

Curriculum Map Year 10: Chemistry Combined Science (Trilogy) AQA

Examination Papers – End of Yr 11	% of GCSE (Combined with Biology and Physics)	Question style
Paper 1 – Topics 8-12	16.7	Multiple choice, structured, closed short answer and open response
Paper 2 – Topics 13-17	16.7	Multiple choice, structured, closed short answer and open response

	Topic	Key Knowledge <i>What will students know by the end of this topic?</i>	Key Skills <i>What skills will students have developed by the end of this topic?</i>	Assessment Opportunities <i>How will student progress be measured? What are the key assessment pieces?</i>
Half Term 1	Topic 17 – Using Resources	- A range of renewable and finite resources and their origins. - What sustainable development is - How water treated and is made potable - Ways of reducing the use of resources - What a Life Cycle Assessment is - How recycling, re-using and reducing can all have an impact on sustainability Consolidation of topic 16 (to include time to review work completed in lockdown)	Recalling key terminology. Explaining how agriculture has an impact on the use of resources Explaining how water (from a range of sources) is treated and made potable Using simple laboratory equipment to make pure water by distillation. Carrying out and interpreting chemical tests on the water before and after. Applying understanding of sustainable development to a range of familiar and unfamiliar examples How to carry out a simple Life Cycle Assessment Processing data from a wide range of sources relating to a wide range of products, services and processes Developing graph drawing and interpretation skills	Homework (with particular focus on consolidating lockdown work prior to test) Starter tasks to review prior learning Regular PPQ practice Competence completing Required Practical 13 Topic 16 test
	Topic 9 – Bonding Structure and Properties of Matter	- Consolidation of topic 8 - The difference between atoms and ions - How ionic compounds form - Properties of ionic compounds	Determining numbers of sub-atomic particles Drawing dot-cross diagrams Calculating charges on ions Determining formulae of ionic compounds Writing balanced chemical equations Using a range of practical chemistry equipment safely	

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Half Term 2	Continuation of topic 9 – Bonding Structure and Properties of Matter	- How covalent compounds form - Properties of covalent compounds - Properties of metals and alloys and metallic bonding - Types of giant covalent structure - Properties of giant covalent compounds	Identifying the state of a range of substances at different temperatures Describing limitations of the ionic model Describing limitations of a range of covalent models Drawing and interpreting dot-cross diagrams for covalent compounds Explaining how different substances conduct electricity Explaining the properties of alloys Researching a range of allotropes of carbon Explaining the properties of giant covalent compounds Drawing and interpreting graphs	Homework Starter tasks Regular PPQ practice to include extended response questions Topic 17 test
Half Term 3	Topic 10 – Quantitative Chemistry	- Consolidation of writing and balancing equations - Be familiar with specific key terms e.g. relative atomic mass/formula mass, mole, limiting reactant - The conservation of mass law - Avogadro's number - Amounts of substance can be measured in moles - How conservation of mass can be understood using formula masses and moles in balanced equations - How to calculate % of an element in a compound - How to calculate reacting masses in balanced equations	Investigating mass changes using various apparatus Writing, balancing and interpreting chemical equations Using formula mass to calculate moles and vice versa Recognising and using expressions in standard form Using ratios, fractions and percentages Changing the subject of a variety of equations Converting units Using appropriate numbers of significant figures	Homework Starter tasks Regular PPQ practice to include ratios, standard form, use of significant figures and changing the subject of equations Topic 9 test
Half Term 4	Continuation of Topic 10 – Quantitative Chemistry	- What limiting reactants are and their effect on reacting mass calculations - How concentration of solutions is measured in chemistry - Be familiar with specific key terms e.g. relative atomic mass/formula mass, mole, limiting reactant, yield, concentration - The uncertainty associated with any measurements taken - Content from Yr 9/10 work in preparation for Yr 10 examination	Writing, balancing and interpreting chemical equations Using formula mass to calculate moles and vice versa Recognising and using expressions in standard form Using ratios, fractions and percentages Changing the subject of a variety of equations Converting units Using appropriate numbers of significant figures Identifying anomalous results and making estimations of uncertainty Calculating the mean of a data set and using the range as a measure of uncertainty	Homework Starter tasks Regular PPQ practice to include ratios, standard form, use of significant figures and changing the subject of equations PPQs of previous topics in preparation for examination (to cover range of question styles e.g. extended response, extended calculation, recall, describe, explain, evaluate, compare)

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Half Term 4 cont.	Topic 11 – Chemical Changes	- How metals react with oxygen, water and acids - The order of metals, including carbon and hydrogen, in the reactivity series - What oxidation and reduction are in terms of electrons, oxygen and hydrogen - How metals are extracted from their ores using carbon reduction	Mixing reagents to explore chemical changes and products Applying the reactivity of metals including carbon and hydrogen to displacement reactions Elucidating chemical formulae Writing and balancing general and ionic equations Writing and balancing ionic half equations Identifying species that have been oxidised or reduced Predicting products from given reactants	Homework Starter tasks Regular PPQ practice to include ratios, equations and competence with formulae Topic 10 test
Half Term 5	Topic 11 – Chemical Changes	- Yr 10 examinations during this half term. - What oxidation and reduction are in terms of electrons, oxygen and hydrogen - How metals are extracted from their ores using carbon reduction - Work experience offered to students this half term	All studied and covered so far from GCSE specification Mixing reagents to explore chemical changes and products Applying the reactivity of metals including carbon and hydrogen to displacement reactions Elucidating chemical formulae Writing and balancing general and ionic equations Writing and balancing ionic half equations Identifying species that have been oxidised or reduced Predicting products from given reactants	Year 10 examination Homework Starter tasks Regular PPQ practice to include ratios, equations and competence with formulae
Half Term 6	Continuation of Topic 11 – Chemical Changes	- The pH scale and the use of a variety of indicators - The link between pH, $[H^+]$ and orders of magnitude - Neutralisation of acids and salt production - The general equation for neutralisation - The difference between strong and weak acids - The process of electrolysis including all key terms - How the electrolysis of molten ionic compounds yields products - How electrolysis can be used to extract more reactive metals - How the electrolysis of aqueous solutions yields products	Mixing reagents to explore chemical changes and products Applying the reactivity of metals including carbon and hydrogen to displacement reactions Elucidating chemical formulae Writing and balancing general and ionic equations Writing and balancing ionic half equations Identifying species that have been oxidised or reduced Predicting products from given reactants Competence of carrying out a multistep procedure, preparation of a pure, dry sample of a soluble salt Using the pH scale to identify acidic or alkaline solutions Measuring the pH of different acids and bases at different concentrations Making orders of magnitude calculations	Homework Starter tasks Regular PPQ practice to include ratios, equations and competence with formulae Required Practical 8 Topic 11 test

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			Using the words, weak, strong, dilute and concentrated and neutral when applied to acids and their reactions Setting up a simple electrochemical cell Applying redox to write and balance half equations Evaluating the processes involved in extracting metals from the ground and then by electrolysis	

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Half Term 1	Continuation of Topic 11 – Chemical Changes	- How the electrolysis of aqueous solutions yields products - The explanation for the products produced at each electrode during electrolysis of aqueous solutions - The electrolysis of brine	Setting up simple electrochemical cells Predicting products from given reactants Writing and balancing ionic half equations Applying redox to write and balance half equations Identifying species that have been oxidised or reduced Competence of carrying out electrolysis of aqueous solutions	Homework Starter tasks Regular use of PPQs from topic 11 including extended response questions: plan Required Practical 9 Required Practical 10
	Topic 12 – Energy Changes	Energy is conserved during chemical reactions - What exothermic and endothermic reactions are including everyday examples of them - How reaction profiles are used to represent chemical reactions - What activation energy is - Energy is needed to break chemical bonds - Energy is released when new bonds are formed	Writing, balancing and interpreting chemical equations Measuring temperature changes of simple chemical reactions and classifying them as exo or endothermic Investigating the variables that affect temperature changes Drawing and interpreting reaction profiles for exothermic and endothermic reactions Calculating the overall energy change in reactions from supplied data	Topic 4 (Chemical changes and / or Electrolysis) test
Half Term 2	Topic 13 – Rate and extent of chemical change	- What rate of reaction is and the different ways that it can be monitored, measured and calculated - Collision theory	Writing, balancing and interpreting chemical equations Explaining why rate of reaction changes using the “Collision theory”	Homework Starter tasks Regular PPQ practice

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	Revision of work from start of the GCSE Preparation for mock examinations	- A variety of revision techniques exist and that no one technique is suitable for all topics - Best practice answering extended response questions: Plan, Explain, Calculate, Evaluate, Compare - Yr 11 mock examination fortnight	Developing examination technique using PPQs focusing on Plan, Explain, Calculate, Evaluate, Compare Improving the use of scientific terminology through revisiting key terms such as accurate, reliable, valid	Use of a variety of styles of PPQs Electrolysis test as revision Retrieval tasks Year 11 mock examination (to cover all previous work)
Half Term 3	Continuing Topic 13 – Rate and extent of chemical change	- The factors that affect the rate of chemical reactions - How changing these factors affects the rate of chemical reactions - Collision theory - Activation energy - What catalysts are and how they affect the rate of reactions and reaction profiles - That some reactions are reversible and examples of reversible reactions - Energy changes in reversible reactions	Writing, balancing and interpreting chemical equations Drawing and interpreting graphs from given or experimental data Calculating the mean rate of reaction Drawing tangents to curves Measuring the gradient of tangents Explaining why rate of reaction changes using the “Collision theory”	Homework Starter tasks Required Practical 11 Regular PPQ practice Topic 12 test
Half Term 4	Continuation of Topic 13 – Rate and extent of chemical change	- That some reactions are reversible and examples of reversible reactions - Energy changes in reversible reactions - The concept of chemical equilibrium - Le-Chateliers principle - The effect of changing conditions on equilibrium - The effect of changing concentration on equilibrium - The effect of changing temperature on equilibrium - The effect of changing pressure on equilibrium	Writing, balancing and interpreting chemical equations Comparing data and results quantitatively Identifying reversible reactions Making qualitative predictions about changes made to systems at equilibrium Explaining why rate of reaction changes using the “Collision theory” Interpreting and applying “Le-Chateliers principle”	Homework Starter tasks Regular PPQ practice Topic 13 test
Half Term 5	Topic 14 – Organic Chemistry	- The origin and composition of crude oil - The Alkanes are a homologous series - The general formula and structure of the alkanes - How fractional distillation is used to refine crude oil - Uses of the fractions from crude oil - Properties of hydrocarbons: boiling points, viscosity and flammability	Building and interpreting models of organic molecules Making predictions of properties based upon regularly changing patterns Explaining the process of fractional distillation Using molecular models to represent alkanes, alkenes and overall chemical reactions	Homework Starter tasks Regular PPQ practice Topic 14 test Preparation for external examinations External examinations

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Half Term 6	External exams			External examinations