



West Park School

Triple Chemistry

GCSE Examination Summer 2024

In readiness for your GCSE examinations in Chemistry you must **LEARN** and **REVISE** the following content and skills:

Chemistry: Paper 1

Atomic Structure and the Periodic Table

Atoms, elements, compounds and mixtures.

The development of the model of the atom.

Subatomic particles.

The development of the periodic table.

Properties and trends of groups in the periodic table.

Structure and Bonding

Ionic, covalent and metallic bonding.

The states of matter and state symbols.

Properties of matter e.g. polymers, alloys.

Giant covalent compounds and fullerenes.

Nanoparticles and bulk materials.

Uses of nanoparticles.

Chemical calculations

Conservation of mass and balanced chemical equations.

Relative formula mass and moles.

Apparent changes in mass, chemical measurements and limiting reactants.

Reacting masses (recipe) calculations. (HT only).

Concentrations of solutions.

Percentage Yield and Atom Economy.

Titration calculations.

Volumes of gases and moles.

Chemical Changes

The reactivity series, metal extraction, oxidation and reduction.

Reactions of acids with metals, alkalis and bases.

Making salts.

The pH scale and neutralisation.

Titrations.

Strong and weak acids (HT only).

Electrolysis

Electrolysis – molten ionic compounds, aqueous solutions, extraction of metals.

Half-equations (HT only).

Energy Changes

Exothermic and endothermic reactions and reaction profiles.

Bond energy calculations (HT only).

Cells and batteries.

Fuel Cells.

RPA's

Making salts

Preparation of a pure, dry sample of a soluble salt from an insoluble oxide or carbonate, using a Bunsen burner to heat dilute acid and a water bath or electric heater to evaporate the solution.

Electrolysis

Investigate what happens when aqueous solutions are electrolysed using inert electrodes.

This should be an investigation involving developing a hypothesis.

Temperature changes

Investigate the variables that affect temperature changes in reacting solutions, eg acid plus metals, acid plus carbonates, neutralisations, displacement of metals.

Titrations

Using titrations to find the concentration of an unknown solution.

Chemistry: Paper 2

Rates of Reaction

Calculating the rate of a chemical reaction.

Factors affecting the rate of reaction – concentration of reactants in solution, surface area of solids, pressure of gases and temperature.

Collision theory, activation energy and catalysts.

Reversible reactions.

Equilibrium and the effect of changing conditions on equilibrium. (HT Only).

Organic Chemistry

Crude oil, hydrocarbons and alkanes.

Fractional distillation – the process and products.

Properties of hydrocarbons.

Cracking and alkenes.

Alcohols and carboxylic acids.

Addition and condensation polymerisation.

Amino acids.

DNA and other naturally occurring polymers.

Chemical Analysis

Pure substances – in chemistry and everyday language.

Formulations – definitions and examples.

Chromatography – simple chromatography and calculating R_f values.

Identifying common gases.

Identifying positive ions - Flame tests and using sodium hydroxide.

Identifying negative ions – carbonates, halides and sulfates.

Instrumental methods including flame emission spectroscopy.

The Earth's Atmosphere

The proportions of different gases in the atmosphere.

The composition of the Earth's early atmosphere.

How and why Earth's atmosphere has changed over time.

Greenhouse gases (carbon dioxide and methane) and how human activities contribute to an increase in greenhouse gases in the atmosphere.

Global climate change.

Carbon footprints.

Atmospheric pollutants from fuels and their effects.

The Earth's Resources

Using the Earth's resources and sustainable development.

Potable water.

Waste Water Treatment.
Phytomining and bioleaching (HT only).
Life Cycle Assessments.
Reducing the use of resources.
Corrosion and its prevention.
Alloys as useful materials.
The Haber Process and use of NPK fertilisers.

RPAs

Tests for positive and negative ions

Using simple chemical tests to identify ions in unknown solutions including flame tests for metal ions.

Rates of reaction

Investigate how changes in concentration affect the rates of reactions by a method involving measuring the volume of a gas produced and a method involving a change in colour or turbidity.

This should be an investigation involving developing a hypothesis.

Chromatography

Investigate how paper chromatography can be used to separate and tell the difference between coloured substances. Students should calculate R_f values.

Water purification

Analysis and purification of water samples from different sources, including pH, dissolved solids and distillation.

Assessment Objectives and Skills

In the examinations you will be expected to address the following assessment objectives:

AO1: Demonstrate knowledge and understanding of: scientific ideas; scientific techniques and procedures.

AO2: Apply knowledge and understanding of: scientific ideas; scientific techniques and procedures.

AO3: Analyse information and ideas to: interpret and evaluate; make judgements and draw conclusions; develop and improve experimental procedures.

Extended response – all examinations will include a number of “long answer” questions.

Maths – you will be expected to show basic mathematical skills in all exams. Biology papers will include at least 10% mathematical content, Chemistry papers 20% and Physics 30%.

RPA – There will be at least one question about a required practical activity in each examination.