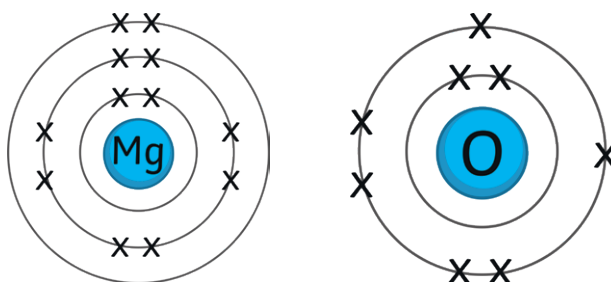


Ionic Compounds Exam Style Question

1. The diagram shows the electronic configuration of magnesium and oxygen.



a. Describe what will happen when these two elements react, in terms of electrons.

b. Describe the structure of an ionic compound.

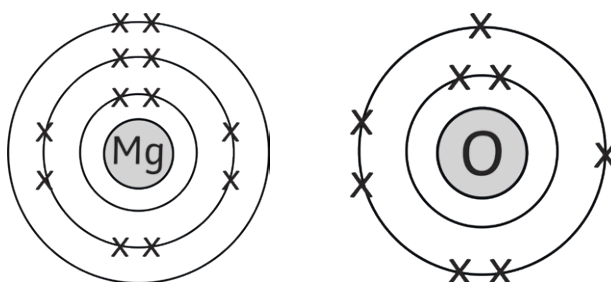
c. Explain why an ionic compound can conduct electricity when dissolved in water or molten, but not when solid.

d. The table shows four compounds. Decide which ones are ionic by placing a tick next to them.

Compound	Melting Point (°C)	Boiling Point (°C)	Can Carry an Electric Charge?	Ionic Compound or Not? ✓ ×
A	-114.1	78.0	Almost none.	
B	845.0	1 676	When dissolved in water, or molten.	
C	645	1 297	When dissolved in water, or molten.	
D	146	Decomposes before boiling.	no	

Answers

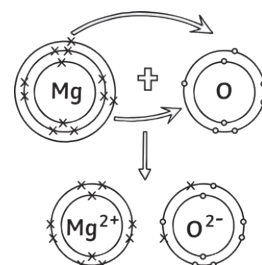
1. The diagram shows the electronic configuration of magnesium and oxygen.



a. Describe what will happen when these two elements react, in terms of electrons.

The metal magnesium is in group 2 and has two electrons on the outer shell. The non-metal oxygen is in group 6 and has six electrons on the outer shell. The two outer electron from magnesium transfer to the outer shell of oxygen, and both become stable due to the completely filled outer shells. The magnesium metal atom is now a positively charged ion, called an anion. The oxygen non-metal atom is now a negatively charged ion, called a cation. There is a strong electrostatic force of attraction between the two oppositely charged ions and this is called an ionic bond.

Alternatively, some credit could be given for a clearly labelled diagram like this:



b. Describe the structure of an ionic compound.

A regularly arranged lattice structure, with many strong bonds/electrostatic forces of attraction between the alternating oppositely charged ions.

c. Explain why an ionic compound can conduct electricity when dissolved in water or molten, but not when solid.

When an ionic compound is dissolved in water, or molten, the ions are free to move and therefore can carry an electrical charge. When an ionic compound is a solid, there are no free ions/they are fixed in place due to the strong electrostatic forces of attraction between the oppositely charged ions.

d. The table shows four compounds. Decide which ones are ionic by placing a tick next to them.

Compound	Melting Point (°C)	Boiling Point (°C)	Can Carry an Electric Charge?	Ionic Compound or Not? ✓/✗
A	-114.1	78.0	Almost none.	✗
B	845.0	1 676	When dissolved in water, or molten.	✓
C	645	1 297	When dissolved in water, or molten.	✓
D	146	Decomposes before boiling.	no	✗

Teacher Feedback

Effort: 1 2 3 4 5

With guidance, you can describe the basic formation of an ionic bond, with few keywords.	You can independently describe the basic formation of an ionic bond, with few keywords.	You can independently describe the formation of an ionic bond in detail, using several keywords.
With guidance, you can describe the basic structure of an ionic compound, with few keywords.	You can independently describe the structure of an ionic compound, with few keywords.	You can independently describe the basic structure of an ionic compound, using several keywords.
With guidance, you can briefly explain why an ionic compound can conduct electricity when dissolved or molten.	You can independently briefly explain why an ionic compound can conduct electricity when dissolved or molten.	You can independently explain why an ionic compound can conduct electricity when dissolved or molten compared to when solid, in detail.
With guidance, you can analyse unfamiliar data to identify ionic compounds, with few errors.	You can independently analyse unfamiliar data to identify ionic compounds, with few errors.	You can independently analyse unfamiliar data to identify ionic compounds, with no errors.

Next Steps:
