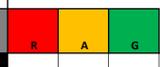


AQA Chemistry (Trilogy 8464) from 2016 Topics T5.1-T5.10



		R	A	G
T5.1 Atomic structure and the periodic table	5.1.1 A simple model of the atom, symbols, relative atomic mass, electronic charge and isotopes			
	5.1.2 The periodic table			
T5.2 Bonding, structure and the properties of matter	5.2.1 Chemical bonds, ionic, covalent and metallic			
	5.2.2 How bonding and structure are related to the properties of substances			
T5.3 Quantitative chemistry	5.3.1 Chemical measurements, conservation of mass and the quantitative interpretation			
	5.3.2 Use of amount of substance in relation to masses of pure substances			
T5.4 Chemical changes	5.4.1 Reactivity of metals			
	5.4.2 Reactions of acids			
T5.5 Energy changes	5.4.3 Electrolysis			
	5.5.1 Exothermic and endothermic reactions			
Extent of change	5.6.1 Rate of reaction			

T5.6 The rate of chemical		Describe the role of a catalyst in a chemical reaction and state that enzymes are catalysts in biological systems Draw and interpret reaction profiles for catalysed reactions							
	5.6.2 Reversible reactions and dynamic equilibrium	Explain what a reversible reaction is, including how the direction can be changed and represent it using symbols: $A + B \rightleftharpoons C + D$ Explain that, for reversible reactions, if a reaction is endothermic in one direction, it is exothermic in the other direction Describe the state of dynamic equilibrium of a reaction as the point when the forward and reverse reactions occur at exactly the same rate HT ONLY: Explain that the position of equilibrium depends on the conditions of the reaction and the equilibrium will change to counteract any changes to conditions HT ONLY: Explain and predict the effect of a change in concentration of reactants or products, temperature, or pressure of gases on the equilibrium position of a reaction							
T5.7 Organic chemistry		Describe what crude oil is and where it comes from, including the basic composition of crude oil and the general chemical formula for the alkanes State the names of the first four members of the alkanes and recognise substances as alkanes from their formulae Describe the process of fractional distillation, state the names and uses of fuels that are produced from crude oil by fractional distillation Describe trends in the properties of hydrocarbons, including boiling point, viscosity and flammability and explain how their properties influence how they are used as fuels Describe and write balanced chemical equations for the complete combustion of hydrocarbon fuels Describe the process of cracking and state that the products of cracking include alkanes and alkenes and describe the test for alkenes Balance chemical equations as examples of cracking when given the formulae of the reactants and products Explain why cracking is useful and why modern life depends on the uses of hydrocarbons							
	5.7.1 Carbon compounds as fuels and feedstock								
T5.8 Chemical analysis		Define a pure substance and identify pure substances and mixtures from data about melting and boiling points Describe a formulation and identify formulations given appropriate information Describe chromatography, including the terms stationary phase and mobile phase and identify pure substances using paper chromatography Explain what the Rf value of a compound represents, how the Rf value differs in different solvents and interpret and determine Rf values from chromatograms Required practical 12: investigate how paper chromatography can be used to separate and tell the difference between coloured substances (including calculation of Rf values) Explain how to test for the presence of hydrogen, oxygen, carbon dioxide and chlorine							
	5.8.1 Purity, formulations and chromatograph and 5.8.2 ID of gases								
T5.9 Chemistry of the atmosphere		Describe the composition of gases in the Earth's atmosphere using percentages, fractions or ratios Describe how early intense volcanic activity may have helped form the early atmosphere and how the oceans formed Explain why the levels of carbon dioxide in the atmosphere changes as the oceans were formed State the approximate time in Earth's history when algae started producing oxygen and describe the effects of a gradually increasing oxygen level							
	5.9.1 The composition and evolution of the Earth's atmosphere								
	5.9.2 Carbon dioxide and methane as greenhouse gases	Explain the ways that atmospheric carbon dioxide levels decreased Name some greenhouse gases and describe how they cause an increase in Earth's temperature List some human activities that produce greenhouse gases Evaluate arguments for and against the idea that human activities cause a rise in temperature that results in global climate change State some potential side effects of global climate change, including discussing scale, risk and environmental implications							
	5.9.3 Common atmospheric pollutants and their sources	Define the term carbon footprint and list some actions that could reduce the carbon footprint Describe the combustion of fuels as a major source of atmospheric pollutants and name the different gases that are released when a fuel is burned Predict the products of combustion of a fuel given appropriate information about the composition of the fuel and the conditions in which it is used Describe the properties and effects of carbon monoxide, sulfur dioxide and particulates in the atmosphere Describe and explain the problems caused by increased amounts of these pollutants in the air							
T5.10 Using resources		State what humans use Earth's resources for, give some examples of natural resources that they use Define the term finite and distinguish between finite and renewable resources Explain what sustainable development is and discuss the role chemistry plays in sustainable development, including improving agricultural and industrial processes State examples of natural products that are supplemented or replaced by agricultural and synthetic products Discuss the importance of water quality for human life, including defining potable water Describe methods to produce potable water, including desalination of salty water or sea water and the potential problems of desalination Required practical 13: analysis and purification of water samples from different sources, including pH, dissolved solids and distillation Describe waste water as a product of urban lifestyles and industrial processes that includes organic matter, harmful microbes and harmful chemicals Describe the process of sewage treatment and compare the ease of obtaining potable water from waste water as opposed to ground or salt water HT ONLY: Name and describe alternative biological methods for extracting metals, including phytomining and bioleaching HT ONLY: Evaluate alternative methods for extracting metals							
	5.10.1 Using the Earth's resources and obtaining potable water								
	5.10.2 Life cycle assessment and recycling	Describe, carry out and interpret a simple comparative life cycle assessment (LCA) of materials or products Discuss the advantages and disadvantages of LCAs Carry out simple comparative LCAs for shopping bags made from plastic and paper Discuss how to reduce the consumption of raw resources and explain how reusing and recycling reduces energy use (including environmental impacts)							