Mark schemes

Q1.

(a) each calcium atom loses two electrons

1

(and) each chlorine atom gains one electron

*allow **1** mark for calcium atoms lose electrons **and** chlorine atoms gain electrons*

1

(so) one calcium atom reacts with two chlorine atoms

1

(to form) Ca^{2+} ions **and** Cl^- ions
or
(to form) calcium ion(s) **and** chloride ion(s)

allow (to form) ions with full outer shells

allow energy level for shell

1

(b) the ions cannot move

allow the ions are in fixed positions

1

[5]

Q2.

(a) bonded pair of electrons in the overlap

*allow any combination of x, o, $e^{(-)}$, * for electrons*

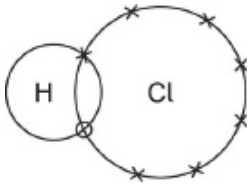
*do **not** accept molecules containing more than 2 atoms*

1

chlorine with 6 non-bonded electrons

*do **not** accept if extra electrons on H*

an answer of



*scores **2** marks*

or

an answer of

*scores **2** marks*

1

(b) (methane)

methane has (much) smaller molecules

1

(so) has weaker intermolecular forces

*do **not** accept reference to weak(er) covalent bonds*

1

(so the intermolecular forces) need less energy to overcome

*do **not** accept reference to breaking covalent bonds*

1

(so) the boiling / melting point is lower (and methane is a gas)

1

OR

(poly(ethene))

poly(ethene) has (much) larger molecules (1)

(so) has stronger intermolecular forces (1)

*do **not** accept reference to weak(er) covalent*

bonds

(so the intermolecular forces) need more energy to break (1)

*do **not** accept reference to breaking covalent bonds*

(so) the melting / boiling point is higher (and poly(ethene) is a solid) (1)

[6]