

Equilibrium

NEET previous year questions · Chemistry

8 questions from the official papers: NEET 2026 (4), Re-NEET 2026 (1), NEET 2020 (3). Each is followed by its answer and a worked solution written by BrainIt. Generated on 23 October 2026.



BrainIt

The NEET practice app that learns how you practise and tells you what to do next.

PYQs · Mock tests · Revision · Interactive 3D concepts · Analytics

Get it on
Google Play

Download on the
App Store



brainit.pro/app

1. NEET 2026 · Q50

In a qualitative analysis, Bi^{3+} is detected by appearance of precipitate of $\text{BiO}(\text{OH})(s)$. Calculate pH when the following equilibrium exists at 298 K. $\text{BiO}(\text{OH})(s) \rightleftharpoons \text{BiO}^+(\text{aq}) + \text{OH}^-(\text{aq})$, $K = 4 \times 10^{-10}$. (Given: $\log 2 = 0.3010$)

- (1) 8.714 (2) 4.699 (3) 5.286 (4) 9.301

Answer (4)

Sol. For the dissolution, $K = s^2$ since a solid gives equal amounts of BiO^+ and OH^- . So $s = \sqrt{4 \times 10^{-10}} = 2 \times 10^{-5} \text{ M} = [\text{OH}^-]$. Then $\text{pOH} = 5 - \log 2 = 4.699$ and $\text{pH} = 14 - 4.699 = 9.301$.

2. NEET 2026 · Q78

At 298 K, a certain buffer solution contains equal concentrations of X^- and HX , K_b for X^- is 10^{-10} . What is the pH of this buffer solution?

- (1) 2 (2) 4 (3) 6 (4) 10

Answer (2)

Sol. For the conjugate pair, $K_a(\text{HX}) = \frac{K_w}{K_b} = \frac{10^{-14}}{10^{-10}} = 10^{-4}$, so $\text{pK}_a = 4$. Using Henderson-Hasselbalch, $\text{pH} = \text{pK}_a + \log \frac{[X^-]}{[\text{HX}]}$; since $[X^-] = [\text{HX}]$, the log term is zero, giving $\text{pH} = 4$.

3. NEET 2026 · Q83

Phenolphthalein is used as an indicator for the titration of sodium hydroxide solution against a standard solution of oxalic acid. The colour change that is observed at an alkaline pH close to the equivalence point during this titration is:

- (1) pinkish red to yellow (2) yellow to pinkish red
(3) pink to colourless (4) colourless to pink

Answer (4)

Sol. Phenolphthalein is colourless in acidic medium and turns pink in basic medium. As the solution shifts from acidic toward alkaline near the equivalence

point, the observed change is colourless to pink (4). Options mentioning yellow refer to methyl orange, not phenolphthalein.

4. NEET 2026 · Q87

Given below are certain reactions. Identify the reaction for which $K_P \neq K_C$.

- (1) $\text{H}_2\text{O}(\text{g}) + \text{CO}(\text{g}) \rightleftharpoons \text{H}_2(\text{g}) + \text{CO}_2(\text{g})$
(2) $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g})$
(3) $\text{H}_2(\text{g}) + \text{I}_2(\text{g}) \rightleftharpoons 2\text{HI}(\text{g})$
(4) $\text{N}_2(\text{g}) + \text{O}_2(\text{g}) \rightleftharpoons 2\text{NO}(\text{g})$

Answer (2)

Sol. Since $K_P = K_C(RT)^{\Delta n_g}$, the two are equal only when $\Delta n_g = 0$. For $\text{N}_2 + 3\text{H}_2 \rightleftharpoons 2\text{NH}_3$, $\Delta n_g = 2 - 4 = -2 \neq 0$, so $K_P \neq K_C$ (2). The other three reactions have equal moles of gas on both sides ($\Delta n_g = 0$), giving $K_P = K_C$.

5. Re-NEET 2026 · Q52

The correct order of solubility of the given salts in water at 298 K is (Given K_{sp} at 298 K: $\text{AgBr} = 5.0 \times 10^{-13}$; $\text{Zn}(\text{OH})_2 = 1.0 \times 10^{-15}$; $\text{Hg}_2\text{Cl}_2 = 1.3 \times 10^{-18}$)

- (1) $\text{Hg}_2\text{Cl}_2 > \text{Zn}(\text{OH})_2 > \text{AgBr}$ (2) $\text{AgBr} > \text{Zn}(\text{OH})_2 > \text{Hg}_2\text{Cl}_2$
(3) $\text{Hg}_2\text{Cl}_2 > \text{AgBr} > \text{Zn}(\text{OH})_2$ (4) $\text{Zn}(\text{OH})_2 > \text{AgBr} > \text{Hg}_2\text{Cl}_2$

Answer (4)

Sol. K_{sp} values can only be compared directly when the salts share the same stoichiometry, so each must first be converted to molar solubility s . For the 1:1 salt AgBr , $K_{sp} = s^2$ gives $s \approx 7.1 \times 10^{-7}$. For the 1:2 salts, $K_{sp} = 4s^3$: $\text{Zn}(\text{OH})_2$ gives $s \approx 6.3 \times 10^{-6}$ and Hg_2Cl_2 gives $s \approx 6.9 \times 10^{-7}$. Ranking these, $\text{Zn}(\text{OH})_2 > \text{AgBr} > \text{Hg}_2\text{Cl}_2$. NCERT Class 11, Equilibrium (solubility equilibria).

6. NEET 2020 · Q95

HCl was passed through a solution of CaCl_2 , MgCl_2 and NaCl . Which of the following compound(s) crystallise(s)?

- (1) Only NaCl
- (2) Only MgCl_2
- (3) NaCl , MgCl_2 and CaCl_2
- (4) Both MgCl_2 and CaCl_2

Answer (1)

Sol. Passing HCl gas increases the concentration of Cl^- ions and lowers the solubility of the chlorides by the common-ion effect. Under these conditions, NaCl becomes much less soluble and crystallises, while MgCl_2 and CaCl_2 remain in solution.

7. NEET 2020 · Q96

Find out the solubility of $\text{Ni}(\text{OH})_2$ in 0.1 M NaOH . Given that the ionic product of $\text{Ni}(\text{OH})_2$ is 2×10^{-15} .

- (1) $2 \times 10^{-8} \text{ M}$
- (2) $1 \times 10^{-13} \text{ M}$
- (3) $1 \times 10^8 \text{ M}$
- (4) $2 \times 10^{-13} \text{ M}$

Answer (4)

Sol. The solubility of $\text{Ni}(\text{OH})_2$ in 0.1 M NaOH can be calculated using the solubility product $K_{sp} = 2 \times 10^{-15}$. Let s be the solubility of $\text{Ni}(\text{OH})_2$. The concentration of OH^- from NaOH is 0.1 M, and from $\text{Ni}(\text{OH})_2$ is $2s$. Thus, $K_{sp} = s \times (0.1 + 2s)^2 \approx s \times (0.1)^2 = 2 \times 10^{-15} \Rightarrow s = 2 \times 10^{-13} \text{ M}$. Chapter: Equilibrium.

8. NEET 2020 · Q125

Hydrolysis of sucrose is given by: $\text{sucrose} + \text{H}_2\text{O} \rightleftharpoons \text{glucose} + \text{fructose}$. If the equilibrium constant (K_c) is 2×10^{13} at 300 K, the value of $\Delta_r G^\circ$ at the same temperature will be

- (1) $8.314 \text{ J mol}^{-1} \text{ K}^{-1} \times 300 \text{ K} \times \ln(2 \times 10^{13})$
- (2) $8.314 \text{ J mol}^{-1} \text{ K}^{-1} \times 300 \text{ K} \times \ln(3 \times 10^{13})$
- (3) $-8.314 \text{ J mol}^{-1} \text{ K}^{-1} \times 300 \text{ K} \times \ln(4 \times 10^{13})$
- (4) $-8.314 \text{ J mol}^{-1} \text{ K}^{-1} \times 300 \text{ K} \times \ln(2 \times 10^{13})$

Answer (4)

Sol. The relationship between the equilibrium constant K_c and the standard Gibbs free energy change $\Delta_r G^\circ$ is given by $\Delta_r G^\circ = -RT \ln K_c$. Substituting the values, $\Delta_r G^\circ = -8.314 \text{ J mol}^{-1} \text{ K}^{-1} \times 300 \text{ K} \times \ln(2 \times 10^{13})$. Chapter: Equilibrium.

AFTER THIS PAPER

Turn this paper into a plan.

BrainIt is a NEET practice app. It learns how you practise and tells you what to do next.

- **PYQs**
Previous-year questions, each with an explanation.
- **Mock tests**
Full and mini mocks on the CBT exam screen.
- **Revision**
Your mistakes come back for review, with flashcards.
- **Interactive concepts**
Learn by exploring 3D models, like the human body and the heart.
- **Analytics**
See your accuracy, speed and where you lose marks.
- **A daily plan**
It picks what to study next, every day.

Get it on

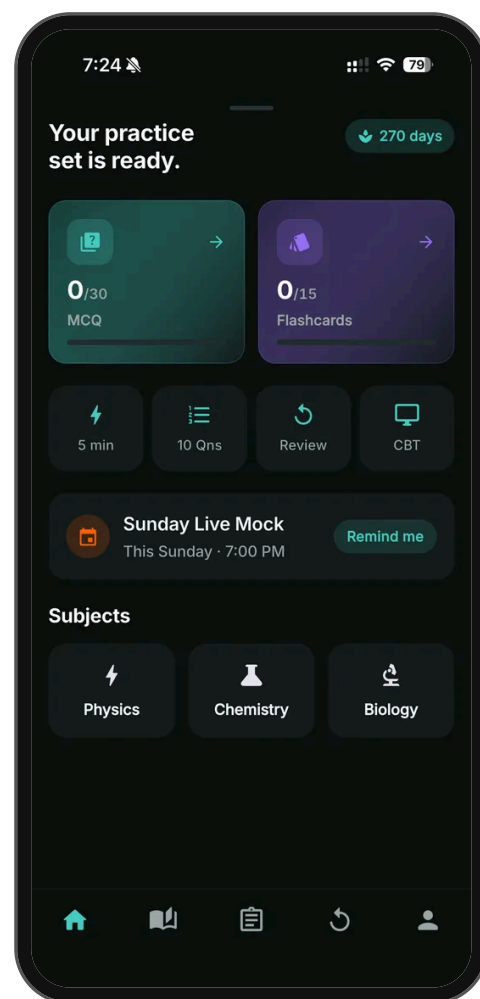
Google Play

Download on the

App Store



Scan with your phone camera,
or type **brainit.pro/app**



Take a free CBT mock

Real NEET questions on the exam screen, timed and marked for you.
No login.