PYQSide

JEE MAIN EQUILIBRIUM — IONISATION OF WEAK ACIDS/WEAK BASES (KA, KB) — PYQS

Max. Marks: 16 **Questions:** 4

Section A (MCQ)

Q.1 A weak acid HA has degree of dissociation x. Which option gives the correct expression of $(pH - pK_a)$?

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

(1) $\log\left(\frac{1-x}{x}\right)$ (2) 0

(3) $\log(1+2x)$ (4) $\log\left(\frac{x}{1-x}\right)$

Scan or tap for the full solution

Section B (Numerical)

Q.2 Consider the dissociation equilibrium of the following weak acid

$HA \rightleftharpoons H^+(aq) + A^-(aq)$

If the pK_a of the acid is 4, then the pH of 10 mM HA solution is _____. (Nearest integer)

[Given: The degree of dissociation can be neglected with respect to unity]

[JEE Main 2026 (Online) 28th January Morning Shift]

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Q.3 The first and second ionization constants of H_2X are 2.5×10^{-8} and 1.0×10^{-13} respectively.

The concentration of X^{2-} in 0.1 M H_2X solution is _____ $\times 10^{-15}$ M. (Nearest Integer)

[JEE Main 2026 (Online) 21st January Evening Shift]

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Q.4 The pH of a 0.01 M weak acid HX ($K_a = 4 \times 10^{-10}$) is found to be 5. Now the acid solution is diluted with excess of water so that the pH of the solution changes to 6. The new concentration of the diluted weak acid is given as $x \times 10^{-4}$ M. The value of x is _____ (nearest integer)

[JEE Main 2025 (Online) 4th April Morning Shift]

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ANSWER KEY

Section A (MCQ)

Ques.	1									
Ans.	**4**									

Section B (Numerical)

Ques.	2	3	4				
Ans.	**3**	**100**	**25**				

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