

APOLLO

How much? The amount of chemical change

SL

Chemistry

First assessment 2025

18 questions | mark schemes

Mark-scheme answers

Chemistry SL | Paper 1A | May 2025 TZ1 | Q20 | 1 marks

20. C

Chemistry SL | Paper 1A | May 2025 TZ1 | Q21 | 1 marks

21. A

Chemistry SL | Paper 1A | May 2025 TZ2 | Q17 | 1 marks

17. C

Chemistry SL | Paper 1A | May 2025 TZ2 | Q18 | 1 marks

18. D

Chemistry SL | Paper 1A | May 2025 TZ3 | Q3 | 1 marks

3. B

Chemistry SL | Paper 1A | May 2025 TZ3 | Q18 | 1 marks

18. A

Chemistry SL | Paper 1A | May 2025 TZ3 | Q21 | 1 marks

21. D

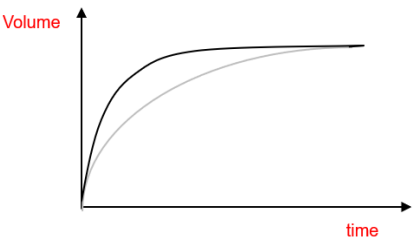
3.	(a)	reasonable line of best fit ✓ extrapolated past data given «extended beyond 0.08 AND 0.4 mol dm⁻³» ✓	Line can touch all data points. Accept range of extrapolation through origin to 0.02 mol dm⁻³ AND past data given for M2. Line can extend beyond graph range.	2
3.	(b)	«directly/positively» proportional OR positive linear ✓	Accept answers based on $y=mx+b$. Accept “«directly/positively» proportional OR positive linear” if extrapolation started from 0.02 mol dm⁻³. Do not accept “positive correlation” alone.	1

Question		Answers	Notes	Total
3.	(c)	gradient = 2.0 ✓ absorbance/A = 2.0 concentration/C OR $y = 2.0x$ ✓	Accept gradient/slope range of 1.9-2.3 for M1. Accept “$y=mx+b$” with range of -0.03-0 for b. Do not accept equation with +b values for M2.	2
3.	(d)	1.22 ✓	Accept answer in the range of 1.20-1.30. Do not ECF from calculation as error is contradiction to graph.	1

3.	(a)	$\text{CaCO}_3(\text{s}) + 2\text{HCl}(\text{aq}) \rightarrow \text{CaCl}_2(\text{aq}) + \text{CO}_2(\text{g}) + \text{H}_2\text{O}(\text{l})$ correct products AND state symbols ✓ correct balancing ✓	<i>Do not accept $\text{H}_2\text{CO}_3(\text{aq})$ for M1.</i> <i>Accept ionic equation.</i>	2
3.	(b)	$n(\text{CaCO}_3) \llcorner = \frac{3.162 \text{ g}}{100.09 \text{ g mol}^{-1}} \llcorner = 0.0316 \llcorner \text{mol} \llcorner$ AND $n(\text{HCl}) \llcorner = 4.00 \text{ mol dm}^{-3} \times 20.0 \times 10^{-3} \text{ dm}^3 \llcorner = 0.0800 \llcorner \text{mol} \llcorner$ ✓ CaCO_3 is limiting ✓	<i>Do not award M2 without working/answer seen for M1</i>	2
3.	(c)	$\llcorner V = 0.0316 \text{ mol} \times 22.7 \text{ dm}^3 \text{mol}^{-1} = \llcorner$ $0.717 \llcorner \text{dm}^3 \llcorner$ ✓		1

– 7 –

2225 – 6212M

Question	Answers	Notes	Total
3. (d)	 Greater gradient AND from origin AND same final volume ✓	<i>Lines must not cross.</i>	1
	$\llcorner \text{catalyst provides} \llcorner$ alternative reaction pathway ✓ $\llcorner \text{catalyst} \llcorner$ lower(s) activation energy ✓	<i>M1 requires a description of the reaction going from reactants to products if exact wording not</i>	

5.	(a)	hydrogen is the limiting reactant OR $2\text{H}_2:1\text{C}_2\text{H}_6$ ✓ 80.0 cm ³ ✓	Award [2] for correct final answer. Accept answers expressed in dm ³ .	2
5.	(b)	60.0 cm ³ of C ₂ H ₂ in excess/leftover ✓ «60.0 cm ³ of C ₂ H ₂ + 80.0 cm ³ of C ₂ H ₆ =» 140.0 cm ³ ✓	Award [2] for correct final answer. Accept answers expressed in dm ³ .	2

Mark-scheme answers

Chemistry SL | Paper 1A | Nov 2025 TZ1 | Q19 | 1 marks

19. C

Chemistry SL | Paper 1A | Nov 2025 TZ1 | Q20 | 1 marks

20. D

Chemistry SL | Paper 1A | Nov 2025 TZ1 | Q21 | 1 marks

21. C

Chemistry SL | Paper 1A | Nov 2025 TZ3 | Q4 | 1 marks

4. A

Chemistry SL | Paper 1A | Nov 2025 TZ3 | Q18 | 1 marks

18. C

Chemistry SL | Paper 1A | Specimen 2025 | Q19 | 1 marks

19. A

Chemistry SL | Paper 1A | Specimen 2025 | Q20 | 1 marks

20. C

Chemistry SL | Paper 1A | Specimen 2025 | Q21 | 1 marks

21. A