^{-6}$)

(A) 6.37

(B) 7.37

(C) 3.67

(D) 3.73

Answer: (C) 3.67 · The council's preliminary key

Q5 AP EAPCET 2026 · 14 May · Shift 1 MCQ

The dissociation constants of $\mathrm{H_2A}$ are $\mathrm{K_{a1}} = 6 \times 10^{-2}$ and $\mathrm{K_{a2}} = 6 \times 10^{-5}$ respectively. At equilibrium, $[\mathrm{A^{2-}}] = [\mathrm{H_2A}]$. What is the approximate concentration of $\mathrm{H^+}$ at equilibrium?

(A) 1.9×10^{-3}

(B) 2×10^{-4}

(C) 1.9×10^{-5}

(D) 1.9×10^{-2}

Answer: (A) 1.9×10^{-3} · The council's preliminary key

Q6 AP EAPCET 2026 · 14 May · Shift 2 MCQ

Solution of HCN and NaCN forms a buffer solution. x moles of HCN is required to prepare 1.0 L of a buffer solution of pH 9 using 0.01 moles of NaCN. What is the value of x ?
(Given $K_a(\mathrm{HCN}) = 10^{-10}$)

(A) 9×10^{-1}

(B) 9×10^{-2}

(C) 9×10^{-3}

(D) 9×10^{-4}

Answer: (C) 9×10^{-3} · The council's preliminary key

Q7 AP EAPCET 2026 · 13 May · Shift 1 MCQ

Observe the following data given below. Which set of buffer solution has highest pH?

Buffer solution	Volume (in mL) of 1M solution of weak acid	Volume (in mL) of 0.1 M sodium salt of weak acid
I	4.0	4.0
II	4.0	40.0
III	40.0	4.0
IV	0.1	10.0

(A) I
(B) II
(C) III
(D) IV

Answer: (D) IV · The council's preliminary key

Q8 AP EAPCET 2026 · 12 May · Shift 1 MCQ

The pH of a solution obtained by mixing 250 mL of 0.5 M NaOH, 100 mL of 0.5 M HCl and 400 mL of water is

(A) 12
(B) 2
(C) 1
(D) 13

Answer: (D) 13 · The council's preliminary key

Q9 AP EAPCET 2026 · 12 May · Shift 2 MCQ

The mass of $\mathrm{CaC_2O_4}$ (in g) to be dissolved in distilled water to make 1.0 L of saturated solution is
(K_{sp} of $\mathrm{CaC_2O_4}$ = $2.5 \times 10^{-9}\ mol^2 L^{-2}$
molar mass of $\mathrm{CaC_2O_4}$ = $128\ g\ mol^{-1}$)

(A) 0.0064
(B) 0.0032
(C) 0.0128
(D) 0.0640

Answer: (A) 0.0064 · The council's preliminary key

Q10 TS EAPCET 2026 · 11 May · Shift 1 MCQ

A certain buffer solution contains $[\mathrm{X^-}]$ and $[\mathrm{HX}]$ in the ratio of 1:10. If $\mathrm{K_b}$ of $\mathrm{X^-}$ is 10^{-10}, then the pH value of the buffer is

(A) 9
(B) 5
(C) 3
(D) 11

Answer: (C) 3 · The council's preliminary key

Q11 TS EAPCET 2026 · 11 May · Shift 2 MCQ

The pH of 0.01 M aqueous aniline solution at 298 K is 8.3. Its degree of dissociation (α) is
($\mathrm{K_b}$ of aniline $= 4 \times 10^{-10}$; antilog (0.7) = 5.0; antilog (0.3) = 2.0; antilog (0.4) = 2.5)

(A) 1×10^{-4}
(B) 4×10^{-4}
(C) 1.5×10^{-4}
(D) 2×10^{-4}

Answer: (D) 2×10^{-4} · The council's preliminary key

Q12 TS EAPCET 2026 · 10 May · Shift 1 MCQ

The mass of sodium hydroxide that must be dissolved in 1.0 L solution to get pH of 12 is

(A) 0.2 g
(B) 0.3 g
(C) 0.4 g
(D) 0.8 g

Answer: (C) 0.4 g · The council's preliminary key

Q13 TS EAPCET 2026 · 9 May · Shift 1 MCQ

The solubility of $BaCO_3$ (molar mass 197 $g\ mol^{-1}$) is $1.4 \times 10^{-3}\ g/100mL$. The solubility product constant of $BaCO_3$ is $x \times 10^{-9}\ mol^2\ L^{-2}$. The value of x is (nearest integer)

(A) 4.0
(B) 5.0
(C) 6.0
(D) 4.8

Answer: (B) 5.0 · The council's preliminary key

Q14 AP EAPCET 2025 · 27 May · Shift 1 MCQ

At T(K) K_{sp} of two ionic salts MX_2 and MX is 5×10^{-13} and 1.6×10^{-11} respectively. The ratio of molar solubility of MX_2 and MX is

(A) 12.5
(B) 1.25
(C) 6.25
(D) 7.50

Answer: (A) 12.5 · The council's preliminary key

Q15 AP EAPCET 2025 · 26 May · Shift 1 MCQ

The conjugate base of phosphorus acid is x. The conjugate base of oleum is y. What are x and y, respectively ?

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(A) $H_2PO_4^-$, $HS_2O_7^-$
(B) $H_2PO_4^-$, HSO_5^-
(C) $H_2PO_3^-$, $HS_2O_7^-$
(D) $H_2PO_3^-$, HSO_4^-

Answer: (C) $H_2PO_3^-$, $HS_2O_7^-$ · The council's preliminary key

Q16 AP EAPCET 2025 · 26 May · Shift 2 MCQ

The molar solubility of PbI_2 in $0.2\,M$ $Pb(NO_3)_2$ solution in terms of K_{sp} (solubility product) is

(A) $\left(\frac{K_{sp}}{0.2}\right)^{1/2}$
(B) $\left(\frac{K_{sp}}{0.4}\right)^{1/4}$
(C) $\left(\frac{K_{sp}}{0.8}\right)^{1/2}$
(D) $\left(\frac{K_{sp}}{0.8}\right)^{1/3}$

Answer: (C) $\left(\frac{K_{sp}}{0.8}\right)^{1/2}$ · The council's preliminary key

Q17 AP EAPCET 2025 · 24 May · Shift 1 MCQ

Observe the following molecules/ions.

NH_4^+, NH_3, BF_3, OH^-, CH_3^+, H^+, CO, C_2H_4.

The number of Lewis bases in the above list is

(A) 2
(B) 3
(C) 4
(D) 5

Answer: (C) 4 · The council's preliminary key

Q18 AP EAPCET 2025 · 23 May · Shift 1 MCQ

When 30 mL of 0.2 M NH_4OH is added to 30 mL of 2 M NH_4Cl solution. If the pH of the buffer formed is 8.2, what is the pK_b of NH_4OH ?

(A) 7.2
(B) 5.8
(C) 6.8
(D) 4.8

Answer: (D) 4.8 · The council's preliminary key

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Q19 AP EAPCET 2025 · 23 May · Shift 2 MCQ

The percentage of ionization of 1 L of x M acetic acid is 4.242 and is called solution "A". The percentage of ionization of 1 L of y M acetic acid is 3 and is called solution "B". Solution "A" is mixed with solution "B". What is the concentration of acetic acid in the resultant solution ?

($\mathrm{K_a}$ of acetic acid $= 1.8 \times 10^{-5}$)

(A) 0.05 M
(B) 0.015 M
(C) 0.02 M
(D) 0.15 M

Answer: (B) 0.015 M · The council's preliminary key

Q20 AP EAPCET 2025 · 22 May · Shift 1 MCQ

At $25\ ^\circ\mathrm{C}$, the percentage of ionization of 'x' M acetic acid is 4.242. What is the value of x ? ($\mathrm{K_a} = 1.8 \times 10^{-5}$).

(A) 0.05
(B) 0.04
(C) 0.02
(D) 0.01

Answer: (D) 0.01 · The council's preliminary key

Q21 AP EAPCET 2025 · 22 May · Shift 2 MCQ

At $25^\circ\mathrm{C}$, $\mathrm{K_a}$ of formic acid is 1.8×10^{-4}. What is the $\mathrm{K_b}$ of $\mathrm{HCOO^-}$?

(A) 1.8×10^{-10}
(B) 5.55×10^{-4}
(C) 5.55×10^{-11}
(D) 5.55×10^{-12}

Answer: (C) 5.55×10^{-11} · The council's preliminary key

Q22 AP EAPCET 2025 · 21 May · Shift 1 MCQ

At T(K), the solubility product of AgBr is 4×10^{-13}. What is its solubility in 0.1 M KBr solution ?

(A) 2×10^{-6} M
(B) 4×10^{-10} M
(C) 4×10^{-12} M
(D) 4×10^{-14} M

Answer: (C) 4×10^{-12} M · The council's preliminary key

Q23 AP EAPCET 2025 · 21 May · Shift 2 MCQ

At $25^{\circ}\mathrm{C}$, the percentage of ionization of x M acetic acid is 4.242. What is the pH of the acetic acid solution ?

$(\log 4.242 = 0.6275)$; $(\log 0.04242 = -1.372)$ $(\mathrm{K_a} = 1.8 \times 10^{-5})$

(A) 3.37
(B) 1.70
(C) 1.37
(D) 2.37

Answer: (A) 3.37 · The council's preliminary key

Q24 TS EAPCET 2025 · 4 May · Shift 1 MCQ

The volume of water required to dissolve 0.1 g $\mathrm{PbCl_2}$ to get a saturated solution (in mL) is (Given $\mathrm{K_{sp}(PbCl_2)} = 3.2 \times 10^{-8}$; Atomic mass of Pb = 207u)

(A) 150
(B) 100
(C) 120
(D) 180

Answer: (D) 180 · The council's preliminary key

Q25 TS EAPCET 2025 · 3 May · Shift 1 MCQ

200 mL of an aqueous solution of HCl (pH = 2) is mixed with 300 mL of aqueous solution of NaOH (pH = 12) and is diluted to 1.0 L. The pH of the resulting solution is

(A) 10.3
(B) 11.0
(C) 11.3
(D) 11.7

Answer: (B) 11.0 · The council's preliminary key

Q26 TS EAPCET 2025 · 3 May · Shift 2 MCQ

At T(K) in a saturated solution of $\mathrm{MgCO_3}$ and $\mathrm{Ag_2CO_3}$, if the concentration of $\mathrm{Mg^{2+}}$ ion is 3.2×10^{-5} M, then the concentration of $\mathrm{Ag^{+}}$ ion in the solution will be
[Given: $\mathrm{K_{sp}(MgCO_3)} = 1.6 \times 10^{-6}$ and $\mathrm{K_{sp}(Ag_2CO_3)} = 8.0 \times 10^{-12}$ at T(K)]

(A) $\sqrt{1.3} \times 10^{-7}$ M
(B) $\sqrt{1.5} \times 10^{-6}$ M
(C) $\sqrt{1.6} \times 10^{-6}$ M
(D) $\sqrt{1.6} \times 10^{-5}$ M

Answer: (D) $\sqrt{1.6} \times 10^{-5}$ M · The council's preliminary key

Q27 AP EAPCET 2024 · 23 May · Shift 1 MCQ

At $27^{\circ}\mathrm{C}$, the degree of dissociation of HA (weak acid) in 0.5 M of its solution is 1%. The concentrations of $\mathrm{H_3O^+}$, $\mathrm{A^-}$ and HA at equilibrium (in $\mathrm{mol\,L^{-1}}$) are respectively

(A) 0.005, 0.005, 0.495
(B) 0.05, 0.05, 0.45
(C) 0.01, 0.01, 0.49
(D) 0.005, 0.495, 0.005

Answer: (A) 0.005, 0.005, 0.495 · The council's preliminary key

Q28 AP EAPCET 2024 · 22 May · Shift 2 MCQ

100 mL of 0.1 M HA (weak acid) and 100 mL of 0.2 M NaA are mixed. What is the pH of resultant solution? ($\mathrm{K_a}$ of HA is 10^{-5}; $\log 2 = 0.3$)

(A) 4.7
(B) 5.0
(C) 5.3
(D) 4.0

Answer: (C) 5.3 · The council's preliminary key

Q29 AP EAPCET 2024 · 21 May · Shift 1 MCQ

At T(K), the solubility product of AX is 10^{-10}. What is the molar solubility of AX in 0.1 M HX solution?

(A) 10^{-5}
(B) 10^{-10}
(C) 10^{-9}
(D) 10^{-8}

Answer: (C) 10^{-9} · The council's preliminary key

Q30 AP EAPCET 2024 · 21 May · Shift 2 MCQ

The solubility of barium phosphate of molar mass 'M' $\mathrm{g\,mol^{-1}}$ in water is x g per 100 mL at 298 K. Its solubility product is $1.08 \times \left(\frac{x}{M}\right)^{a} \times (10)^{b}$. The values of a and b respectively are

(A) 7, 5
(B) 5, 7
(C) 5, 5
(D) 7, 7

Answer: (B) 5, 7 · The council's preliminary key

Q31 AP EAPCET 2024 · 20 May · Shift 1 MCQ

At 27 ^{0}C, 100 mL of 0.4 M HCl is mixed with 100 mL of 0.5 M $NaOH$ solution. To the resultant solution, 800 mL of distilled water is added. What is the pH of final solution?

(A) 12
(B) 2
(C) 1.3
(D) 1.0

Answer: (A) 12 · The council's preliminary key

Q32 AP EAPCET 2024 · 20 May · Shift 2 MCQ

Which of the following will make a basic buffer solution?

(A) 100 mL of 0.1 M CH_3COOH + 100 mL of 0.1 M $NaOH$
(B) 100 mL of 0.1 M HCl + 100 mL of 0.1 M $NaOH$
(C) 50 mL of 0.1 M KOH + 25 mL of 0.1 M CH_3COOH
(D) 100 mL of 0.1 M HCl + 200 mL of 0.1 M NH_4OH

Answer: (D) 100 mL of 0.1 M HCl + 200 mL of 0.1 M NH_4OH · The council's preliminary key

Q33 AP EAPCET 2024 · 19 May · Shift 2 MCQ

What is the conjugate base of chloric acid?

(A) ClO_4^-
(B) ClO^-
(C) ClO_2^-
(D) ClO_3^-

Answer: (D) ClO_3^- · The council's preliminary key

Q34 AP EAPCET 2024 · 18 May · Shift 1 MCQ

At 27^0C, the degree of dissociation of weak acid (HA) in its 0.5M aqueous solution is 1%. Its K_a value is approximately

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(A) 5×10^{-4}
(B) 5×10^{-5}
(C) 5×10^{-6}
(D) 5×10^{-8}

Answer: (B) 5×10^{-5} · The council's preliminary key

Q35 TS EAPCET 2024 · 10 May · Shift 1 MCQ

Observe the following species

(i) NH_3 (ii) $AlCl_3$ (iii) $SnCl_4$ (iv) CO_2 (v) Ag^+ (vi) HSO_4^-

How many of the above species act as Lewis acids?

(A) 5
(B) 3
(C) 4
(D) 2

Answer: (C) 4 · The council's preliminary key

Q36 TS EAPCET 2024 · 10 May · Shift 2 MCQ

At $27^\circ C$, 100 mL of 0.5 M HCl is mixed with 100 mL of 0.4 M $NaOH$ solution. To this resultant solution, 800 mL of distilled water is added. What is the pH of final solution?

(A) 12.0
(B) 2.0
(C) 1.3
(D) 1.0

Answer: (B) 2.0 · The council's preliminary key

Q37 AP EAPCET 2023 · 19 May · Shift 1 MCQ

The pH of 0.01M BOH solution is 10. What is its degree of dissociation?

(Given K_b of BOH is 1×10^{-6})

(A) 10%
(B) 5%
(C) 2%
(D) 1%

Answer: (D) 1% · The council's preliminary key

Q38 AP EAPCET 2023 · 18 May · Shift 1 MCQ

Observe the following solutions

i) 1 L of 10^{-6} M $AgNO_3$, ii) 1 L of 10^{-7} M $AgNO_3$, iii) 1 L of 10^{-9} M $AgNO_3$,

iv) 1 L of 10^{-3} M $AgNO_3$, v) 1 L of 10^{-5} M NaCl

Which of the above two solutions when mixed will give a white precipitate, AgCl?
(Given K_{sp} of AgCl $= 1 \times 10^{-10}$)

(A) (i), (v)
(B) (ii), (v)
(C) (iv), (v)
(D) (iii), (v)

Answer: (C) (iv), (v) · The council's preliminary key

Q39 AP EAPCET 2023 · 18 May · Shift 2 MCQ

Observe the following species

$AlCl_3, NH_3, H^+, Co^{3+}, {}^-OH, Mg^{2+}, BF_3, Cl^-$

How many Lewis acids are present in the above list?

(A) 5
(B) 4
(C) 2
(D) 3

Answer: (A) 5 · The council's preliminary key

Q40 AP EAPCET 2023 · 17 May · Shift 1 MCQ

Given below are two statements

Statement I: The changes in pH with temperature are so small that we often ignore it

Statement II: When the hydrogen ion concentration changes by a factor of 100, the pH changes by one unit

In the light of above statements, identify the correct answer from the options given below

(A) Both statements I and II are correct.
(B) Both statements I and II are not correct.
(C) Statement I is correct but statement II is not correct.
(D) Statement I is not correct but statement II is correct.

Answer: (C) Statement I is correct but statement II is not correct. · The council's preliminary key

Q41 AP EAPCET 2023 · 17 May · Shift 2 MCQ

Observe the following species

$AlCl_3, NH_3, H^+, Co^{3+}, {}^-OH, H^-Mg^{2+}, BF_3, Cl^-$

How many Lewis bases are present in the above list?

(A) 2
(B) 5
(C) 4
(D) 3

Answer: (C) 4 · The council's preliminary key

Q42 AP EAPCET 2023 · 16 May · Shift 1 MCQ

Conjugate acid and conjugate base of HCO_3^- are respectively

(A) $H_2CO_3, H_3CO_3^+$
(B) H_2CO_3, CO_3^{2-}
(C) CO_3^{2-}, H_2CO_3
(D) CO_3^{2-}, CO_2

Answer: (B) H_2CO_3, CO_3^{2-} · The council's preliminary key

Q43 AP EAPCET 2023 · 16 May · Shift 2 MCQ

Observe the following solutions

I. Black coffee II. 0.2M NaOH III. Lemon juice

IV. Lime water V. Human Saliva VI. Tomato juice

The number of solutions with pH less than 7 is

(A) 2
(B) 5
(C) 4
(D) 3

Answer: (C) 4 · The council's preliminary key

Q44 AP EAPCET 2023 · 15 May · Shift 2 MCQ

Observe the following solutions

I. Black coffee II. 0.2M NaOH III. Lemon juice

IV. Lime water V. Human Saliva VI. Tomato juice

The number of solutions having pH range of 1-7 and 7-14, in the above list, is respectively

(A) 1, 5
(B) 3, 3
(C) 2, 4
(D) 4, 2

Answer: (D) 4, 2 · The council's preliminary key

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Q45 TS EAMCET 2023 · 14 May · Shift 1 MCQ

Which of the following does not form a buffer solution?

(A) $NH_3 + HCl$ (2:1 mole ratio)
(B) $CH_3CO_2H + NaOH$ (2:1 mole ratio)
(C) $NaOH + CH_3COOH$ (1:1 mole ratio)
(D) $NH_4Cl + NH_3$ (1:1 mole ratio)

Answer: (C) $NaOH + CH_3COOH$ **(1:1 mole ratio)** · The council's preliminary key

Q46 TS EAMCET 2023 · 14 May · Shift 2 MCQ

At 298 K the molar solubility of $Cd(OH)_2$ in 0.1M KOH solution is $x \times 10^{-y}$. The values of x and y are respectively

(at 298 K, K_{sp} of $Cd(OH)_2$ = 2.5×10^{-14})

(A) 2.5, 14
(B) 25, 13
(C) 25, 14
(D) 2.5, 16

Answer: (B) 25, 13 · The council's preliminary key

Q47 TS EAMCET 2023 · 12 May · Shift 1 MCQ

A solution is prepared by mixing 10 mL of 1.0 M acetic acid and 20 mL of 0.5M sodium acetate and diluted to 100 mL. If the pK_a of acetic acid is 4.76, then the pH of the solution is

(A) 4.76
(B) 3.76
(C) 5.76
(D) 9.24

Answer: (A) 4.76 · The council's preliminary key

Q48 TS EAMCET 2022 · 20 Jul · Shift 1 MCQ

How many of the following are diprotic acids?
Citric acid, Chromic acid, Oxalic acid, Pyrosulfuric acid, Sulfurous acid

(A) 2
(B) 5
(C) 4
(D) 3

Answer: (C) 4 · The council's preliminary key

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Q49 TS EAMCET 2022 · 20 Jul · Shift 2 MCQ

Ammonia is a Lewis base because it is

(A) Electron pair donor
(B) Electron pair acceptor
(C) Proton donor
(D) Proton acceptor

Answer: (A) Electron pair donor · The council's preliminary key

Q50 TS EAMCET 2022 · 19 Jul · Shift 2 MCQ

Match the following

Metal Sulfide

A) PbS
B) HgS
C) MnS
D) ZnS

Solubility product

I) 4.0×10^{-53}
II) 8.0×10^{-28}
III) 1.6×10^{-24}
IV) 2.5×10^{-13}

The correct match is

(A) A-I, B-II, C-III, D-IV
(B) A-II, B-I, C-IV, D-III
(C) A-II, B-III, C-IV, D-I
(D) A-III, B-IV, C-I, D-II

Answer: (B) A-II, B-I, C-IV, D-III · The council's preliminary key

Q51 TS EAMCET 2022 · 18 Jul · Shift 1 MCQ

The pH of pure water at $80\ ^{\circ}\mathrm{C}$ is

(A) 7.0
(B) ∞
(C) > 7.0
(D) < 7.0

Answer: (D) < 7.0 · The council's preliminary key

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Q52 TS EAMCET 2022 · 18 Jul · Shift 2 MCQ

Match the following
List - I: A) Aq. solution of $AlCl_3$; B) Aq. solution of CH_3COONa; C) Aq. solution of KCl; D) Al_2O_3
List - II: I) Basic; II) Acidic; III) Highly conductive; IV) Strongly basic; V) Amphoteric
The correct match is

(A) A-II, B-I, C-III, D-V
(B) A-I, B-III, C-IV, D-V
(C) A-III, B-II, C-I, D-V
(D) A-IV, B-V, C-II, D-I

Answer: (A) A-II, B-I, C-III, D-V · The council's preliminary key

Q53 AP EAPCET 2022 · 8 Jul · Shift 1 MCQ

Statement A :- pH of buffer increases with increasing temperature.
Statement B:- The value of K_W of water decreases with decreasing temperature.

(A) A is correct, but B is wrong.
(B) Both A and B are correct
(C) Both A and B are wrong
(D) A is wrong but B is correct

Answer: (D) A is wrong but B is correct · Checked by our team

Q54 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

A 1.0 L of aqueous solution contains 1×10^{-8} M NaBr, 1×10^{-8} M NaCl and 1×10^{-8} M NaI. To this solution, 1×10^{-10} M aqueous $AgNO_3$ solution is added drop wise. The order of precipitation of Ag X (X = Cl, Br, I) is
(K_{SP} (AgCl) = 1.8×10^{-10}; K_{SP} (AgBr) = 5×10^{-13}; K_{SP} (AgI) = 8.3×10^{-17})

(A) AgBr, AgCl, AgI
(B) AgCl, AgBr, AgI
(C) AgI, AgBr, AgCl
(D) AgBr, AgI, AgCl

Answer: (C) AgI, AgBr, AgCl · The council's preliminary key

Q55 AP EAPCET 2022 · 8 Jul · Shift 2 MCQ

The conjugate base of NH_3 is

(A) NH_4^+
(B) NH_4OH
(C) NH_2^-
(D) NH_2

Answer: (C) NH_2^- · The council's preliminary key

Q56 AP EAPCET 2022 · 7 Jul · Shift 1 MCQ

The conjugate base of NH_4^+ is

(A) NH^{2-}
(B) NH_3
(C) NH_2^-
(D) NH_4OH

Answer: (B) NH_3 · The council's preliminary key

Q57 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

At $25^\circ C$, the solubility product of MCl is 1×10^{-10}. What is its molar solubility in 0.1 M NaCl solution at same temperature?

(A) 0.1 M
(B) 0.05 M
(C) 10^{-9} M
(D) 10^{-5} M

Answer: (C) 10^{-9} M · The council's preliminary key

Q58 AP EAPCET 2022 · 7 Jul · Shift 2 MCQ

The solubility products of NiS, ZnS, CdS and HgS are 4.7×10^{-5}, 1.6×10^{-24}, 8×10^{-27} and 4×10^{-53} respectively. An aqueous solution contains Ni^{2+}, Zn^{2+}, Cd^{2+}, and Hg^{2+} of equal concentration. H_2S gas was passed into this solution very slowly. The first and the last ions that precipitate as sulphides are respectively

(A) Ni^{2+}, Hg^{2+}
(B) Hg^{2+}, Cd^{2+}
(C) Zn^{2+}, Hg^{2+}
(D) Hg^{2+}, Ni^{2+}

Answer: (D) Hg^{2+}, Ni^{2+} · The council's preliminary key

Q59 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

The conjugate base of H_3O^+ is

(A) H_2O
(B) OH^-
(C) H^+
(D) H^-

Answer: (A) H_2O · The council's preliminary key

Q60 AP EAPCET 2022 · 6 Jul · Shift 1 MCQ

A few grams of sodium carbonate is added to 1 L of water. What is the pH or pH range of resultant solution?

(A) $7 - 14$
(B) 7.0
(C) 1.0
(D) $1 - 4$

Answer: (A) $7 - 14$ · The council's preliminary key

Q61 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

Identify the correct statements from the following
a) The ionic product of water at 100°C is $< 10^{-14}$.
b) pH of a solution decreases with increasing temperature.
c) NaH_2PO_4 on hydrolysis gives a basic solution.
d) NH_3 can act both as Bronsted acid and base.

(A) b, c, d
(B) a, b, c
(C) a, c, d
(D) a, b, d

Answer: (A) b, c, d · The council's preliminary key

Q62 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

1 L of 0.02 M aqueous HCl is mixed with 1 L of 0.01 M aqueous H_2SO_4 solution. Assuming complete dissociation and no change in the volume upon mixing, the pH of resultant solution is $(\log_{10} 2 = 0.3)$

(A) 1.7
(B) 2.7
(C) 3.7
(D) 2.0

Answer: (A) 1.7 · The council's preliminary key

Q63 AP EAPCET 2022 · 6 Jul · Shift 2 MCQ

Which of the following behaves as a Lewis acid?

(A) PH_3
(B) BF_3
(C) NMe_3
(D) CO

Answer: (B) BF_3 · The council's preliminary key

Q64 AP EAPCET 2022 · 5 Jul · Shift 2 MCQ

The K_a values of A, B and C are 1.8×10^{-4}, 5×10^{-10} and 3×10^{-8} respectively. The correct order of their acidic strength is

(A) $B > A > C$
(B) $B > C > A$
(C) $A > B > C$
(D) $A > C > B$

Answer: (D) $A > C > B$ · The council's preliminary key

Q65 AP EAPCET 2022 · 4 Jul · Shift 1 MCQ

Equal volumes of 0.5 N acetic acid and 0.5 N sodium acetate are mixed. What is the pH of resultant solution? (pK_a of acetic acid = 4.75)

(A) 4.85
(B) 4.65
(C) 4.75
(D) 7.0

Answer: (C) 4.75 · The council's preliminary key

Q66 AP EAPCET 2022 · 4 Jul · Shift 2 MCQ

The pH of 0.01 N lime water is

(A) 13.09
(B) 10
(C) 12
(D) 9.8

Answer: (C) 12 · The council's preliminary key

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Q67 AP EAPCET 2021 · 5 Oct · Shift 1 MCQ

Match the following?

Salt | K_{sp} | Solubility

A) Ag_2CrO_4 | I) 5.3×10^{-17} | P) 1.34×10^{-5}

B) $AgCl$ | II) 5×10^{-13} | Q) 0.65×10^{-4}

C) $AgBr$ | III) 1.1×10^{-12} | R) 0.90×10^{-8}

D) AgI | IV) 1.8×10^{-10} | S) 0.71×10^{-6}

(A) (a-iii-q), (b-iv-p), (c-ii-s), (d-i-r)

(B) (a-ii-p), (b-iii-r), (c-i-q), (d-iv-s)

(C) (a-iv-s), (b-i-q), (c-iii-r), (d-ii-p)

(D) (a-i-r), (b-ii-s), (c-iv-p), (d-iii-q)

Answer: (A) (a-iii-q), (b-iv-p), (c-ii-s), (d-i-r) · The council's preliminary key

Q68 AP EAPCET 2021 · 25 Aug · Shift 1 MCQ

Which of the following species acts as both Bronsted acid and base?

(A) OH^-

(B) NH_3

(C) $NaCl$

(D) HSO_4^-

Answer: (D) HSO_4^- · The council's preliminary key

Q69 AP EAPCET 2021 · 25 Aug · Shift 2 MCQ

If the molar solubility (in $mol.L^{-1}$) of a sparingly soluble salt AB_4 is 'S', and the corresponding solubility product is 'K_{sp}', then S in terms of K_{sp} is given by the relation _____

(A) $S = \left(\frac{K_{sp}}{128}\right)^{1/4}$

(B) $S = \left(\frac{K_{sp}}{256}\right)^{1/5}$

(C) $S = (256\,K_{sp})^{1/5}$

(D) $S = (128\,K_{sp})^{1/4}$

Answer: (B) $S = \left(\frac{K_{sp}}{256}\right)^{1/5}$ · The council's preliminary key

Q70 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

Which among the following pairs constitute a buffer?

(A) LiOH & LiCl
(B) $\mathrm{HNO_3}$ & $\mathrm{NH_4NO_3}$
(C) $\mathrm{HNO_2}$ & $\mathrm{NaNO_2}$
(D) HBr & KBr

Answer: (C) $\mathrm{HNO_2}$ & $\mathrm{NaNO_2}$ · The council's preliminary key

Q71 AP EAPCET 2021 · 24 Aug · Shift 1 MCQ

If the solubility of $\mathrm{Ag_2CO_3}$ in its saturated solution is $1.20 \times 10^{-4}\ \mathrm{mol.L^{-1}}$, then find the solubility product of $\mathrm{Ag_2CO_3}$.

(A) 5.30×10^{-12}
(B) 4.50×10^{-11}
(C) 2.66×10^{-12}
(D) 6.90×10^{-12}

Answer: (D) 6.90×10^{-12} · The council's preliminary key

Q72 AP EAPCET 2021 · 23 Aug · Shift 1 MCQ

Which of the following gas the highest pH at $25\ ^\circ\mathrm{C}$?

(A) distilled $\mathrm{H_2O}$
(B) $1\ M$ aq $\mathrm{NH_3}$
(C) $1\ M$ NaOH
(D) $1M$ HCl

Answer: (C) $1\ M$ NaOH · The council's preliminary key

Q73 AP EAPCET 2021 · 23 Aug · Shift 2 MCQ

Strongest conjugate base is _____

(A) Cl^-
(B) Br^-
(C) I^-
(D) F^-

Answer: (D) F^- · The council's preliminary key

Q74 AP EAPCET 2021 · 20 Aug · Shift 1 MCQ

The solubility of $AgBr_{(s)}$, having solubility product 5×10^{-10} in $0.2\ M\ NaBr$ solution, equals

(A) $5 \times 10^{-10}\ M$

(B) $25 \times 10^{-10}\ M$

(C) $0.5\ M$

(D) $0.002\ M$

Answer: (B) $25 \times 10^{-10}\ M$ · The council's preliminary key

Q75 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

Match the following?

Species | Conjugate acid

A) NH_3

B) HCO_3^-

C) H_2O

D) HSO_4^-

I) H_2CO_3

II) H_3O^+

III) NH_4^+

IV) H_2SO_4

(A) A-III, B-I, C-II, D-IV

(B) A-I, B-III, C-II, D-IV

(C) A-III, B-II, C-I, D-IV

(D) A-III, B-II, C-IV, D-I

Answer: (A) A-III, B-I, C-II, D-IV · The council's preliminary key

Q76 AP EAPCET 2021 · 20 Aug · Shift 2 MCQ

The pH of 0.1 M solution of acetic acid will be ____ [degree of dissociation of acetic acid is 0.0132]

(A) 4.32

(B) 3.14

(C) 1.14

(D) 2.88

Answer: (D) 2.88 · The council's preliminary key

Q77 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

Calculate the $p\mathrm{OH}$ of $0.10\ M$ HCl solution.

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(A) 13
(B) 1
(C) 7
(D) 14

Answer: (A) 13 · The council's preliminary key

Q78 AP EAPCET 2021 · 19 Aug · Shift 2 MCQ

Which among the following pairs is not an acidic buffer?

(A) $HCOOH$ & $HCOOK$
(B) $HClO_4$ & $NaClO_4$
(C) C_6H_5COOH & C_6H_5COONa
(D) HCN & KCN

Answer: (B) $HClO_4$ & $NaClO_4$ · The council's preliminary key

Q79 TS EAMCET 2021 · 6 Aug · Shift 1 MCQ

The successive equilibrium constants for the stepwise dissociation of a tribasic acid are K_1, K_2 and K_3, respectively. The equilibrium constant for the overall dissociation is

(A) $(K_1 + K_2 + K_3)$
(B) $\sqrt[3]{(K_1 + K_2 + K_3)}$
(C) $(K_1 \times K_2 \times K_3)^3$
(D) $K_1 \times K_2 \times K_3$

Answer: (D) $K_1 \times K_2 \times K_3$ · The council's preliminary key

Q80 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

Match the following
List-1 (Acid)
A) HCN
B) $H_2C_2O_4$
C) H_2S
D) Niacin
List-2 (Ka (ionization constant))
I) 6.8×10^{-4}
II) 8.9×10^{-8}
III) 4.9×10^{-10}
IV) 5.6×10^{-2}
V) 1.5×10^{-5}
The correct match is

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(A) A-I, B-III, C-IV, D-V
(B) A-V, B-II, C-III, D-IV
(C) A-II, B-III, C-IV, D-V
(D) A-III, B-IV, C-II, D-V

Answer: (D) A-III, B-IV, C-II, D-V · The council's preliminary key

Q81 TS EAMCET 2021 · 4 Aug · Shift 1 MCQ

If the molar concentrations of base and its conjugate acid are same, then pOH of the buffer solution is

(A) same as $\mathrm{pK_b}$ of base
(B) same as $\mathrm{pK_a}$ of base
(C) same as $\mathrm{pK_a}$ of acid
(D) same as $\mathrm{pK_b}$ of acid

Answer: (A) same as $\mathrm{pK_b}$ of base · The council's preliminary key

Q82 TS EAMCET 2021 · 4 Aug · Shift 2 MCQ

The degree of dissociation of 0.1 M acid HA is 5 %. The value of K_c of HA is

(A) 1.3×10^{-4}
(B) 2.6×10^{-3}
(C) 2.6×10^{-4}
(D) 1.3×10^{-2}

Answer: (C) 2.6×10^{-4} · The council's preliminary key

Q83 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

The concentration of hydrogen ion in a sample solution is $4.7 \times 10^{-4} M$. Find its pH.

(A) 2.32
(B) 3.33
(C) 4.70
(D) 0.047

Answer: (B) 3.33 · The council's preliminary key

Q84 AP EAMCET 2020 · 7 Oct · Shift 1 MCQ

The correct decreasing order of basic strength of $\mathrm{H_2O}$, $\mathrm{NH_3}$, $\mathrm{OH^-}$, $\mathrm{NH_2^-}$ is

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(A) $H_2O < NH_3 < OH^- < NH_2^-$
(B) $OH^- > NH_2^- > H_2O > NH_3$
(C) $NH_3 > H_2O > NH_2^- > OH^-$
(D) $NH_3 > H_2O > OH^- > NH_2^-$

Answer: (A) $H_2O < NH_3 < OH^- < NH_2^-$ · The council's preliminary key

Q85 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

For the species HSO_4^- and NH_3 their conjugative acids respectively are

(A) SO_4^{2-} & NH_4^+
(B) SO_4^{2-} & NH_2^-
(C) H_2SO_4 & NH_4^+
(D) H_2SO_4 & NH_2^-

Answer: (C) H_2SO_4 & NH_4^+ · The council's preliminary key

Q86 AP EAMCET 2020 · 22 Sep · Shift 1 MCQ

K_{sp} for $CaSO_4$ is 9×10^{-6}. The minimum volume of water needed to dissolve 1g of $CaSO_4$ at 298 K temperature is _____

(A) 3.50 L
(B) 4.25 L
(C) 1.75 L
(D) 2.45 L

Answer: (D) 2.45 L · The council's preliminary key

Q87 AP EAMCET 2020 · 22 Sep · Shift 2 MCQ

Weak acids are partially ionized in aqueous solutions. The ionization constants of some acids are given below. Arrange these acids in increasing order of their acid strength

Index | Acid | Ionisation constant (K_a)
1 | Formic acid ($HCOOH$) | 1.8×10^{-4}
2 | Hypochlorous acid ($HClO$) | 3.0×10^{-8}
3 | Nitrous acid (HNO_2) | 4.5×10^{-4}
4 | Hydrocyanic acid (HCN) | 4.9×10^{-10}

(A) $4 < 2 < 1 < 3$
(B) $1 < 2 < 3 < 4$
(C) $2 < 3 < 1 < 4$
(D) $4 < 3 < 2 < 1$

Answer: (A) $4 < 2 < 1 < 3$ · The council's preliminary key

Q88 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

The solubility of AgBr with solubility product 5.0×10^{-13} at 298 K in 0.1 M NaBr solution would be _____

(A) $7 \times 10^{-6}\ M$
(B) $5 \times 10^{-12}\ M$
(C) $5 \times 10^{-14}\ M$
(D) $5 \times 10^{-6}\ M$

Answer: (B) $5 \times 10^{-12}\ M$ · The council's preliminary key

Q89 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

The pH of $10^{-8}\ M$ HCl solution is

(A) 8
(B) -8
(C) Between $7 - 8$
(D) Between $6 - 7$

Answer: (D) Between $6 - 7$ · The council's preliminary key

Q90 AP EAMCET 2020 · 21 Sep · Shift 1 MCQ

The ionic product of water _____ , with increase in temperature.

(A) Remains constant
(B) Increases
(C) Decreases
(D) May increase or decrease

Answer: (B) Increases · The council's preliminary key

Q91 AP EAMCET 2020 · 21 Sep · Shift 2 MCQ

Calculate the molar ratio of a weak acid HA ($K_a = 10^{-6}$) and its salt with strong base so that the pH of buffer solution is 6.

(A) 10
(B) 1
(C) 6
(D) 0.1

Answer: (B) 1 · The council's preliminary key

Q92 AP EAMCET 2020 · 18 Sep · Shift 1 MCQ

Strongest conjugate base among the following is

(A) Cl^-
(B) F^-
(C) Br^-
(D) I^-

Answer: (B) F^- · The council's preliminary key

Q93 AP EAMCET 2020 · 18 Sep · Shift 2 MCQ

The pK_a of a weak acid, benzoic acid and pK_b of a weak base, ammonium hydroxide are 4.25 and 4.75 respectively. Then, the pH of 0.1 M solution of ammonium benzoate will be _____

(A) 7.10
(B) 7.50
(C) 6.75
(D) 6.50

Answer: (C) 6.75 · The council's preliminary key

Q94 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

The solubility product of $\mathrm{Ni(OH)_2}$ at 298 K is 2×10^{-15} $\mathrm{mol^3.dm^{-9}}$. The pH value if its aqueous and saturated solution is

(A) 5
(B) 7.5
(C) 9
(D) 13

Answer: (C) 9 · The council's preliminary key

Q95 AP EAMCET 2020 · 17 Sep · Shift 1 MCQ

Acidity of BF_3 can be explained on the basis of which of the following concepts?

(A) Arrhenius concept
(B) Bronsted Lowry concept
(C) Lewis concept
(D) Bronsted Lowry as well as Lewis concept.

Answer: (C) Lewis concept · The council's preliminary key

Q96 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

When equal volumes of $\mathrm{Ca^{+2}}$ and $\mathrm{F^-}$ solutions are mixed, in which of the solutions precipitation will not occur? (K_{sp} of $\mathrm{CaF_2}$ = 1.6×10^{-10})

(A) 10^{-2} M Ca^{+2} + 10^{-5} M F^{-}
(B) 10^{-3} M Ca^{+2} + 10^{-3} M F^{-}
(C) 10^{-4} M Ca^{+2} + 10^{-2} M F^{-}
(D) 10^{-2} M Ca^{+2} + 10^{-3} M F^{-}

Options (1) or (2) were accepted. More than one answer was accepted. · The council's preliminary key

Q97 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

Which of the following will have the highest pH?

(A) Saturated solution of $NaOH$
(B) 1 M HCl solution
(C) Human saliva
(D) Lemon juice

Answer: (A) Saturated solution of $NaOH$ · The council's preliminary key

Q98 AP EAMCET 2020 · 17 Sep · Shift 2 MCQ

The solubility of A_2X_3 is 'y' M. Its solubility product is _____

(A) $6y^4$
(B) $64y^4$
(C) $36y^5$
(D) $108y^5$

Answer: (D) $108y^5$ · The council's preliminary key

Q99 TS EAMCET 2020 · 14 Sep · Shift 1 MCQ

pH of 0.05M aqueous solution of diethyl amine is 10. The value of equilibrium constant is

(A) 4×10^{-7}
(B) 2×10^{-7}
(C) 2×10^{-3}
(D) 4×10^{-3}

Answer: (B) 2×10^{-7} · Official TGCHE final key

Q100 TS EAMCET 2020 · 11 Sep · Shift 1 MCQ

What is the pH of 10 L of a buffer solution containing 0.01 M NH_4Cl and 0.1 M NH_4OH having pK_b of 5?

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(A) 8
(B) 7
(C) 10
(D) 5

Answer: (C) 10 · Official TGCHE final key

Q101 TS EAMCET 2020 · 11 Sep · Shift 2 MCQ

The pH of the solution, when
A) (i) Sodium acetate is dissolved in water
B) (ii) Ammonium chloride is dissolved in water

(A) (i) pH $>$ 7; (ii) pH $<$ 7
(B) (i) pH = 7; (ii) pH = 0
(C) (i) pH $>$ 7; (ii) pH $>$ 7
(D) (i) pH $<$ 7; (ii) pH $>$ 7

Answer: (A) (i) pH $>$ 7; (ii) pH $<$ 7 · Official TGCHE final key

Q102 TS EAMCET 2020 · 10 Sep · Shift 2 MCQ

Calculate the molar solubility of calcium hydroxide $\mathrm{Ca(OH)_2}$ in 0.10 M NaOH solution. The ionic product of calcium hydroxide is 5.5×10^{-6}.

(A) 11×10^{-6}
(B) 1
(C) 5.5×10^{-4}
(D) 5.5

Answer: (C) 5.5×10^{-4} · Official TGCHE final key

Q103 TS EAMCET 2020 · 9 Sep · Shift 1 MCQ

At 25 °C, the ionization constant for anilinium hydroxide is 5.00×10^{-10}. The hydrolysis constant of anilinium chloride is

(A) 2.00×10^{-5}
(B) 4.00×10^{-3}
(C) 1.50×10^{-6}
(D) 2.50×10^{-4}

Answer: (A) 2.00×10^{-5} · Official TGCHE final key

Q104 TS EAMCET 2020 · 9 Sep · Shift 2 MCQ

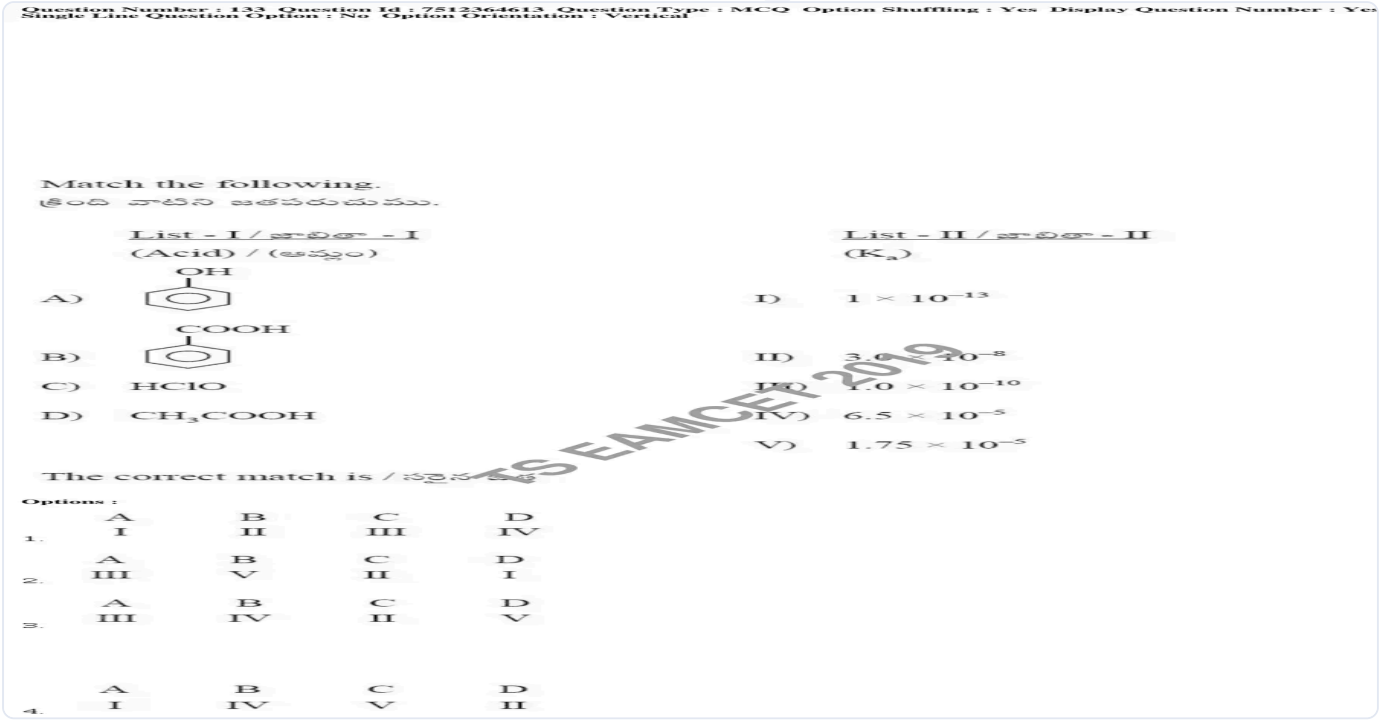
What is the pH of a 10^{-8}M solution of HCl?

(A) 7.1
(B) 8.0
(C) 5.8
(D) 6.9

Answer: (D) 6.9 · Official TGCHE final key

Q105 TS EAMCET 2019 · 4 May · Shift 1 MCQ

Match the following.
List - I (Acid)
A) *(see the figure above)* phenol (benzene ring with OH)
B) *(see the figure above)* benzoic acid (benzene ring with COOH)
C) HClO
D) $\mathrm{CH_3COOH}$
List - II (K_a)
I) 1×10^{-13}
II) 3.0×10^{-8}
III) 1.0×10^{-10}
IV) 6.5×10^{-5}
V) 1.75×10^{-5}
The correct match is


Question Number : 133 Question Id : 7513364613 Question Type : MCQ Option Shuffling : Yes Display Question Number : Yes Single Line Question Option : No Option Orientation : Vertical

Match the following.

List - I / జాబితా - I
(Acid) / (ఆమ్లం)

A)
B)
C) HClO
D) CH_3COOH

List - II / జాబితా - II
(K_a)

I) 1×10^{-13}
II) 3.0×10^{-8}
III) 1.0×10^{-10}
IV) 6.5×10^{-5}
V) 1.75×10^{-5}

The correct match is / సరైన జత

TS EAMCET 2019

Options :

	A	B	C	D
1.	I	II	III	IV
2.	III	V	II	I
3.	III	IV	II	V
4.	I	IV	V	II

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(A) A-I, B-II, C-III, D-IV
(B) A-III, B-V, C-II, D-I
(C) A-III, B-IV, C-II, D-V
(D) A-I, B-IV, C-V, D-II

Answer: (C) A-III, B-IV, C-II, D-V · Official TGCHE final key

Q106 TS EAMCET 2019 · 4 May · Shift 2 MCQ

The concentration in M of OH^- in 0.001 M H_2SO_4 is

(A) 1×10^{-13}
(B) 0.5×10^{-12}
(C) 5×10^{-12}
(D) 0.5×10^{-13}

Answer: (C) 5×10^{-12} · Official TGCHE final key

Q107 TS EAMCET 2019 · 3 May · Shift 1 MCQ

What is the solubility product (K_{sp}) of calcium phosphate in pure water? [S = molar solubility]

(A) $108\,S^5$
(B) $72\,S^3$
(C) $6\,S^5$
(D) $121\,S^2$

Answer: (A) $108\,S^5$ · Official TGCHE final key

Q108 TS EAMCET 2019 · 3 May · Shift 2 MCQ

A solution of 0.1 mole of CH_3NH_2 ($K_b = 5 \times 10^{-4}$) and 0.08 mole of HCl is diluted to one litre, then the pOH of the solution is ($\log 1.25 = 0.1$)

(A) 10.1
(B) 3.9
(C) 4.9
(D) 9.9

Answer: (B) 3.9 · Official TGCHE final key

Q109 AP EAMCET 2019 · 23 Apr · Shift 1 MCQ

If the pH of a buffer solution containing 0.1 M of monoacidic base and 0.01 M of its salt is 10.5, the pK_a of conjugate acid is

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(A) 9.5
(B) 4.5
(C) 3.5
(D) 11.5

Answer: (A) 9.5 · Official APSCHE final key

Q110 AP EAMCET 2019 · 22 Apr · Shift 1 MCQ

At $\mathrm{T(K)}$, if the ionization constant of ammonia in solution is 2.5×10^{-5}, the pH of $0.01\ \mathrm{M}$ ammonia solution and the ionization constant of its conjugate acid respectively at that temperature are ($\log 2 = 0.30$)

(A) $10.7,\ 4.0 \times 10^{-8}$
(B) $10.7,\ 4.0 \times 10^{-10}$
(C) $3.3,\ 4.0 \times 10^{-8}$
(D) $3.3,\ 4.0 \times 10^{-10}$

Answer: (B) $10.7,\ 4.0 \times 10^{-10}$ · Official APSCHE final key

Q111 AP EAMCET 2019 · 22 Apr · Shift 2 MCQ

20 mL of 0.2 M sodium hydroxide solution is added to 40 mL of 0.2 M acetic acid solution. What is the pH of the solution? (pKa of $\mathrm{CH_3COOH}$ = 4.8)

(A) 9.2
(B) 4.8
(C) 8.4
(D) 2.9

Answer: (B) 4.8 · Official APSCHE final key

Q112 AP EAMCET 2019 · 21 Apr · Shift 1 MCQ

The solubility product of a sparingly soluble salt $\mathrm{A_2B}$ is 3.2×10^{-11}. Its solubility in $\mathrm{mol\,L^{-1}}$ is

(A) 4×10^{-4}
(B) 2×10^{-4}
(C) 6×10^{-4}
(D) 3×10^{-4}

Answer: (B) 2×10^{-4} · Official APSCHE final key

Q113 AP EAMCET 2019 · 21 Apr · Shift 2 MCQ

50 mL of 0.02 M NaOH solution is mixed with 50 mL of 0.06 M acetic acid solution, the pH of resulting solution is
(pKa of acetic acid is 4.76, log 5 = 0.70)

(A) 5.06
(B) 4.06
(C) 5.46
(D) 4.46

Answer: (D) 4.46 · Official APSCHE final key

Q114 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

In which of the following, the solubility of AgCl will be minimum?

(A) 0.1 M KNO_3
(B) 0.1 M KCl
(C) 0.2 M KNO_3
(D) Water

Answer: (B) 0.1 M KCl · Official APSCHE final key

Q115 AP EAMCET 2019 · 20 Apr · Shift 1 MCQ

The number of species of the following that can act both as Bronsted acids and bases is
$HCl,\ ClO_4^-,\ {}^-OH,\ H^+,\ H_2O,\ HSO_4^-,\ SO_4^{2-},\ H_2SO_4,\ Cl^-$

(A) 4
(B) 3
(C) 1
(D) 2

Options (2) or (4) were accepted. More than one answer was accepted. · Official APSCHE final key

Q116 AP EAMCET 2019 · 20 Apr · Shift 2 MCQ

A buffer solution is prepared by mixing 10 mL of 1.0 M acetic acid and 20 mL of 0.5 M sodium acetate and then diluted to 100 mL with distilled water. The pH of the buffer solution is (pK_a of acetic acid is 4.76)

(A) 4.84
(B) 5.21
(C) 4.34
(D) 4.76

Answer: (D) 4.76 · Official APSCHE final key

Q117 TS EAMCET 2018 · 7 May · Shift 1 MCQ

What is the pH of acetic acid at equilibrium, given that acetic acid concentration is 0.1 M and it is 30% dissociated at equilibrium. (log 3 = 0.47)

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(A) 2.00
(B) 1.53
(C) 3.53
(D) 3.00

Answer: (B) 1.53 · The council's preliminary key

Q118 TS EAMCET 2018 · 5 May · Shift 1 MCQ

If the solubility product of $\mathrm{Ni(OH)_2}$ is 4.0×10^{-15}, the solubility (in $\mathrm{mol\ L^{-1}}$) is

(A) 5.0×10^{-5}
(B) 4.0×10^{-5}
(C) 2.0×10^{-5}
(D) 1.0×10^{-5}

Answer: (D) 1.0×10^{-5} · The council's preliminary key

Q119 TS EAMCET 2018 · 5 May · Shift 2 MCQ

Which of the following compounds give basic solution on hydrolysis?
a) $\mathrm{NH_4Cl}$
b) $\mathrm{K_2CO_3}$
c) $\mathrm{Na_2B_4O_7 \cdot 10H_2O}$
d) NaCl

(A) a, b, c
(B) b, c
(C) b, c, d
(D) c, d

Answer: (B) b, c · The council's preliminary key

Q120 TS EAMCET 2018 · 4 May · Shift 1 MCQ

The degree of dissociation of 0.1 N $\mathrm{CH_3COOH}$ is (given $K_a = 1 \times 10^{-5}$) approximately

(A) 1×10^{-6}
(B) 1×10^{-7}
(C) 1×10^{-3}
(D) 1×10^{-2}

Answer: (D) 1×10^{-2} · The council's preliminary key

Q121 TS EAMCET 2018 · 4 May · Shift 2 MCQ

Estimate the approximate $\mathrm{pK_a}$ of 0.5 M $\mathrm{CH_3COOH}$. Degree of dissociation (ionization) is 0.15. $(\log 1.32 = 0.12)$

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(A) 2.0
(B) 1.5
(C) 1.88
(D) 0.15

Answer: (C) 1.88 · The council's preliminary key

Q122 AP EAMCET 2018 · 24 Apr · Shift 1 MCQ

If the pH of 0.10 M monobasic acid at 298 K is 5.0, the value of $\mathrm{pK_a}$ at the same temperature is

(A) 5.0
(B) 8.0
(C) 9.0
(D) 6.0

Answer: (C) 9.0 · The council's preliminary key

Q123 AP EAMCET 2018 · 24 Apr · Shift 2 MCQ

If the pH of $0.10\ \mathrm{M}$ monoacidic base at 298 K is 9.0, the value of K_b and pK_b at the same temperature are respectively

(A) 1.0×10^{-9}, 9.0
(B) 1.0×10^{-5}, 5.0
(C) 1.0×10^{-10}, 10.0
(D) 1.0×10^{-4}, 4.0

Answer: (A) 1.0×10^{-9}, 9.0 · The council's preliminary key

Q124 AP EAMCET 2018 · 23 Apr · Shift 1 MCQ

Arrange the aqueous solutions of the following salts in the increasing order of pH
I) $\mathrm{CuSO_4}$
II) NaCN
III) KCl

(A) I < II < III
(B) I < III < II
(C) III < II < I
(D) II < III < I

Answer: (B) I < III < II · The council's preliminary key

Q125 AP EAMCET 2018 · 23 Apr · Shift 2 MCQ

If the ionization constant of hypochlorous acid (HOCl) is 2.5×10^{-5}, the pH of 1.0 M of its solution is ($\log 5 = 0.7$)

(A) 3.3
(B) 2.3
(C) 4.3
(D) 3.0

Answer: (B) 2.3 · The council's preliminary key

Q126 AP EAMCET 2018 · 22 Apr · Shift 1 MCQ

If the $\mathrm{pK_a}$ of acetic acid and $\mathrm{pK_b}$ of dimethylamine are 4.76 and 3.26 respectively, the pH of dimethyl ammonium acetate solution is

(A) 7.75
(B) 6.75
(C) 7.0
(D) 8.5

Answer: (A) 7.75 · The council's preliminary key

Q127 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

The pH of a buffer solution formed by mixing 30 mL of 0.1 M $\mathrm{NH_4OH}$ and 30 mL of 1 M $\mathrm{NH_4Cl}$ solutions is 8.6. The $\mathrm{pK_b}$ of $\mathrm{NH_4OH}$ is

(A) 5.4
(B) 4.4
(C) 5.6
(D) 4.2

Answer: (B) 4.4 · The council's preliminary key

Q128 AP EAMCET 2018 · 22 Apr · Shift 2 MCQ

The solubility products of three sparingly soluble salts AB, $\mathrm{A_2B}$ and $\mathrm{AB_3}$ are respectively 4.0×10^{-20}, 3.2×10^{-11} and 2.7×10^{-31}. The increasing order of their solubility is

(A) $\mathrm{AB} < \mathrm{AB_3} < \mathrm{A_2B}$
(B) $\mathrm{AB_3} < \mathrm{AB} < \mathrm{A_2B}$
(C) $\mathrm{A_2B} < \mathrm{AB_3} < \mathrm{AB}$
(D) $\mathrm{A_2B} < \mathrm{AB} < \mathrm{AB_3}$

Answer: (A) $\mathrm{AB} < \mathrm{AB_3} < \mathrm{A_2B}$ · The council's preliminary key

Q129 AP EAMCET 2017 · 25 Apr · Shift 1 MCQ

A solution which is 10^{-3} M each in $\mathrm{Mn^{2+}}$, $\mathrm{Fe^{2+}}$, $\mathrm{Zn^{2+}}$ and $\mathrm{Hg^{2+}}$ is treated with 10^{-16} M sulphide ion. If the K_{sp} of MnS, FeS, ZnS and HgS are 10^{-15}, 10^{-23}, 10^{-20} and 10^{-54} respectively, which one will precipitate first?

(A) FeS
(B) MnS
(C) HgS
(D) ZnS

Answer: (C) HgS · The council's preliminary key

Q130 AP EAMCET 2017 · 25 Apr · Shift 2 MCQ

The solubility 'S' of $Zr_3(PO_4)_4$ in terms of its solubility product, K_{sp} is

(A) $\left(\frac{K_{sp}}{144}\right)^{1/4}$
(B) $\left(\frac{K_{sp}}{6912}\right)^{1/5}$
(C) $\left(\frac{K_{sp}}{1728}\right)^{1/6}$
(D) $\left(\frac{K_{sp}}{6912}\right)^{1/7}$

Answer: (D) $\left(\frac{K_{sp}}{6912}\right)^{1/7}$ · The council's preliminary key

Q131 AP EAMCET 2017 · 24 Apr · Shift 1 MCQ

When 200 mL solution of HCl of pH = 2 is mixed with 300 mL solution of NaOH of pH = 12, the pH of resulting solution is $(\log 2 = 0.3)$

(A) 2.7
(B) 11.3
(C) 12
(D) 8

Answer: (B) 11.3 · The council's preliminary key

Q132 AP EAMCET 2017 · 24 Apr · Shift 2 MCQ

The pH of a buffer solution obtained by mixing 50 mL of 0.1 M NH_4OH and 25 mL of 2.0 M NH_4Cl is (pK_b is 4.8)

(A) 5.8
(B) 9.2
(C) 8.2
(D) 4.8

Answer: (C) 8.2 · The council's preliminary key

Q133 TS EAMCET 2016 · 15 May · Offline MCQ

pH of an aqueous solution of NH_4Cl is

(A) 7
(B) > 7
(C) < 7
(D) 1

Answer: (C) < 7 · Official TGCHE final key

Q134 AP EAMCET 2016 · 29 Apr · Offline MCQ

In which of the following salts only cationic hydrolysis is involved?

(A) CH_3COONH_4
(B) CH_3COONa
(C) NH_4Cl
(D) Na_2SO_4

Answer: (C) NH_4Cl · The council's preliminary key

Q135 AP EAMCET 2014 · 22 May · Offline MCQ

If the ionic product of $Ni(OH)_2$ is 1.9×10^{-15}, the molar solubility of $Ni(OH)_2$ in 1.0 M NaOH is

(A) 1.9×10^{-18} M
(B) 1.9×10^{-13} M
(C) 1.9×10^{-15} M
(D) 1.9×10^{-14} M

Answer: (C) 1.9×10^{-15} M · The council's preliminary key

Q136 AP EAMCET 2013 · 10 May · Offline MCQ

The degree of ionization of 0.10 M lactic acid is 4.0%
(see the figure above)
The value of K_c is

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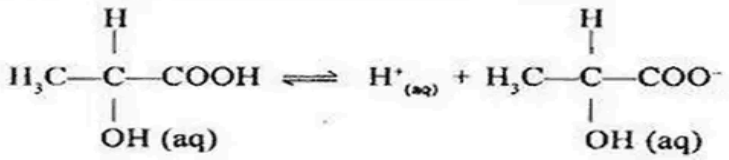
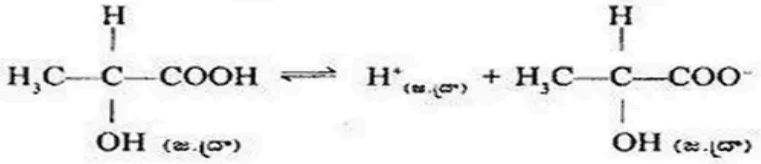
134. The degree of ionization of 0.10 M lactic acid is 4.0%



0.10 M లాక్టిక్ ఆమ్లం అయనీకరణ అవధి 4.0%



The value of K_c is

K_c విలువ

(1) 1.66×10^{-5} (2) 1.66×10^{-4}

(3) 1.66×10^{-3} (4) 1.66×10^{-2}

(A) 1.66×10^{-5}

(B) 1.66×10^{-4}

(C) 1.66×10^{-3}

(D) 1.66×10^{-2}

Answer: (B) 1.66×10^{-4} · The council's preliminary key

Q137 AP EAMCET 2013 · 10 May · Offline MCQ

The pH of a buffer solution made by mixing 25 ml of 0.02 M NH_4OH and 25 ml of 0.2 M NH_4Cl at $25^\circ C$ is : (pK_b of NH_4OH = 4.8)

(A) 5.8

(B) 8.2

(C) 4.8

(D) 3.8

Answer: (B) 8.2 · The council's preliminary key

Q138 AP EAMCET 2012 · 12 May · Offline MCQ

Which one of the following statements is NOT correct ?

(A) The pH of 1.0×10^{-8} M HCl is less than 7.

(B) The ionic product of water at 25°C is $1.0 \times 10^{-14}\ mol^2\ L^{-2}$.

(C) Cl^- is a Lewis acid.

(D) Bronsted-Lowry theory cannot explain the acidic character of $AlCl_3$.

Answer: (C) Cl^- **is a Lewis acid.** · Official APSCHE final key

Q139 AP EAMCET 2011 · 8 May · Offline MCQ

The order of pH of 0.200 M solutions of NH_4NO_3, $NaNO_3$ and Na_2CO_3 is :

(A) $NH_4NO_3 < Na_2CO_3 < NaNO_3$
(B) $NH_4NO_3 < NaNO_3 < Na_2CO_3$
(C) $Na_2CO_3 < NaNO_3 < NH_4NO_3$
(D) $NaNO_3 < NH_4NO_3 < Na_2CO_3$

Answer: (B) $NH_4NO_3 < NaNO_3 < Na_2CO_3$ · The council's preliminary key

Q140 AP EAMCET 2010 · 30 May · Offline MCQ

The pH of 0.01 M solution of acetic acid is 5.0. What are the values of $[H^+]$ and K_a respectively ?

(A) 1×10^{-5} M, 1×10^{-8}
(B) 1×10^{-5} M, 1×10^{-9}
(C) 1×10^{-4} M, 1×10^{-8}
(D) 1×10^{-3} M, 1×10^{-8}

Answer: (A) 1×10^{-5} M, 1×10^{-8} · Official APSCHE final key

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