Edvantage Science AP Chemistry 2

Chapter 5

Traffic Light Study Guide

Section	Page	Learning Outcome	Red	Amber	Green
5.1	264	Define and provide an example of an *Arrhenius acid* and an *Arrhenius base*.	○	○	○
	264	Determine the products of an Arrhenius acid-base reaction.	○	○	○
	265 - 266	Define and provide an example of a *Brønsted-Lowry acid* and a *Brønsted-Lowry base*.	○	○	○
	266 - 267	Determine the products of a Brønsted-Lowry acid-base reaction and identify its *conjugate acid-base pairs*.	○	○	○
	267	Determine a Brønsted-Lowry acid's conjugate base (and vice-versa).	○	○	○
	268	Define and provide an example of an *amphiprotic* species.	○	○	○
5.2	273 - 274	Define and provide an example of a *strong acid* and a *weak acid*.	○	○	○
	274	Define and provide an example of a *strong Brønsted-Lowry base* and a *weak Brønsted-Lowry base*.	○	○	○
	275	Write the *acid ionization equation* and the *acid ionization expression* for any given acid.	○	○	○
	276	Write the *base ionization equation* and the *base ionization expression* for any given base.	○	○	○
	277	Find the K_a value of an acid in the K_a table.	○	○	○
	277 - 278	Relate the strength of an acid to the strength of its conjugate base and vice-versa.	○	○	○
	279	Describe and explain periodic trends in *binary acid* strength.	○	○	○
	280	Cite two factors that influence the strength of *ternary acids*.	○	○	○
	280	Cite two factors that influence the strength of *carboxylic acids*.	○	○	○
	282 -283	Determine whether the forward or reverse reaction is favoured in any *Brønsted-Lowry acid-base equilibrium*.	○	○	○
	284	Describe the *levelling effect*.	○	○	○
5.3	289	Provide the chemical equation for the *autoionization* of water, the K_w expression and the value of K_w at room temp.	○	○	○
	290	Define *acidic, basic,* and *neutral* in terms of the relative concentrations of H^+ and OH^-.	○	○	○
	291	Calculate the $[H^+]$ and $[OH^-]$ in strong acid and strong base solutions.	○	○	○
	292	Calculate the $[H^+]$ and $[OH^-]$ that result from mixing particular amounts of a strong acid and a strong base.	○	○	○

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5.4	296 - 297	Calculate a solution's *pH* from its $[H^+]$, taking care to express the pH to the appropriate number of sig.figs.	○	○	○
	297	Cite two ways to measure a solution's pH.	○	○	○
	298	Calculate a solution's $[H^+]$ from its pH, taking care to express the $[H^+]$ to the appropriate number of sig.figs.	○	○	○
	299 - 302	Interconvert $[H^+]$, $[OH^-]$, pH and pOH.	○	○	○
	300 - 301	Identify an aqueous solution at room temperature as being acidic, basic (alkaline), or neutral, from its pH or its pOH.	○	○	○
	303 - 305	Calculate the pH and pOH that result from mixing particular amounts of a strong acid and a strong base.	○	○	○
5.5	312 - 314	Calculate an acid solution's $[H^+]$ from the acid's K_a and the (initial) [acid].	○	○	○
	315 - 316	Calculate an acid solution's concentration from the acid's K_a and the solution's pH.	○	○	○
	317	Calculate an acid's K_a from the acid solution's concentration and its pH.	○	○	○
	318	Calculate the K_b of a base from the K_a of its conjugate acid and K_w.	○	○	○
	319 - 320	Calculate a base solution's $[OH^-]$ from the base's K_b and the (initial) [base].	○	○	○
	321 - 322	Calculate a base solution's concentration from the base's K_b and the solution's pH.	○	○	○
	323	Calculate a base's K_b from the base solution's concentration and its pH.	○	○	○