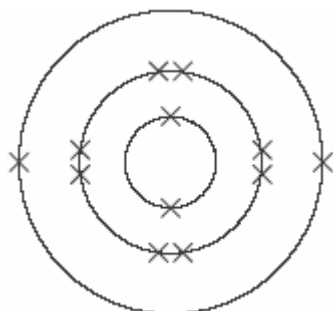


Structure and bonding

1. (a) Write a balanced symbol equation for the reaction between magnesium (Mg) and oxygen (O₂) to form magnesium oxide (MgO).

..... (1)

- (b) The diagram shows the electronic structure of a magnesium atom. The atomic (proton) number of magnesium is 12.

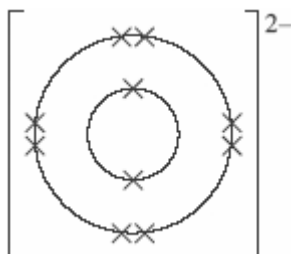


Magnesium atom

Draw a similar diagram to show the electronic structure of an oxygen atom. The atomic (proton) number of oxygen is 8.

(1)

- (c) Magnesium ions and oxide ions are formed when magnesium reacts with oxygen. The diagram shows the electronic structure of an oxide ion.



Oxide ion

Draw a similar diagram to show the electronic structure of a magnesium ion.

(1)

- (d) Magnesium oxide is a white solid with a high melting point. Explain how the ions are held together in solid magnesium oxide.

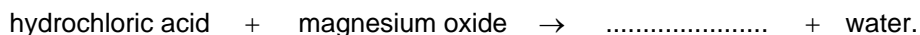
.....

(2)

Unit C2, C2.1.1

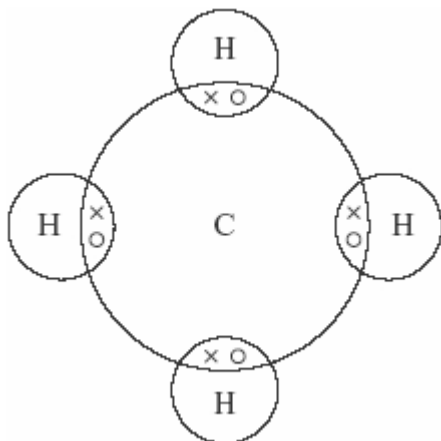
- (e) Indigestion tablets can be made from magnesium oxide. The magnesium oxide neutralises some of the hydrochloric acid in the stomach.

Complete the word equation for the reaction between magnesium oxide and hydrochloric acid.



(1)
(Total 6 marks)

2. The diagram represents a particle of methane.



- (a) What is the formula of methane?

(1)

- (b) Choose a word from the box to answer the question.

atom	ion	molecule
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Which of the words best describes the methane particle shown in the diagram?

.....

(1)

- (c) Choose a word from the box to answer the question.

covalent	ionic	metallic
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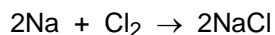
What is the type of bonding shown in the diagram?

.....

(1)
(Total 3 marks)

Unit C2, C2.1.1

3. Sodium reacts with chlorine to form the compound sodium chloride.



Describe, in terms of electron arrangement, the type of bonding in:

- (i) a molecule of chlorine;

.....

.....

.....

.....

.....

.....

(3)

- (ii) the compound sodium chloride.

.....

.....

.....

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.....

.....

(4)

(Total 7 marks)