Belfairs Academy

A Level Chemistry Fundamentals Map

Knowledge	Skills
DEVELOPMENT OF PRACTICAL SKILLS IN CHEMISTRY Experimental design, including to solve problems set in a practical context Processing, analysing and interpreting qualitative and quantitative experimental results Use and application of scientific methods and practices Research and referencing	Work to significant figures Draw and interpret graphs Use ratios Use estimates Use standard form Determine the slope and intercept of a linear graph Translate information between graphical, numerical and algebraic forms
FOUNDATIONS IN CHEMISTRY The mole and calculations using moles Oxidation numbers and redox reactions Acid-base reactions Electronic configuration and chemical properties	Recognise and make use of appropriate units in calculations Use expressions in decimals and ordinary form Use ratios, fractions and percentages
PERIODIC TABLE AND ENERGY Properties and reactions of Group 2 elements and the halogens The periodic table and periodicity Patterns in the periodic table Bonding Intermolecular forces Shapes of molecules and ions Energetics and enthalpy changes Rates of reactions Chemical Equilibria	Solve algebraic equations Change the subject of an equation
CORE ORGANIC CHEMISTRY Introductory Organic chemistry Free radical substitution reactions of alkanes Electrophilic addition reactions of alkenes Isomerism in alkanes and alkenes Addition polymerisation Alcohols and their reactions Haloalkanes and their reactions Mass spectra Infrared spectroscopy Organic synthesis	Use expressions in decimals and ordinary form Use ratios, fractions and percentages

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PHYSICAL CHEMISTRY AND TRANSITION ELEMENTS Measuring reaction rates Orders and the rate equation Half-lives Orders from rate-concentration graphs Initial rates and the rate constant Rate-determining step The equilibrium constants- Kc and Kp Calculations using Kc and Kp What is pH? Conjugate acid-base pairs Calculating pH for strong and weak acids The ionisation of water and pH of bases Buffer solutions and calculating their pH Titration curves Lattice enthalpy Constructing Born-Haber cycles and related calculations Enthalpy change of solution and hydration Entropy and free energy Redox Half cells and cell potentials The feasibility of reactions Transition metals and complex ions Stereoisomerism in complex ions Ligand substitution in complexes Redox titrations	Recognise and make use of appropriate units in calculations Estimate results Use calculators to find and use power, exponential and logarithmic functions Translate information between graphical, numerical and algebraic forms

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Knowledge	Skills
ORGANIC CHEMISTRY AND ANALYSIS Introduction to aromatic chemistry The structure of benzene The delocalised model of benzene Substitution reactions of benzene Phenols An introduction to carbonyl compounds Reactions of aldehydes and ketones Carboxylic acids Esters Amino acids and amines Addition and condensation polymerisation Organic synthesis of aliphatic and aromatic compounds Thin-layer chromatography Gas Chromatography- mass spectrometry Carbon-13 nuclear magnetic resonance Proton nuclear magnetic resonance	Use expressions in decimals and ordinary form Use ratios, fractions and percentages