**CC5-7 Revision Mat**

**Covalent Bonds:**

What is a covalent bond?

…………………………………………………………………………………………………………………………………………………………………………

Draw dot and cross diagrams of the outer electrons only for the following covalent molecules:

Hydrogen chloride (HCl):

Methane (CH4)

Oxygen (O2):

Carbon dioxide (CO2):

**Ionic Lattices**

Ionic compounds are arranged in a lattice structure.

Describe what is meant by the term ‘lattice’

…………………………………………………………………………………………………………………………………………………………………………

**Ionic compounds have no overall charge**

*Deduce the formula of the following ionic compounds*:

Sodium chloride:

Aluminium chloride:

Calcium bromide:

Aluminium chloride:

Explain why ionic compounds have high melting and boiling points

…………………………………………………………………………………………………………………………………………………………………………

Explain why solid sodium chloride does not conduct electricity but sodium chloride solution does.

……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

**Ionic Bonds**

Define an ion:

…………………………………………………………………………………………………………………………………………………………………………

Anions are …………………………………. charged ions

Cations are ……………………………….. charged ions

**Complete the table:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Group Number** | **Charge on ion** | **Anion or Cation** | **Lost or gained and the number** |
| 1 |  |  |  |
| 2 |  |  |  |
| 6 |  |  |  |
| 7 |  |  |  |

Draw a dot and cross diagram of a sodium ion.

Draw a dot and cross diagram of a chloride ion.

**Allotropes of carbon**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Properties** | **Fullerenes** | **Graphene** | **Diamond** | **Graphite** |
| Structure |  |  |  |  |
| Ability to conduct electricity |  |  |  |  |
| Melting and boiling points |  |  |  |  |
| Uses |  |  |  |  |

Explain why graphite is softer than diamond

……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

Explain why fullerenes have low melting points

……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

**Allotropes of carbon**

Define allotrope

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

**Molecular Compounds**

Explain why simple covalent compounds have low melting points and boiling points

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

Explain why simple covalent compounds do not conduct electricity

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

What is a polymer?

…………………………………………………………………………………………………………………………………………………………………………

Explain why large polymer molecules have higher melting points and boiling points

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

**Properties of metals continued**

Explain why aluminium (forms Al3+ ions) has a higher electrical conductivity than sodium

……………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Ionic** | **Simple covalent** | **Giant covalent** | **Metallic** |
| Melting and boiling points |  |  |  |  |
| Solubility in water |  |  |  |  |
| Ability to conduct electricity |  |  |  |  |

**Bonding models**

|  |  |  |
| --- | --- | --- |
|  | **Advantages** | **Disadvantages** |
| Dot and cross diagrams |  |  |
| Metallic model |  |  |
| 3d Ball and stick model |  |  |

**Properties of metals**

List some properties of metals

*
*
*
*

List some properties of non-metals

*
*
*
*

Draw and label a diagram to represent the structure of a metal

Explain why metals are malleable

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………

Explain how metals conduct electricity

………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………………