WORKSHEET 4

PROPERTIES AND BONDING IN CARBON

Syllabus reference 8.5.2

- The following cards are listed as Property Cards or Explanation Cards.
- The Property Cards give a physical property of the substance while the Explanation Cards give an explanation of that property.
- You are to cut out the cards and match them up.

PROPERTY CARD – I

Carbon is able to form four covalent bonds.

PROPERTY CARD – J

Graphite is soft and slippery and conducts electricity.

PROPERTY CARD – K

Diamond is extremely hard and a non-conductor of electricity.

PROPERTY CARD – L

Buckyballs are extremely stable at high temperatures and pressure.

PROPERTY CARD – M

The simplest hydrocarbon compound is methane, CH_4, which is a tetrahedron.

PROPERTY CARD – N

When bonded to oxygen, carbon forms carbon dioxide (CO_2) which is a gas.

PROPERTY CARD – O

In ethyne (C_2H_2), the carbon–carbon bond length is 0.120 pm, while in ethene (C_2H_4), the carbon–carbon bond length is 0.134 pm and in ethane, (C_2H_6), the carbon–carbon bond length is 0.154 pm.

EXPLANATION CARD – 9

Made up of five- and six-membered rings with each carbon bonded to three other carbon atoms forming a hollow, cage-like shape with other delocalised electrons.

EXPLANATION CARD – 10

It belongs to Group 4 in the periodic table and has four valence electrons.

EXPLANATION CARD – 11

Carbon can form four single covalent bonds due to its four valence electrons.

EXPLANATION CARD – 12

Carbon is able to form single, double and triple bonds. The stronger the C–C bond, the closer the carbon atoms are together.

EXPLANATION CARD – 13

It forms a planar structure of six-membered rings with delocalised electrons in the planes.

EXPLANATION CARD – 14

Consists of atoms covalently bonded to four other carbon atoms forming a three-dimensional structure with all valance electrons tied up in strong covalent bonds.

EXPLANATION CARD – 15

Carbon can form double bonds (two shared electron pairs) with adjacent atoms. When small molecules form, intermolecular forces are often weak so a gas results.