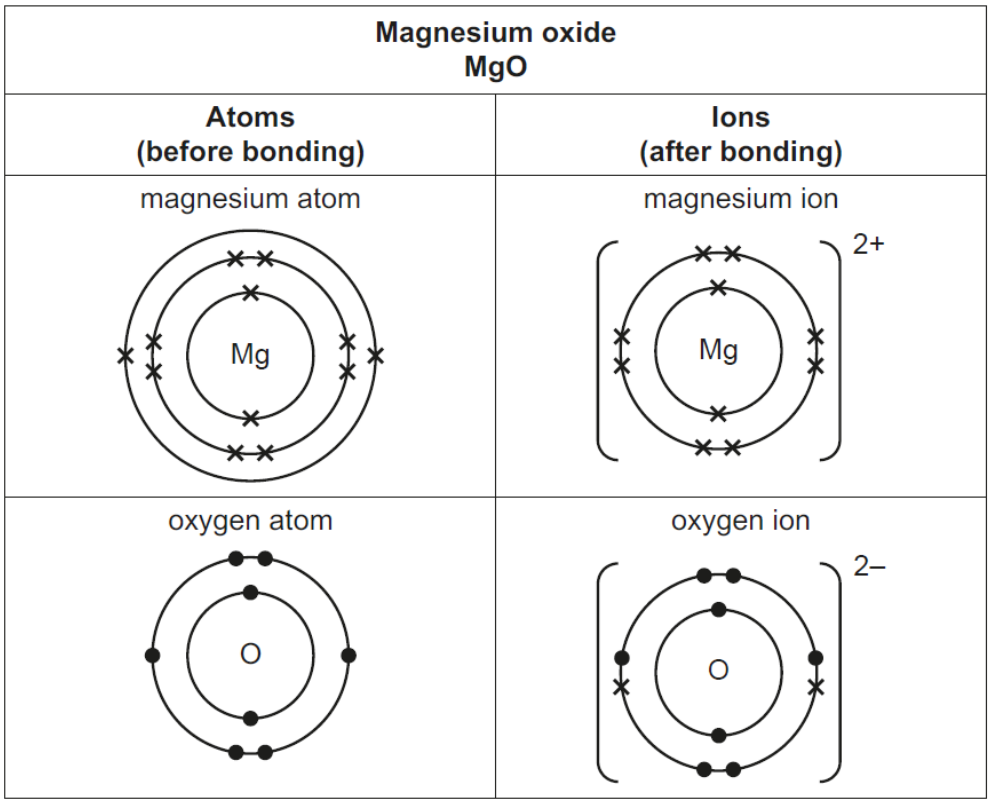
GCSE Chemistry B (Twenty First Century Science)

J258/02 Depth in chemistry (Foundation Tier)

Question Set 27

1 Magnesium oxide has ionic bonding. When ionic bonds form, electrons pass from one atom to another to form ions.

The diagrams show the arrangement of electrons in the **atoms** and **ions** of magnesium oxide.



(a) Describe how magnesium and oxygen atoms form ions, and explain the charges on each ion.

Use ideas about electrons and electron shells in your answer. **[6]**

(b) The table shows the melting point and boiling point of magnesium oxide and some other oxides.

	Melting point (°C)	**Boiling point** (°C)
Magnesium oxide	2852	3600
Carbon monoxide	−205	−192
Water	0	100

(i) Room temperature is 20 °C.

Draw lines to connect each **oxide** with its correct **state** and **state symbol** (at room temperature).

Oxide	State	State symbol
magnesium oxide	gas	(s)
carbon monoxide	liquid	(l)
water	solid	(g)

[2]

(ii) Complete the sentences to explain the differences between the melting points of the three oxides.

Use words from the list.

Each word can be used once, more than once, or not at all.

magnesium oxide	**strong**
carbon monoxide	**covalent**
water	**ionic**
weak	**intermolecular**

The oxide with the highest boiling point is .....

The oxide with the lowest melting point is.....

The melting point is low because the forces between molecules

are very .....

These forces are called ..... forces.

The type of bonding between atoms in carbon monoxide and water is

..... .

[3]

Total Marks for Question Set 27: 11