Shapes of molecules and intermolecular forces

Specification reference	Checklist questions	
2.2.2 g	Can you describe the shapes of, and bond angles in, molecules and ions with up to six electron pairs (including lone pairs) surrounding the central atom as predicted by electron pair repulsion, including the relative repulsive strengths of bonded pairs and lone pairs of electrons?	☐
2.2.2 h	Can you use electron pair repulsion to explain the following shapes of molecules and ions: linear, non-linear, trigonal planar, pyramidal, tetrahedral and octahedral?	☐
2.2.2 i	Can you describe electronegativity as the ability of an atom to attract the bonding electrons in a covalent bond; interpretation of Pauling electronegativity values?	☐
2.2.2 j i	Can you explain a polar bond and permanent dipole within molecules containing covalently- bonded atoms with different electronegativities?	☐
2.2.2 j ii	Can you explain a polar molecule and overall dipole in terms of permanent dipole(s) and molecular shape?	☐
2.2.2 k	Can you describe intermolecular forces based on permanent dipole–dipole interactions and induced dipole–dipole interactions?	☐
2.2.2 l	Can you describe hydrogen bonding as intermolecular bonding between molecules containing N, O or F and the H atom of –NH, –OH or HF?	☐
2.2.2 m	Can you explain anomalous properties of H_2O resulting from hydrogen bonding?	☐
2.2.2 m i	Can you explain anomalous properties of H_2O resulting from hydrogen bonding, for example, the density of ice compared with water?	☐
2.2.2 m ii	Can you explain anomalous properties of H_2O resulting from hydrogen bonding, for example, its relatively high melting and boiling points?	☐

6 Shapes of molecules and intermolecular forces Checklist

Specification reference	Checklist questions	
2.2.2 n	Can you explain the solid structures of simple molecular lattices, as covalently bonded molecules attracted by intermolecular forces (e.g. I_2, ice)?	☐
2.2.2 o	Can you explain the effect of structure and bonding on the physical properties of covalent compounds with simple molecular lattice structures including melting and boiling points, solubility and electrical conductivity?	☐