	Statement	Guidance
8.1.U1	A Brønsted–Lowry acid is a proton/H+ donor and a Brønsted–Lowry base is a proton/H+ acceptor.	The location of the proton transferred should be clearly indicated. For example, CH_3COOH/CH_3COO^- rather than $C_2H_4O_2/C_2H_3O_2^-$
8.1.U2	Amphiprotic species can act as both Brønsted–Lowry acids and bases	The difference between the terms amphoteric and amphiprotic should be covered
8.1.U3	A pair of species differing by a single proton is called a conjugate acid-base pair	Students should know the representation of a proton in aqueous solution as both H^+ (aq) and H_3O^+ (aq).
8.2.U4	Most acids have observable characteristic chemical reactions with reactive metals, metal oxides, metal hydroxides, hydrogen carbonates and carbonates.	Bases which are not hydroxides, such as ammonia, soluble carbonates and hydrogen carbonates should be covered
8.2.U5	Salt and water are produced in exothermic neutralization reactions	
8.3.U6	$pH = \log[H_{(aq)}]$ and $[H] = 10^{-pH.}$	
8.3.U7	A change of one pH unit represents a 10-fold change in the hydrogen ion concentration [H].	
8.3.U8	pH values distinguish between acidic, neutral and alkaline solutions.	Students should be concerned only with strong acids and bases in this sub-topic
8.3.U9	The ionic product constant, $K_w = [H^+][OH] = 10^{-14}$ at 298 K.	Equations involving H_3O^+ instead of H_+ may be applied
8.4.U10	Strong and weak acids and bases differ in the extent of ionization.	The terms ionization and dissociation can be used interchangeably.
8.4.U11	Strong acids and bases of equal concentrations have higher conductivities than weak acids and bases	
8.4.U12	A strong acid is a good proton donor and has a weak conjugate base	
8.4.U13	A strong base is a good proton acceptor and has a weak conjugate acid.	
8.5.U14	Rain is naturally acidic because of dissolved CO_2 and has a pH of 5.6. Acid deposition has a pH below 5.6.	
8.5.U15	Acid deposition is formed when nitrogen or sulfur oxides dissolve in water to form HNO_3, HNO_2, H_2SO_4 and H_2SO_3.	
8.5.U16	Sources of the oxides of sulfur and nitrogen and the effects of acid deposition should be covered	
18.1.U17	A Lewis acid is a lone pair acceptor and a Lewis base is a lone pair donor	Both organic and inorganic examples should be studied.
18.1.U18	When a Lewis base reacts with a Lewis acid a coordinate bond is formed.	
18.1.U19	A nucleophile is a Lewis base and an electrophile is a Lewis acid.	Relations between Brønsted–Lowry and Lewis acids and bases should be discussed
18.2.U20	The expression for the dissociation constant of a weak acid (K_a) and a weak base (K_b).	Only examples involving the transfer of one proton will be assessed.
18.2.U21	For a conjugate acid base pair, $K_a \times K_b = K_w$	The value K_w depends on the temperature. Students should state when approximations are used in equilibrium calculations
18.2.U22	The relationship between K_a and pK_a is ($pK_a = -\log K_a$), and between K_b and pK_b is ($pK_b = -\log K_b$)	Calculations of pH at temperatures other than 298 K can be assessed
18.3.U23	The characteristics of the pH curves produced by the different combinations of strong and weak acids and bases.	Only examples involving the transfer of one proton will be assessed. Important features are: – intercept with pH axis – equivalence point – buffer region – points where pK_a = pH or pK_b = pOH.
18.3.U24	An acid–base indicator is a weak acid or a weak base where	For an indicator which is a weak acid:

	the components of the conjugate acid–base pair have different colours	– $HIn(aq) \rightleftharpoons H^+(aq) + In^-(aq)$ Colour A Colour B – The colour change can be considered to take place over a range of $pK_a \pm 1$. For an indicator which is a weak base: – $BOH(aq) \rightleftharpoons B^+(aq) + OH^-(aq)$ Colour A Colour B
18.3.U25	The relationship between the pH range of an acid–base indicator, which is a weak acid, and its pK_a value.	
18.3.U26	The buffer region on the pH curve represents the region where small additions of acid or base result in little or no change in pH.	
18.3.U27	The composition and action of a buffer solution	