

Atomic Structure

Question Paper 2

Level	Edexcel
Subject	Chemistry
Exam Board	GCSE(9-1)
Topic	Key Concepts in Chemistry
Sub Topic	Atomic Structure
Booklet	Question Paper 2

Time Allowed: 34 minutes

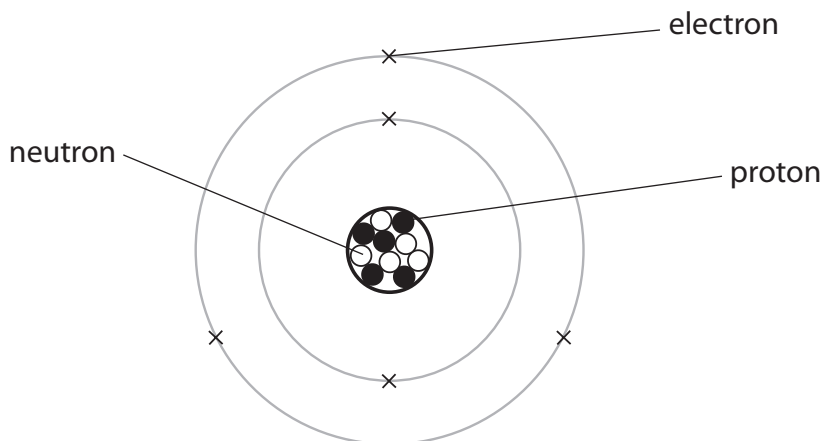
Score: /28

Percentage: /100

1 Boron exists as two isotopes.

These are boron-10, $^{10}_5\text{B}$, and boron-11, $^{11}_5\text{B}$.

(a) The diagram shows an atom of the isotope, boron-10.



(i) State the electronic configuration of boron.

(1)

(ii) Complete the sentence by putting a cross (☒) in the box next to your answer.

In the periodic table, boron is in period

(1)

- A 2
- B 3
- C 5
- D 10

(iii) The table shows the three particles present in atoms and their relative masses and charges.

Complete the table.

(2)

particle	relative mass	relative charge
electron	$\frac{1}{1837}$	
neutron		
proton		+1

2 The positions of five elements, **A**, **B**, **C**, **D** and **E**, are shown in the periodic table.

These letters are not the atomic symbols of these elements.

	1	2										3	4			0
		A												D		E
		B														
									C							

(a) Use only elements **A**, **B**, **C**, **D** and **E** to answer (i) and (ii).

(i) Give the letters of **all** the elements that are metallic.

(1)

(ii) Give the letters of the **two** elements that have the most similar chemical properties.

(1)

(b) An atom of element **B** contains more protons than an atom of element **A**.

State how many more protons there are in an atom of element **B** than in an atom of element **A**.

(1)

(c) An atom of element **E** has atomic number 10 and mass number 22.

(i) How many electrons does this atom contain?

Put a cross (☒) in the box next to your answer.

(1)

A 10

B 12

C 22

D 32

(ii) 10% of the atoms in a sample of element **E** have a mass number of 22.
All the other atoms in this sample have a mass number of 20.

Calculate the relative atomic mass of element **E**.

(3)

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relative atomic mass =

(d) The element below **E** in the periodic table is used to fill filament light bulbs.

Explain why this element is suitable for this use.

(2)

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(Total for Question 2 = 9 marks)

3 The elements in group 3 of the periodic table are boron, aluminium, gallium, indium and thallium.

(a) Elements can be classified as metals or non-metals.

Explain, using its position in the periodic table, whether indium is a metal or a non-metal.

(2)

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(b) Each aluminium atom has 13 electrons.

State the electronic configuration of an aluminium atom.

(1)

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(c) Boron has an atomic number of 5.

There are two isotopes of boron, boron-10 and boron-11.

(i) Complete the sentence by putting a cross (☒) in the box next to your answer.

Every boron atom contains

(1)

- A five protons
- B five neutrons
- C eleven electrons
- D eleven neutrons

(ii) Explain what is meant by the term **isotopes**.

(2)

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(iii) A sample of boron contains the two isotopes, boron-10 and boron-11.
The relative atomic mass of boron is 10.8

Give the reason why the relative atomic mass is closer to 11 than 10.

(1)

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(Total for Question 3 = 7 marks)