Chemistry
Year 13 curriculum map

Year 13	T1	T2	T3	T4	T5	T6
Content / Topic for Term	Transition metal chemistry Reactions in aqueous solution Thermodynamics	Kinetics Equilibria Electrode Potentials	Acids, bases and buffers Optical Isomerism Carbonyl group Chemistry	Amines Polymers Amino acids, proteins and DNA Organic synthesis	NMR Chromatography	A Level examinations
Key Knowledge for acquisition, recall and application in assessment or exam	Transition metal Chemistry • general properties of transition metals • complex formation • coloured ions • variable oxidation states • catalysts Reactions in aqueous solution • acid-base chemistry of transition metal ions	Kinetics • rate of reactions • rate expressions and order of reactions • determining rate equations • the rate determining step Equilibria • the equilibrium constant Kp Electrode potentials • The electrochemical series	Acids, bases and buffers • defining an acid • the ph scale • weak acids and bases • acid-base titrations • indicators • buffers Optical isomerism • nomenclature • reactions of the carbonyl group • optical isomers Carbonyl group chemistry	Amines • amines • amines as bases • amines as nucleophiles Polymers • condensation polymers Amino acids, proteins and DNA • amino acids • peptides, polypeptides and proteins • enzymes • DNA • anti-cancer drugs	NMR • nuclear magnetic resonance spectroscopy • proton NMR • interpreting 1H NMR Chromatography • chromatography	

	• ligand substitution reactions Thermodynamics enthalpy change • Born-Haber cycles • entropy • Gibbs free energy	• Predicting the direction of redox reactions • Electrochemical cells	• aldehydes and ketones • carbonyl group chemistry • carboxylic acids and esters • acylation	Organic synthesis • synthetic routes • organic analysis		
Key skills to apply in assessment or exam	• Calculations using Born-Haber cycles. • Required practical 11 – Identifying transition metal ions in solution.	• Calculations using rate equations, Kp and ecell. • Required practical 7 – measuring rate (link to CPAC criteria). • Required practical 8 – measuring E for an electrochemical cell (link to CPAC criteria).	• Calculating pH. • Required practical 9 – investigating pH change during a titration (link to CPAC criteria). • Required practical 10 – preparing an organic solid (link to CPAC criteria).	• Determination of synthetic routes. • Organic analysis practical techniques.	• Required practical 12 – TLC (link to CPAC criteria).	
Title of Knowledge Organiser	Transition metal chemistry	Kinetics Equilibria	Acids, bases and buffers	Polymers	Chromatography	

	Reactions in aqueous solution Thermodynamics	Electrode Potentials	Optical Isomerism Carbonyl group Chemistry Amines	Amino acids, proteins and DNA Organic synthesis NMR		