AQA GCSE Chemistry | 8462

SPECIFICATION POINT 4.8.1.2

Formulations

Mark schemes and examiner comments

Tier	**Foundation**
Question groups	**3**
Available paper years	**2019–2025**

Using this booklet

1. Booklet answer numbers match the question booklet.
2. Use the original question number within marking tables.
3. Examiner comments are included where available.

Name: _____ **Date:** _____

Where a precise marking extract is unavailable, the full source document is included in an appendix. Any missing mark scheme is explicitly identified.

4.8.1.2 Formulations

Answer 01 · Mark scheme

June 2019 | 8462/2F | Original Q9

Question 9

Question	Answers	Mark	AO/ Spec. Ref
09.1	**Level 3**: The design/plan would lead to the production of a valid outcome. All key steps are identified and logically sequenced.	5–6	AO1 4.8.2.3 4.8.3.1 4.8.3.3
	Level 2: The design/plan would not necessarily lead to a valid outcome. Most steps are identified, but the plan is not fully logically sequenced.	3–4	
	Level 1: The design/plan would not lead to a valid outcome. Some relevant steps are identified, but links are not made clear.	1–2	
	No relevant content	0	
	Indicative content lithium: • crush tablets or dissolve tablet (in water or acid) • clean wire • place on wire • place in (roaring / blue / non-luminous) flame • observe flame colour • crimson flame carbonate: • add hydrochloric acid • effervescence / fizzing • bubble gas through limewater • limewater becomes cloudy		
09.2	formulation(s)	1	AO1 4.8.1.2

4.8.1.2 Formulations

Answer 01 · Mark scheme

09.3		an answer of 58.3333333 (%) correctly rounded to at least 2 significant figures scores **3** marks		AO2 4.8.1.2
	1.20 g = 1200 mg **or** 700 mg = 0.700 g		1	
	$\frac{700}{1200} \times 100$ **or** $\frac{0.700}{1.20} \times 100$	allow correct use of incorrectly or not converted values from step 1	1	
	= 58.3 (%)	allow 58.3333333 (%) correctly rounded to at least 2 significant figures	1	
Total			**10**	

4.8.1.2 Formulations

Answer 02 · Mark scheme

November 2021 | 8462/2F | Original Q7

Question 7

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.1	fuel		1	AO1 4.7.1.2

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.2	propene		1	AO2 4.7.2.1 4.7.3.1

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.3	(percentage yield =) $\frac{380}{400} \times 100$ = 95 (%)		1 1	AO2 4.3.3.1

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.4	some ethanol changes back into ethene and steam some ethanol escapes from the apparatus		1 1	AO2 4.3.3.1

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.5	C_2H_5OH + **3** O_2 → 3 H_2O + 2 CO_2	allow multiples	1	AO2 4.1.1.1 4.3.1.1 4.7.2.3

4.8.1.2 Formulations

Question 7 continued

Question	Answers	Extra information	Mark	AO / Spec. Ref.
07.6	(advantages) (fermentation) low energy usage (fermentation) uses renewable raw materials (disadvantages) (fermentation) produces impure ethanol (fermentation) slow rate of reaction		 1 1 1 1	AO3 4.7.2.2 4.7.2.3 4.10.1.1

Total			**11**

4.8.1.2 Formulations

Question 10

Question	Answers	Mark	AO / Spec. Ref.
10.1	**Level 3:** A judgement, strongly linked and logically supported by a sufficient range of correct reasons, is given.	5–6	AO3 4.10.1.1 4.10.1.2 4.10.2.2 4.10.3.1
	Level 2: Some logically linked reasons are given. There may also be a simple judgement.	3–4	
	Level 1: Relevant points are made. They are not logically linked.	1–2	
	No relevant content	0	
	Indicative content • aluminium ore is a finite resource • wood is a renewable resource • aluminium ore has to be mined / quarried o which causes dust / noise pollution • trees require land for growing o which reduces land for farming o which can lead to deforestation • cost of wood is lower o so more doors can be obtained for the same cost • aluminium is stronger o so less easily damaged • aluminium doors do not need painting o so less maintenance required • both are recyclable o so resources are conserved o so less goes into landfill o so less fossil fuels used o so less climate change • judgement		

4.8.1.2 Formulations

Question	Answers	Extra information	Mark	AO / Spec. Ref.
10.2	(the oxide coating) acts as a barrier (that) prevents air / oxygen / water reaching the aluminium / metal	do **not** accept sacrificial protection do **not** accept references to rusting do **not** accept sacrificial protection	1 1	AO1 4.10.3.1

Question	Answers	Extra information	Mark	AO / Spec. Ref.
10.3	a fixed mass of pigment and a fixed mass of liquid		1	AO1 4.8.1.2

Total Question 10	9

4.8.1.2 Formulations

Answer 03 · Examiner comments June 2025 | 8462/2F | Original Q10

Question 10

10.1 Over half of students achieved a Level 1 response for comparing the values given in the table. To achieve a higher level, links were required, why comparisons made a difference, and a judgement was required for Level 3. Too many students quoted values from the table with no 'added value' and no credit was given for this.

10.2 Around a third of students scored at least one mark on this item, usually for the idea that water, air or oxygen could not react with the aluminium. Far fewer students were able to explain the specification point that the oxide provides a barrier. Students who described sacrificial protection gained no marks for this question, whereas those that described the reaction as rusting limited their response to one mark.

10.3 A quarter of students correctly identified that a formulation would have fixed quantities of all components.

4.8.1.2 Formulations

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the Results Statistics page of the AQA Website.