

PYQSide

JEE MAIN EQUILIBRIUM — SOLUBILITY PRODUCT (K_{sp}) AND PRECIPITATION — PYQS

Max. Marks: 20

Questions: 5

Section A (MCQ)

- Q.1** M_3A_2 is a sparingly soluble salt of molar mass $y \text{ g mol}^{-1}$ and solubility $x \text{ g L}^{-1}$. The ratio of the molar concentration of the anion (A^{3-}) to the solubility product of the salt is

[JEE Main 2026 (Online) 5th April Morning Shift]

- (1) $\frac{1}{54} \cdot \frac{y^4}{x^4}$ (2) $\frac{y^5}{108x^4}$
 (3) $108 \cdot \frac{x^5}{y^5}$ (4) $\frac{1}{108} \cdot \frac{y^4}{x^4}$

Scan or tap for the full solution



- Q.2** The solubility product constants of Ag_2CrO_4 and $AgBr$ are $32x$ and $4y$ respectively at 298 K . The value of $\left(\frac{\text{molarity of } Ag_2CrO_4}{\text{molarity of } AgBr} \right)$ can be expressed as :

[JEE Main 2026 (Online) 2nd April Morning Shift]

- (1) $\frac{2\sqrt[3]{x}}{y}$ (2) $2\sqrt{\frac{x}{y}}$ (3) $\sqrt{\frac{x}{y}}$ (4) $\frac{\sqrt[3]{x}}{\sqrt{y}}$

Scan or tap for the full solution



- Q.3** If equal volumes of AB_2 and XY (both are salts) aqueous solutions are mixed, which of the following combination will give a precipitate of AY_2 at 300 K ? (Given K_{sp} (at 300 K) for $AY_2 = 5.2 \times 10^{-7}$)

[JEE Main 2025 (Online) 2nd April Morning Shift]

- (1) $2.0 \times 10^{-4} \text{ M } AB_2, 0.8 \times 10^{-3} \text{ M } XY$
 (2) $2.0 \times 10^{-2} \text{ M } AB_2, 2.0 \times 10^{-2} \text{ M } XY$
 (3) $1.5 \times 10^{-4} \text{ M } AB_2, 1.5 \times 10^{-3} \text{ M } XY$
 (4) $3.6 \times 10^{-3} \text{ M } AB_2, 5.0 \times 10^{-4} \text{ M } XY$

Scan or tap for the full solution



- Q.4** Arrange the following in increasing order of solubility product :
 $Ca(OH)_2, AgBr, PbS, HgS$

[JEE Main 2025 (Online) 28th January Evening Shift]

- (1) $PbS < HgS < Ca(OH)_2 < AgBr$
 (2) $HgS < AgBr < PbS < Ca(OH)_2$
 (3) $HgS < PbS < AgBr < Ca(OH)_2$
 (4) $Ca(OH)_2 < AgBr < HgS < PbS$

Scan or tap for the full solution



Section B (Numerical)

- Q.5** Consider two Group IV metal ions X^{2+} and Y^{2+} . A solution containing $0.01 \text{ M } X^{2+}$ and $0.01 \text{ M } Y^{2+}$ is saturated with H_2S . The pH at which the metal sulphide YS will form as a precipitate is _____. (Nearest integer)
 (Given: $K_{sp}(XS) = 1 \times 10^{-22}$ at 25°C , $K_{sp}(YS) = 4 \times 10^{-16}$ at 25°C , $[H_2S] = 0.1 \text{ M}$ in solution, $K_{a1} \times K_{a2}(H_2S) = 1.0 \times 10^{-21}$, $\log 2 = 0.30$, $\log 3 = 0.48$, $\log 5 = 0.70$)

[JEE Main 2026 (Online) 24th January Morning Shift]

Scan or tap for the full solution



ANSWER KEY

Section A (MCQ)

Ques.	1	2	3	4										
Ans.	1	4	2	3										

Section B (Numerical)

Ques.	5													
Ans.	4													