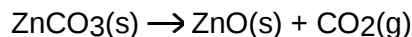


- 7 The equation shows the reaction of zinc carbonate when it is heated.



- 5.0 g of zinc carbonate is heated in a test tube for 10 minutes.
- The mass of the test tube decreases by 0.6 g.

How does the law of conservation of mass explain this decrease in mass?

- A** 0.6 g of carbon dioxide is produced.
- B** 0.6 g of zinc oxide is produced.
- C** 4.4 g of carbon dioxide is produced.
- D** 5.6 g of zinc oxide is produced.

Your answer

☐

[1]

- 8 Which statement describes the **mole**?

- A** The mole is defined relative to carbon-14.
- B** The mole is the unit for the amount of a substance.
- C** The number of particles in one mole of a substance depends on the substance. **D**

One mole contains 1.67×10^{-27} particles.

Your answer

☐

[1]

- 9 Magnesium reacts very slowly with oxygen at room temperature.

When magnesium is heated in a Bunsen burner flame it burns very brightly after only a few seconds.

Which statement is correct?

- A** The activation energy for the reaction is high. **B**
- The reaction is endothermic.
- C** Magnesium is an unreactive metal.
- D** Magnesium only reacts at very high temperatures.

Your answer

☐

[1]

- **A** is calcium carbonate
- **B** is sodium carbonate
- **C** is sodium chloride.

Solid	Solubility in water	Reaction with dilute hydrochloric acid
Calcium carbonate	insoluble	reacts to produce carbon dioxide
Sodium carbonate	soluble	reacts to produce carbon dioxide
Sodium chloride	soluble	no reaction

Describe any observations that the student would see in these experiments **and** how they help show the labels are correct.

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EXTRA ANSWER SPACE

If you need extra space use these lined pages. You must write the question numbers clearly in the margin.

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11. Annotations available in RM Assessor

Annotation	Meaning
	Correct response
	Incorrect response
	Omission mark
	Benefit of doubt given
	Contradiction
	Rounding error
	Error in number of significant figures
	Error carried forward
	Level 1
	Level 2
	Level 3
	Benefit of doubt not given
	Noted but no credit given
	Ignore

	(g)	(i)	First check answer on the answer line If answer = 28.57 / 28.6 / 29 (%) award 2 marks $4 \div 14 (\times 100)$ ✓ $= 28.57 / 28.6 / 29 (\%)$ ✓	2	2 x 2.2	ALLOW any correct rounding of calculator answer of 28.571428
		(ii)	Idea that the diagram contains too many atoms of lithium ✓ / too few aluminium atoms	1	3.1b	ECF from an incorrectly calculated percentage relating to the diagram e.g. value is below 2% lithium INGORE any reference to percentage values

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Question	Answer	Marks	AO element	Guidance
12 (a)	Any 3 from: Ions in a solid <u>vibrate in a fixed position</u> ✓ Ions gain energy / vibrate or move more / vibrate or move faster ✓ (Ionic) bonds become weaker ✓ (Ionic) bonds break / lattice breaks down / ions are now irregularly arranged ✓ Ions start to move freely or randomly (past each other) ✓	3	3 x 1.1	ALLOW particles instead of ions If molecules / atoms are used instead of ions maximum of 2 marks IGNORE intermolecular forces
(b)	So the ions <u>are free</u> to move / AW ✓	1	1.2	DO NOT ALLOW delocalised electrons
(c)	Potassium / K ✓ $K^+ + e^- \rightarrow K$ ✓	2	2 x 1.2	DO NOT ALLOW ions ALLOW half equation given here if product is K
(d)	Hydrogen / H₂ ✓ Potassium is more reactive than hydrogen / ORA ✓	2	2 x 3.1b	DO NOT ALLOW ions ALLOW half equation given here if product is H₂