

2 Lithium is an element in Group 1 of the Periodic Table.

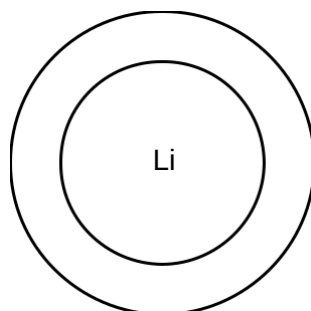
(a)

(i) Describe **one** physical property of lithium.

.....
 [1]

(ii) **Complete** the diagram to show the arrangement of electrons in an atom of lithium.

Use the Periodic Table.



(b) Lithium reacts with water to form an alkaline solution and hydrogen gas.

Complete the **word** equation and **balanced symbol** equation for the reaction.

Include state symbols on the symbol equation.

lithium + water → + hydrogen

$2\text{Li(s)} + 2\text{.....(l)} \rightarrow 2\text{LiOH(.....)} + \text{.....(g)}$

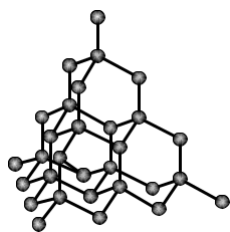
[2]

[4]

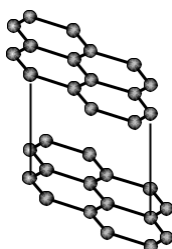
- (b) Diamond and graphite are different forms of carbon.

Fig. 9.1 shows their structures.

Fig. 9.1



Diamond



Graphite

- (i) Graphite is a good conductor of electricity.

Use the structures to explain why.

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..... [2]

- (ii) Glass can be cut by diamond but not by graphite. Use the structures to explain why.

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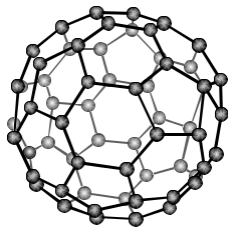
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..... [2]

- (c) Buckminsterfullerene is a nanoparticle made of 60 carbon atoms.

Fig. 9.2 shows the structure of Buckminsterfullerene.

Fig. 9.2



- (i) Buckminsterfullerene has a diameter of 1

nm. What is its diameter in m?

Put a ring around the correct option.

1×10^{10}

1×10^9

1

1×10^{-9}

1×10^{-10}

[1]

- (ii) Buckminsterfullerene is used in medicine to carry drugs into the body.

Describe **two** properties of buckminsterfullerene that make it able to carry drugs into the body.

1

2

[2]

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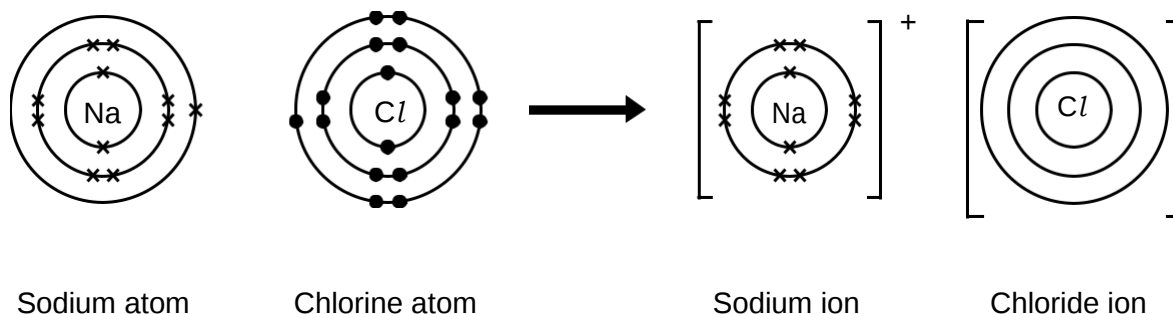
Turn over for the next question

Preview from [Notesale.co.uk](https://www.notesale.co.uk)
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(iii) Fig. 11.2 shows the dot and cross diagram for sodium chloride. Complete

Fig. 11.2 to show the structure and charge of the chloride ion.

Fig. 11.2



[2]

(b) How does the arrangement of electrons in atoms of sodium and chlorine relate to their group and period in the Periodic Table?

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..... [2]

(c) An atom of sodium has an atomic number of 11 and a mass number of 23.

State the number of protons, neutrons and electrons in a sodium atom.

Number of protons =

Number of neutrons =

Number of electrons =

[2]

END OF QUESTION PAPER

MARKING INSTRUCTIONS

PREPARATION FOR MARKING

RM ASSESSOR

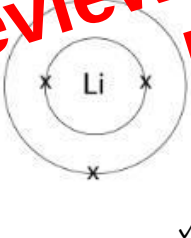
1. Make sure that you have accessed and completed the relevant training packages for on -screen marking: *RM Assessor Online Training*; *OCR Essential Guide to Marking*.
2. Make sure that you have read and understood the mark scheme and the question paper for this unit. These are available in RM A ssessor.
3. Log-in to RM Assessor and mark the **required number** of practice responses (“scripts”) and the **required number** of standardisation responses.

MARKING

1. Mark strictly to the mark scheme.
2. Marks awarded must relate directly to the marking criteria.
3. The schedule of dates is very important. It is essential that you meet the RM Assessor 50% and 100% (traditional 50% Batch 1 and 100% Batch 2) deadlines. If you experience problems, you must contact your Team Leader (Supervisor) without delay.
4. If you are in any doubt about applying the mark scheme, consult your Team Leader by telephone, email or via the RM Assessor messaging system.

12. Abbreviations, annotations and conventions used in the detailed Mark Scheme (to include abbreviations and subject -specific conventions).

Annotation	Meaning
/	alternative and acceptable answers for the same marking point
✓	Separate marking points
DO NOT ALLOW	Answers which are not worthy of credit
IGNORE	Statements which are irrelevant
ALLOW	Answers that can be accepted
()	Words which are not essential to gain credit
—	Underlined words must be present in answer to score a mark
ECF	Error carried forward
AW	Alternative wording
ORA	Or reverse argument

Question			Answer	Marks	AO element	Guidance
2	(a)	(i)	Any one from: Soft ✓ Low melting/boiling point ✓ Conducts heat/electricity ✓	1	1.1	ALLOW solid / malleable / silvery / shiny IGNORE dull / weak /
		(ii)	3 electrons identified ✓ Structure as shown 	2	2.1 1.1	Note: Beware of heavily crossed out - allow final version
	(b)		Lithium Hydroxide ✓ H ₂ O ✓ aq ✓ H ₂ ✓	4	1.2	ALLOW effort has been made to show the subscript _{in H₂O} 2 DO NOT ALLOW lower case h in H ₂ O
	(c)	(i)	increases ✓	1	1.1	ALLOW warms up DO NOT ALLOW T surroundings increase AND T reactants decreases IGNORE releases heat IGNORE non-temperature related comments