

Chemistry

Year 7

Particles and Structure: The particle model, state changes, diffusion and pressure.

Substance and Properties: Pure and impure substances, solutions and separation techniques of mixtures.

Chemical Reactions: How metals react with oxygen, water and acids. Combustion and thermal decomposition reactions. Energy changes in reactions.

Year 8

The Periodic Table: Atoms, elements and trends in the periodic table.

Acids and Bases: Properties of acids and alkalis, neutralisation and making salts.

Reactivity Series and Metals: Extraction of metals, the reactivity series and displacement reactions.

Earth and Environment: Finite and renewable resources, greenhouse effect, acid rain and the rock cycle.

Year 9

Atomic Structure and Separation Techniques: Models of the atom, electronic configuration, distillation and chromatography.

The Periodic Table: History of the periodic table. Metals and non metals, Group 0,1 and 7 and transition metals.

Structure and Bonding: Ionic, covalent and metallic bonding. Properties of ionic, covalent and metallic structures. Nanoscience.

Crude Oil and Fractional Distillation: Crude oil, fractional distillation, combustion of hydrocarbons and cracking.

GCSE AQA - 8462

Year 10

Organic Chemistry: Polymerisation, alkenes, alcohols, carboxylic Acids and esters.

Chemical Change: Extraction of metals, reactivity series, reactions of acids with metals, metal oxides and carbonates. Electrolysis of solutions and molten compounds.

Chemical Calculations: Conservation of mass, moles, reacting masses, balancing equations with masses, atom economy, percentage yield, limiting reactants, titrations and volumes of gases.

Energy Changes: Endothermic and exothermic reactions, bond energy calculations, chemical cells and fuel cells.

Year 11

The Earth's Atmosphere: Evolution of the atmosphere, global warming, global dimming, acid rain.

Rates and Equilibria: Factors that affect rate of reaction and position of equilibria.

Earth's Resources: Water treatment, phytomining, bioleaching and life cycle assessments.

Using Resources: Rusting, alloys, glass, ceramics, composites. The Haber process and fertilisers.

Chemical Analysis: Chemical tests for anions and cations, chromatography and instrumental techniques.

A-Level AQA - 7405

Year 12

- Atomic Structure and Periodicity
- Amount of Substance
- Bonding
- Introduction to Organic Chemistry
- Energetics and Kinetics
- Alkenes, Halogenoalkanes and Alcohols
- Chemical Equilibria and K_c
- Organic Analysis
- Redox
- Group 7 Halogens and Group 2 Alkaline Earth metals

Year 13

- Rate Equations
- Optical Isomerism
- Aldehydes, Ketones and Carboxylic Acids
- Equilibrium Constant K_p
- Aromatic Chemistry and Amines
- Acids and Bases
- Thermodynamics
- Polymers, Biochemistry and Chromatography
- Organic Synthesis and NMR Spectroscopy
- Electrode Potentials and Electrochemical Cells
- Period 3 Elements and their Oxides
- Transition Metals and Reactions of Aqueous Ions