

Paper 2 Content

C8 Rates and Equilibria	Analysis	Revised
Can calculate the mean rate of a reaction using this remembering time always goes on the bottom of the division.		
Can draw and interpret graphs showing product formed or reactant used against time.		
Can draw tangents to curves and use the slope to measure the rate of reaction.		
Can calculate the gradient of a tangent to a curve to measure rate of reaction.		
Can name 5 factors that would affect the rate of a reaction.		
<i>Can give detail on RP 5: 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.</i>		
Can describe collision theory in terms of particles and energy.		
Can predict and explain the effect of changing conditions on the rate of a reaction.		
Explain how each factor would affect the rate of reaction using collision theory		
State what a catalyst is and its role in a chemical reaction.		
Can explain catalysts by referring to reaction profiles and reaction pathways.		
Can identify catalysts from an equation.		
Can recognise and define reversible reactions.		
Can link reversible reactions to endothermic and exothermic in terms of energy transfer.		
Can describe equilibria in a reversible reaction.		
Can state Le Chatelier's Principle.		
Can predict the effect of changes on systems at equilibrium from information given		
Can describe and explain the effect of changing concentration of a reactant or product on the position of equilibrium.		
Can describe and explain the effect of changing the temperature of a system on the position of equilibrium.		
Can describe and explain the effect of changing the pressure of a system on the position of equilibrium.		
C9 Crude Oils and Fuels	Analysis	Revised
Can describe how crude oil was formed.		
Can describe crude oil as a mixture of hydrocarbons.		
Can define an endothermic reaction in terms of energy and give examples.		
Can give the general formula for an alkane and name and draw the first 4.		
Can describe the process of fractional distillation including evaporation and condensation.		
Can give uses for the fractions obtained from fractional distillation.		
Can link size of hydrocarbon molecule to the properties of boiling point, viscosity and flammability.		
Can describe the combustion of fuels to produced energy.		
Can write balanced equations for the complete combustion of hydrocarbons.		
Can describe and interpret trends in properties of hydrocarbons.		
Can describe steam and catalytic cracking including the conditions.		
Can state the products of cracking.		
Can balance equations showing cracking.		
Can recall the test for alkenes and explain why it happens.		
Can explain the reason cracking is used and some uses of alkenes.		
C10 Organic Reactions	Analysis	Revised
Can describe the structure of alkenes.		

Can give the general formula for alkenes.		
Can state the names of the first four alkenes.		
Can recognise and draw the molecular and displayed formula of the first four alkenes.		
Give the functional group in the alkene molecule that determined the reactions.		
Can describe combustion reactions of alkenes and link to incomplete combustion.		
Can describe the reactions and conditions for the addition of hydrogen, water and halogens to alkenes.		
Draw displayed formula for the first four alkenes and the products of their addition reaction with hydrogen, water, Cl, Br and I		
Can state the functional group of alcohols.		
Can name the first four alcohols, write their formula and draw their displayed formula.		
Can give uses for alcohols.		
Can describe the reactions of the first four alcohols with sodium, being burned in air, added to water and reacted with an oxidising agent.		
Can state the functional groups of carboxylic acids.		
Can draw the displayed formula of the first four carboxylic acids and give the molecular formula for each.		
Can describe what happens when the first four carboxylic acids react with carbonates, dissolve in water and react with alcohols.		
Can explain why carboxylic acids are weak acids in terms of ionisation and pH.		
Can name and draw ethyl ethanoate and name the group of molecules to which this belongs.		
C11 Polymers	Analysis	Revised
Can describe addition polymerisation.		
Can recognise addition polymers and monomers from diagrams of displayed formula.		
Can use the double bond functional group in a monomer to recognise when addition polymerisation will occur.		
Can draw diagrams to represent the formation of a polymer from an alkene monomer and the monomer from the polymer repeating unit.		
Can describe condensation polymerisation in terms of loss of a molecule from the functional group of the molecules.		
Can recognise a diol and a dicarboxylic acid in terms of the functional groups.		
Can use diagrams to show how a diol and a dicarboxylic acid react to form a polyester.		
Can describe the structure of amino acids in terms of their functional groups.		
Can describe how amino acids react together to form polypeptides.		
Can describe the role of DNA.		
Can describe the structure of DNA.		
Can name monomers of the natural polymers DNA, proteins, starch and cellulose.		
C12 Chemical Analysis	Analysis	Revised
Can state what is meant by pure substance.		
Can use melting and boiling point data to distinguish pure from impure substances.		
Can state what a formulation is.		
Can identify formulations from information.		
Can define the stationary and mobile phase of chromatography.		
Can explain how paper chromatography separated mixtures.		
Can say how chromatography can distinguish a pure substance from an impure substance.		
Can interpret chromatograms and calculate R _f values from chromatograms.		
<i>Can give details on RP6: Investigate how paper chromatography can be used to separate and tell the difference between coloured substances and calculate R_f values.</i>		
Can describe the test for hydrogen gas.		
Can describe the test for oxygen.		

Can describe the test for carbon dioxide.		
Can describe the test for chlorine gas.		
Can recall the colours of flame tests for Li, Na, K, Ca, Cu.		
Can explain why K can sometimes be difficult to detect in a mixture.		
Describe how sodium hydroxide can be used to identify some metal ions.		
Can give the results when sodium hydroxide is added to solutions of aluminium, calcium and magnesium.		
Can give the results when sodium hydroxide is added to solutions of Cu (II), Fe (II) and Fe (III)		
Can write balanced symbol equations for the reaction which produce insoluble hydroxides.		
Can describe how carbonates react with dilute acids.		
Can give the results of tests to identify halide ions Cl ⁻ , Br ⁻ , I ⁻ with silver nitrate solution in nitric acid.		
Can describe the test for sulfate ions in solution with barium chloride in dilute hydrochloric acid.		
<i>Give details on RP7: Use of chemical tests to identify the ions in unknown single ionic compounds.</i>		
Give advantages of instrumental methods compared with chemical tests.		
Can describe how flame emission spectroscopy is carried out to analyse metal ions in solution.		
Can interpret an instrumental result from chart or tables from flame emission spectroscopy.		
C13 The Atmosphere	Analysis	Revised
Can give the composition of the atmosphere.		
Can describe how the atmosphere changed over time.		
Can explain where the carbon dioxide went and how oxygen increased.		
Can evaluate different theories about the Earth's early atmosphere.		
Can describe the greenhouse effect in terms of how greenhouse molecules interact with short and long wave radiation.		
Can recall two human activities that increase the amounts of greenhouse gases carbon dioxide and methane.		
Can evaluate the quality of evidence in a report about global climate change when given information.		
Can describe why data is uncertain.		
Can explain why peer review is important.		
Can describe four possible effects of climate change.		
Can discuss the environmental implications of global climate change.		
Can explain what a carbon footprint is.		
Can describe what actions are taken to reduce carbon dioxide and methane emissions.		
Can describe how carbon monoxide, carbon particles (also called soot and particulates), sulfur dioxide and oxides of nitrogen are produced by burning fuels.		
Can predict the products of combustion of a fuel based on its composition.		
Can describe and explain the problems cause by the pollutants carbon monoxide, carbon particles, sulfur dioxide and oxides of nitrogen.		
C14 Using Resources	Analysis	Revised
Can give the difference between finite and renewable resources.		
Can define sustainable development.		
Can state examples of natural products that have been replaced by synthetic products.		
Can interpret information about resources from charts, graphs and tables.		
Can distinguish between potable and pure water.		
Can describe the differences between salty water and ground water.		
Can give the steps taken to produce potable water in the UK.		
Can describe how water is sterilised.		

Can describe ways that salty water can be made potable and say what the problems with this are.		
<i>Give details on RP8: Analysis and purification of water samples from different sources, including pH, dissolved solids and distillation.</i>		
Can describe how waste water is treated to make it potable.		
Can describe the processes of extracting copper by bioleaching and phytomining.		
Can explain how scrap iron can extract copper from solutions.		
Can explain how copper can be extracted from solutions by electrolysis.		
Can give the stages in a life cycle assessment.		
Can give a life cycle assessment for shopping bags made from plastic and paper and compare the two.		
Can explain why recycling and reusing materials is important.		
Can briefly describe how glass bottles and metals can be recycled.		
Can evaluate was of reducing the use of limited resources from information.		
C15 Using Materials	Analysis	Revised
Can explain what corrosion is and how it occurs.		
Can describe ways of preventing corrosion.		
Can describe experiments and interpret results to show that both air and water are necessary for rusting.		
Can explain sacrificial protection in terms of relative reactivity.		
Can give the metals in the alloys bronze, brass and steels.		
Can describe how alloys of gold link to carats.		
Can give the differences between high carbon steel, low carbon steel and stainless steel.		
Can recall a use for the alloys bronze, brass, gold, high carbon steel, low carbon steel, stainless steel and aluminium.		
Can give examples of ceramics, composites and polymers.		
Can give the difference in properties of HD and LD polyethene and explain how they are produced.		
Can explain the difference between thermosetting and thermosoftening polymers in terms of their structures.		
Can compare the physical properties of glass and clay ceramics, polymers, composites and metals.		
Can state what the Haber process is used for.		
Can state the raw materials for the Haber process and give sources from them.		
Can give the conditions at which the Haber process is carried out.		
Can write the word and balanced symbol equation for the reaction.		
Can explain how ammonia is removed and the nitrogen and hydrogen are recycled.		
Can interpret graphs of reaction conditions versus rate.		
Can apply the principles of dynamic equilibrium to the Haber process.		
Can explain why the conditions for the Haber process are a compromise.		
Can give the elements used in NPK fertilisers.		
Can recall the names of the salts produced when phosphate rock is treated with nitric acid, sulfuric acid and phosphoric acid.		
Can compare the industrial production of fertilisers with lab preparations.		