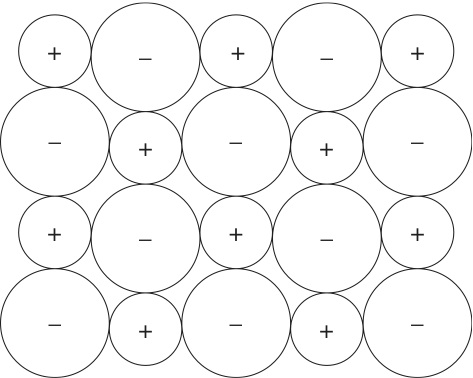
AQA AS/A-level Year 1 Chemistry exam practice answers

**3 Bonding**

**1 (a)** A giant structure containing Na+ and Cl− ions attracted electrostatically [1]

**** [1]

**(b) (i)** Ions are mobile in the liquid phase but fixed in their lattice in the solid phase [1]

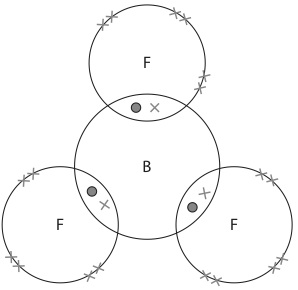
**(ii)** Oppositely charged ions attract each other strongly [1]

**2 (a)** Shared [1] pair(s) [1] of electrons

**(b)** A covalent bond in which both electrons [1] being shared come from the same donor atom [1]

**(c)** A structure bonded throughout [1] by covalent bonds [1]

**3 (a)**

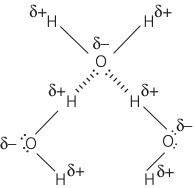
**** [2]

**(b)** An incomplete outer shell of six electrons [1]

**(c)** Ammonia has a lone pair of electrons [1] and may form a dative bond [1] in which the lone pair on the nitrogen atom is shared with the boron atom.

**4 (a)** Hydrogen bonding [1]; dipole–dipole attractions [1]

**(b)**

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[1] for molecular shape being correct and intermolecular forces indicated with dipoles drawn; [1] for lone pairs drawn correctly with hydrogen bonding shown between a lone pair on an oxygen of one water molecule with a hydrogen atom from another water molecule

**(c)** Hydrogen bonds are stronger than dipole–dipole forces [1]; more energy is needed to separate the molecules [1]

**(d)** Increasing number of electrons in the molecules [1]; greater van der Waals’ forces [1]

**5** B

**6** A

**7** C