AQA GCSE Combined Science - Trilogy | 8464

SPECIFICATION POINT 5.2.1.3

Ionic compounds

Past-paper questions

Tier	**Higher**
Question groups	**2**
Available paper years	**2018–2025**

Using this booklet

1. Answer the questions in order and show your working.
2. Original question numbers and marks are retained.
3. Print at actual size (100%) for measuring questions.
4. Use the companion answer booklet to check your work.

Name: _____ **Date:** _____

Whole questions are retained for context, so some parts assess other specification points. Current and legacy sources are labelled. Continue on extra paper if needed.

5.2.1.3 Ionic compounds

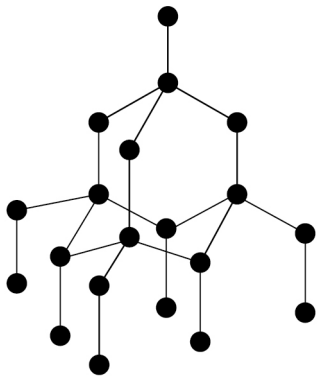
Question 01

June 2018 | 8464/C/1H | Original Q5

0 5 This question is about structure and bonding.

0 5 . 1 **Figure 5** shows part of the structure and bonding in diamond.

Figure 5



Explain why diamond has a high melting point.

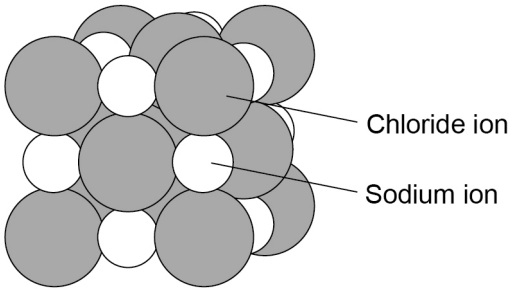
[3 marks]

5.2.1.3 Ionic compounds

Question 01 · continued

0 5 . 2 **Figure 6** shows part of the structure and bonding in sodium chloride (NaCl).

Figure 6



Explain the conditions needed for sodium chloride to conduct electricity.

[3 marks]

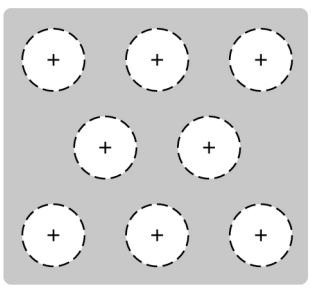
Question 5 continues on the next page

5.2.1.3 Ionic compounds

Question 01 · continued

0 5 . 3 **Figure 7** shows the structure of sodium.

Figure 7



Describe how sodium conducts thermal energy.

[3 marks]

9

5.2.1.3 Ionic compounds

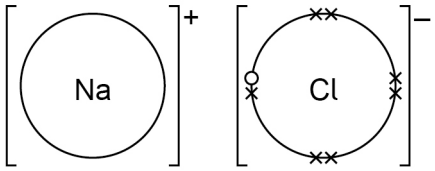
Question 02

June 2025 | 8464/C/1H | Original Q7

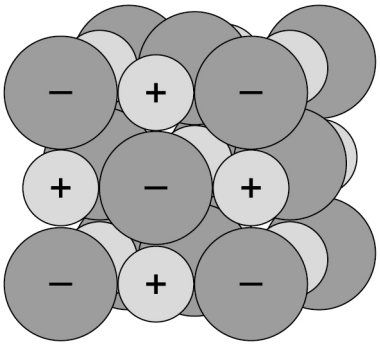
0 7 This question is about bonding and structures.

0 7 . 1 **Figure 10** represents two models of sodium chloride.

Figure 10



Model **A**



Model **B**

Give **two** limitations of model **A** compared with model **B**.

[2 marks]

1 _____

_____

2 _____

_____

0 7 . 2 Aluminium sulfate consists of the ions:

- Al^{3+}
- SO_4^{2-}

What is the formula of aluminium sulfate?

[1 mark]

_____

5.2.1.3 Ionic compounds

Question 02 · continued

0 7 . 3 Metals have metallic bonding.

Suggest **one** reason why aluminium metal conducts electricity better than sodium metal.

[1 mark]

0 7 . 4 Silicon dioxide and the polymer poly(ethene) are solid substances.

Compare silicon dioxide with the polymer, poly(ethene).

Answer in terms of structure and bonding.

[4 marks]

Extra space

8