

Chemistry I

Acid-Base Study Guide

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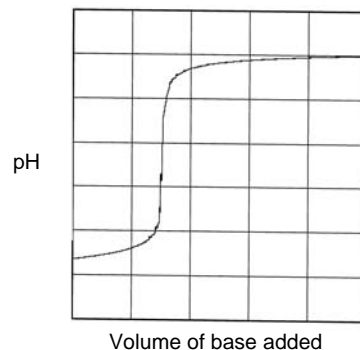
Disclaimer

This is ONLY a GUIDE, not a comprehensive list. There may be some things on the test that are not included on this guide.

The test will consist of multiple choice, matching, true false, and short answer questions. You will be allowed to use the usual references. You will be allowed TWO class periods maximum to complete the test.

Topics, Skills, & Vocabulary to know:

Acid + base reactions, acid reactions, base reactions
 Acid-base indicator properties, usage, selection, & colors
 Amphoteric
 Autoionization of H₂O
 Be familiar with the common properties of acids and bases
 Be familiar with the common substances containing acids and bases
 Concentration vs strength
 Conjugate acid-base pairs, understand & identify
 Definitions of Arrhenius, Bronsted-Lowry, & Lewis
 Diprotic & Triprotic (multiprotic acids)
 Electron pair donor/acceptor
 H⁺/OH⁻, hydrogen ion, hydroxide ion producers
 Hydrolysis
 Hydronium ion, H₃O⁺
 K_a and K_b comparisons
 pH titration curves – various strength combinations, equivalence point
 Proton donor – proton acceptor
 Titrations – definition, usage, & calculations, normality
 Weak vs strong (memorize the 7 strong acids: HCl, HBr, HI, H₂SO₄, HNO₃, HClO₄, HClO₃)



Calculations:

$$pH = -\log[H^+] \quad pOH = -\log[OH^-] \quad pH + pOH = 14 \quad K_w = 1 \times 10^{-14}$$

$$[H^+] = 10^{-pH} \quad [OH^-] = 10^{-pOH} \quad K_w = [H^+][OH^-] \quad N_A V_A = N_B V_B$$

$$K_a = \frac{[H^+][A^-]}{[HA]} \quad K_b = \frac{[Cation^+][OH^-]}{[Base]}$$

	H⁺	Aqueous Solutions										OH⁻
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pH	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14
pOH	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
[H ⁺]	10 ⁰	10 ⁻¹	10 ⁻²	10 ⁻³	10 ⁻⁴	10 ⁻⁵	10 ⁻⁶	10 ⁻⁷	10 ⁻⁸	10 ⁻⁹	10 ⁻¹⁰	10 ⁻¹¹	10 ⁻¹²	10 ⁻¹³	10 ⁻¹⁴
[OH ⁻]	10 ⁻¹⁴	10 ⁻¹³	10 ⁻¹²	10 ⁻¹¹	10 ⁻¹⁰	10 ⁻⁹	10 ⁻⁸	10 ⁻⁷	10 ⁻⁶	10 ⁻⁵	10 ⁻⁴	10 ⁻³	10 ⁻²	10 ⁻¹	10 ⁰