

Subject: GCSE CHEMISTRY

Exam board and overall exam code: Eduqas (C410P)

Exam content

Paper	Duration	Content	Percentage of overall GCSE
Component 1 (Concepts in Chemistry)	2 hrs 15 mins	A mix of short answer questions, structured questions, extended writing and data response questions, with some set in a practical context.	75%
Component 2 (Applications in Chemistry)	1 hr 15 mins	Section A: A mix of short answer questions, structured questions, extended writing and data response questions, all set in a practical context. Section B: A resource booklet containing an unseen article will provide the basis for a mix of short answer questions, structured questions and data response questions	25%

Exam Topics

- The following table contains a brief summary of the subject areas covered within each topic of the course.
- Please note that it is not a definitive list of everything that you need to know and understand – the specification should be your main point of reference. This can be found either online at <http://www.eduqas.co.uk/qualifications/chemistry/gcse/> or on the T-drive T:\SENIOR SCHOOL\Science\Mrs Michael\Year 11 Eduqas GCSE Chemistry (Separate).
- Specification maps (which list the pages in the GCSE Chemistry For You text book that can be referenced for each statement in the specification) are all available on the T drive T:\SENIOR SCHOOL\Science\Mrs Michael\Year 11 Eduqas GCSE Chemistry (Separate).

1. Pure substances and mixtures	Purity of substance, differences between elements, compounds and mixtures, uses of everyday products as formulations, separating techniques-simple and fractional distillation and chromatography and R_f values.
2. Particles and atomic structure	The differences between the three states of matter, the structure of the atom and its sub-atomic particles, the arrangements of elements in the Periodic Table and the importance of Mendeleev, electronic structure of the first 20 elements and isotopes.
3. Chemical formulae, equations and amount of substance	Use of chemical symbols to write formulae of elements and simple covalent and ionic compounds, calculations: empirical formulae, relative masses and moles, reacting masses from balanced equations, limiting reactants and law of conservation of mass.
4. The Periodic Table and amount of substance	The physical and chemical properties of elements in Groups 0,1 and 7 of the Periodic Table, reactivity trends within Groups 1 and 7, the use of the Periodic Table to classify elements, describe tests to identify hydrogen, oxygen and chlorine gases,

	flame test of Group 1 metal ions and testing Group 7 ions using silver nitrate solution, differences between metals and non-metals and general properties of transition metals e.g. titanium, vanadium, iron and copper.
5. Bonding, structure and properties	Dot and cross diagrams of simple ionic and covalent substances, bonding and properties of ionic, covalent and metallic substances, structures of simple and giant covalent substances, allotropes of carbon including fullerenes with reference to their structures, properties and uses, properties of diamond and graphite, nanoscience and risk associated with nanoparticles.
6. Reactivity series and extraction of metals	Reactivity of metals with water/acids, displacement reactions to establish a reactivity series, the relationship between the position of the metal in the reactivity series and metal extraction from its ore using iron and aluminium as examples, further examples of electrolysis in their molten and aqueous states, phytomining and bioleaching and properties of aluminium, copper, iron and titanium and tests to identify aqueous copper(II), iron(II) and iron(III) ions.
7. Chemistry of acids	Definitions of acids and bases, tests to identify carbon dioxide, carbonate ions with dilute acid, salts from insoluble bases and carbonates, neutralisation and the pH scale, strong and weak acids and moles of solution calculations.
8. Energy changes in chemistry	Exothermic and endothermic reactions, energy profile diagrams for exothermic and endothermic reactions and activation energy and bond energy calculations electrochemical cells and advantages and disadvantages of hydrogen/oxygen fuel cells.
9. Rate of chemical change and dynamic equilibrium	Practical methods for determining the rate of a given reaction from gas collection, loss of mass and precipitation, interpreting rate of reaction graphs, the effect of temperature, concentration and surface area on rate of reaction, collision theory, the effect of a catalyst (on activation energy) and enzymes on reaction rate, reversible reactions, dynamic equilibrium and altering conditions.
10. Carbon compounds	Fractional distillation of crude oil, cracking of hydrocarbons, families of organic compounds: alkanes, alkenes, alcohols and carboxylic acids and their reactions, addition and condensation polymerisation, DNA-a naturally occurring polymer and the dependency of modern life on the finite resource-crude oil.
11. Production, use and disposal of important chemicals and materials	Haber process in agricultural production, importance of nitrogen, phosphorous and potassium in agricultural production and the potential drawback of overuse, tests to identify ammonia gas and ammonium salts, percentage yield, atom economy, causes of corrosion, ammonia production and equilibrium, physical properties of glass and clay ceramics, polymers, composites and metals, definition and interpretation of data for a life cycle assessment of a material or product, recycling and factors that affect recycling.
12. The Earth and its atmosphere	History of our atmosphere, our evolving atmosphere, greenhouse gases, global climate change, atmospheric pollutants: carbon monoxide, sulfur dioxide, oxides of nitrogen and particulates and methods for increasing the availability of potable water in terms of the separation techniques used.
<ul style="list-style-type: none"> You will be given a copy of the <u>Periodic Table</u> and a <u>Formulae of common ions table</u> in all your examinations but you will need to learn the <u>Reactivity series of metals</u>. 	

- You need to be familiar with all of the 12 required practical activities that we have studied during lessons. You will find details of each of these on the T drive T:\SENIOR SCHOOL\Science\Mrs Michael\Year 11 Edquas GCSE Chemistry (Separate).
1. SP1A Determination of a melting point, e.g. naphthalene (pure substance) or candle wax (impure substance)
 2. SP1B Separation of liquids by distillation, e.g. ethanol from water and by paper chromatography
 3. SP4 Identification of unknown substances using flame tests and chemical tests for ions and gases
 4. SP6A Determination of relative reactivities of metals through displacement reactions
 5. SP6B Investigation into electrolysis of aqueous solutions and electroplating
 6. SP7A Preparation of crystals of a soluble salt from an insoluble base
 7. SP7B Titration of a strong acid against a strong base using an indicator
 8. SP8 Determination of the amount of energy released by a fuel
 9. SP9A Investigation into the effect of one factor on the rate of a reaction using a gas collection method
 10. SP9B Investigation into the effect of one factor on the rate of the reaction between dilute hydrochloric acid and sodium thiosulfate
 11. SP9C Investigation into the effect of various catalysts on the decomposition of hydrogen peroxide
 12. SP11 Determination of the percentage of water in a hydrated salt e.g. copper(II) sulfate

The CGP book: GCSE Chemistry Complete Revision and Practice (For the Grade 1-9 Exams) is a pupil-friendly resource and has plenty of practice questions and answers as well as a recap of all of the material in the course (use the following ISBN code in the Amazon.co.uk search box: 9781782945901).