

Topic	Sub-heading	Keywords	OCR 21C Combined science	OCR A 21C Chemistry
Atoms, elements and compounds	Atoms, elements and compounds	atoms, elements, compounds, molecules, symbols, formula	Throughout	Throughout
Atoms, elements and compounds	Chemical concepts	chemical reactions, balanced symbol equations, hazards	C2.4	C2.4
Atoms, elements and compounds	Atomic structure	atomic structure, atomic number, mass number, electronic structure, energy level, electron shell	C2.1	C2.1
Atoms, elements and compounds	Isotopes	isotopes, atom, mass number	C2.1	C2.1
Periodic table	Development of the periodic table	Newlands, Mendeleev, Dobereiner	C2.2	C2,2
Periodic table	Atomic structure and the periodic table	metals, non-metals, groups, periods	C2.3	C2.3
Periodic table	Group 1 - alkali metals	properties, trends, density, melting point, reaction with water	C2.2 C2.3	C2.2 C2.3
Periodic table	Group 7 - halogens	properties, trends, displacement reactions	C2.2 C2.3	C2.2 C2.3
Periodic table	Group 0 - Noble gases	properties, boiling point, trends, unreactivity	C2.3	C2.3
Periodic table	Transition elements	properties, transition metals, conductor, ions, catalysts		C2.5
Structure and bonding	Ionic and covalent bonding	ions, ionic, covalent, molecule, giant structure	C2.3 C3.4 C4.2	C2.3 C3.4 C4.3
Structure and bonding	Metal structure and properties	delocalised electrons, conductor, giant structure	C3.1 C4.2	C3.1 C4.3
Structure and bonding	Ionic compounds	ions, ionic, giant structure, lattice	C2.3 C4.2	C2.3 C4.3
Structure and bonding	Simple covalent molecules	covalent, molecule	C3.4 C4.2	C3.4 C4.3
Structure and bonding	Giant covalent structures	giant structure, covalent, diamond, graphite, fullerene	C4.2	C4.3
Structure and bonding	Nanotechnology	nanotechnology, nanoparticles, carbon nanotubes	C4.3	C4.4
Quantitative chemistry	RAM	relative atomic mass, RAM	C5.2	C5.3

Quantitative chemistry	Calculating formulae	empirical formula		
Quantitative chemistry	Moles	moles, molar mass	C5.2 (HT)	C5.3 (HT)
Quantitative chemistry	Gas volumes	molar volume		C5.3 (HT)
Quantitative chemistry	Atom economy	atom economy		C6.4
Quantitative chemistry	Yield in reactions	yield, percentage yield, theoretical yield, actual yield		C5.3
Obtaining and using metals	Extracting metals	reactivity series, reduction, carbon, electrolysis, oxidation	C3.2	C3.2
Obtaining and using metals	Extracting aluminium	reactivity, electrolysis	C3.2	C3.2
Obtaining and using metals	Extracting copper	bioleaching, phytomining, displacement	C3.2 (HT)	C3.2 (HT)
Obtaining and using metals	Properties and uses of metals	conductors, alloys, smart materials, recycling		C4.1
Obtaining and using metals	Reactions of metals	rusting, corrosion, galvanising, sacrificial protection, reactivity series, displacement reactions, thermal decomposition		C4.5
Acids, bases and salts	Acids and bases	acid, alkali, base, hydrogen ion, neutralisation, pH	C6.1	C6.1
Acids, bases and salts	Making salts	salt, hydroxide, carbonate, oxide, precipitate	C6.1	C6.1
Acids, bases and salts	Weak and strong acids		C6.1 (HT)	C6.1 (HT) C3.4
Acids, bases and salts	Titrations	end-point, pH curve, indicator		C5.4
Electrolysis	Electrolysis	anode, cathode, electrolyte	C3.3	C3.3
Energy in reactions	Exothermic and endothermic reactions	endothermic, exothermic, reversible	C1.2	C1.2
Energy in reactions	Energy diagrams	activation energy, energy level diagram	C1.2	C1.2
Energy in reactions	Bond energy	bond making, bond breaking	C1.2	C1.2
Energy in reactions	Fuel cells	hydrogen fuel cell, electrochemical cell, half equations		C1.2
Rates of reaction	How fast?	rate	C6.2	C6.2
Rates of reaction	Collision theory	activation energy, collision, kinetic theory, limiting factor	C6.2	C6.2

Rates of reaction	Catalysts	activation energy	C6.2	C6.2
Dynamic equilibrium	Reversible reactions	Reversible reaction, dynamic equilibrium	C6.3	C6.3
Dynamic equilibrium	Making ammonia (Haber process)	equilibrium, reversible		C6.4
Dynamic equilibrium	The contact process	contact process, sulfur, sulfuric acid		
Organic chemistry	Crude oil	renewable, non-renewable, fossil fuels, hydrocarbons, alkanes	C3.4	C3.4
Organic chemistry	Fractional distillation of oil	fractions, viscosity, flammability, hydrocarbon	C3.4	C3.4
Organic chemistry	Burning fuels	combustion, particulates, fuel, methane, catalytic converter	C1.1	C1.1
Organic chemistry	Cracking hydrocarbons	alkanes, alkenes, addition reaction, bromine water, double bond, saturated, unsaturated, homologous series	C3.4	C3.4
Organic chemistry	Polymers	monomer, double bond, bromine water, polymerisation, thermoset, thermo soft, biodegradable	C4.1 C4.2	C4.1 C4.2 C4.3
Organic chemistry	Alcohols	fuel, solvent, ethanol, combustion		C3.4
Organic chemistry	Carboxylic acids	carboxylic acid, methanoic acid, ethanoic acid, propanoic acid, butanoic acid, weak acid		C3.4
Organic chemistry	Esters	alcohol, perfume, flavouring		
Chemical analysis	Chromatography	chromatography, food additives, R _f value	C5.1	C5.1
Chemical analysis	Tests for ions	flame test, precipitate		C5.2
Chemistry of the atmosphere	The atmosphere	oxygen, carbon cycle, carbon dioxide, deforestation, air, photosynthesis, fossil fuel	C1.1 C1.3	C1.1 C1.3
Chemistry of the atmosphere	Effects of human activities	acid rain, global warming, dimming, deforestation, greenhouse gases, fossil fuels	C1.1	C1.1
Using resources	Fertilisers and water pollution	fertilisers, eutrophication, ammonia, neutralisation, life cycle analysis	C4.4	C4.5 C6.4
Using resources	Purifying water	water treatment, distillation	C1.4	C1.4