

SC5: **Ionic Bonding** (Paper 1 & Paper 2)

SC6: **Covalent Bonding** (Paper 1 & Paper 2)

SC7: **Types of Substances** (Paper 1 & Paper 2)

Lesson	Objectives Tracker Sheet	Date covered	I know this well	I need to do more work on this
SC5a Ionic bonds	C1.21 Explain how ionic bonds are formed by the transfer of electrons between atoms to produce cations and anions, including the use of dot and cross diagrams.			
	C1.22 Recall that an ion is an atom or group of atoms with a positive or negative charge.			
	C1.23 Calculate the numbers of protons, neutrons and electrons in simple ions given the atomic number and mass number.			
	C1.24 Explain the formation of ions in ionic compounds from their atoms, limited to compounds of elements in groups 1, 2, 6 and 7.			
SC5b Ionic lattices	C1.25 Explain the use of the endings –ide and –ate in the names of compounds.			
	C1.26 Deduce the formulae of ionic compounds (including oxides, hydroxides, halides, nitrates, carbonates and sulfates) given the formulae of the constituent ions.			
	C1.27 Explain the structure of an ionic compound as a lattice structure: (a) consisting of a regular arrangement of ions (b) held together by strong electrostatic forces (ionic bonds) between oppositely-charged ions.			
SC5c Properties of ionic compounds	C1.32 Explain the properties of ionic compounds limited to: (a) high melting points and boiling points, in terms of forces between ions			

	(b) whether or not they conduct electricity as solids, when molten and in aqueous solution.			
SC6a Covalent bonds	C1.28 Explain how a covalent bond is formed when a pair of electrons is shared between two atoms.			
	C1.29 Recall that covalent bonding results in the formation of molecules.			
	C1.30 Explain the formation of simple molecular, covalent substances, using dot and cross diagrams, including: (a) hydrogen (b) hydrogen chloride (c) water (d) methane (e) oxygen (f) carbon dioxide.			
SC7a Molecular compounds	C1.33 Explain the properties of typical covalent, simple molecular compounds limited to: (a) low melting points and boiling points, in terms of forces between molecules (intermolecular forces) (b) poor conduction of electricity.			
	C1.38 Describe, using poly(ethene) as the example, that simple polymers consist of large molecules containing chains of carbon atoms.			
SC7b Allotropes of carbon	C1.34 Recall that graphite and diamond are different forms of carbon and that they are examples of covalent, giant molecular substances.			
	C1.35 Describe the structures of graphite and diamond.			
	C1.36 Explain, in terms of structure and bonding, why graphite is used to make electrodes and as a lubricant, whereas diamond is used in cutting tools.			
	C1.37 Explain the properties of fullerenes including C60 and graphene in terms of their structures and bonding.			

SC7c Properties of metals	C1.39 Explain the properties of metals, including malleability and the ability to conduct electricity.			
	C1.41 Describe most metals as shiny solids which have high melting points, high density and are good conductors of electricity whereas most non-metals have low boiling points and are poor conductors.			
SC7d Bonding models	C1.31 Explain why elements and compounds can be classified as: (a) ionic (b) covalent, simple molecular (c) covalent, giant molecular (d) metallic and how the structure and bonding of these types of substances results in different physical properties, including relative melting point and boiling point, relative solubility in water and ability to conduct electricity (as solids and in solution).			
	C1.40 Describe the limitations of particular representations and models to include dot and cross, ball and stick models and two and three-dimensional representations.			