3.1 The periodic table

(a) the periodic table as the arrangement of elements: **(i)** by increasing atomic (proton) number **(ii)** in periods showing repeating trends in physical and chemical properties (periodicity) **(iii)** in groups having similar chemical properties					
(b) **(i)** the periodic trend in electron configurations across Periods 2 and 3 **(see also 2.2.1 d)** **(ii)** classification of elements into s-, p- and d-blocks					
(c) first ionisation energy (removal of 1 mol of electrons from 1 mol of gaseous atoms) and successive ionisation energy, and: **(i)** explanation of the trend in first ionisation energies across Periods 2 and 3, and down a group, in terms of attraction, nuclear charge and atomic radius **(ii)** prediction from successive ionisation energies of the number of electrons in each shell of an atom and the group of an element					
(d) explanation of: **(i)** metallic bonding as strong electrostatic attraction between cations (positive ions) and delocalised electrons **(ii)** a giant metallic lattice structure, e.g. all metals					
(e) explanation of the solid giant covalent lattices of carbon (diamond, graphite and graphene) and silicon as networks of atoms bonded by strong covalent bonds					
(f) explanation of physical properties of giant metallic and giant covalent lattices, including melting and boiling points, solubility and electrical conductivity in terms of structure and bonding					
(g) explanation of the variation in melting points across Periods 2 and 3 in terms of structure and bonding **(see also 2.2.2 o)**.					