

APOLLO

How fast? The rate of chemical change SL

Chemistry

First assessment 2025

15 questions | mark schemes

Mark-scheme answers

Chemistry SL | Paper 1A | May 2025 TZ1 | Q22 | 1 marks

22. A

Chemistry SL | Paper 1A | May 2025 TZ1 | Q23 | 1 marks

23. A

Chemistry SL | Paper 1A | May 2025 TZ2 | Q19 | 1 marks

19. C

Chemistry SL | Paper 1A | May 2025 TZ2 | Q20 | 1 marks

20. A

Chemistry SL | Paper 1A | May 2025 TZ2 | Q21 | 1 marks

21. B

Chemistry SL | Paper 1A | May 2025 TZ3 | Q19 | 1 marks

19. A

2.	(a)	use volumetric flask ✓ make up to line ✓ mix/invert/shake «the final solution» ✓	Marking points can be in any order.	3 max
2.	(b)	«dilute solution to» make several/multiple concentrations ✓ measure the absorbance/transmittance «of these solutions» ✓ plot graph of absorbance/transmittance vs/against concentration «with a straight line of best fit» ✓	Do not accept “colour” for absorbance/transmittance for M2.	3
2.	(c)	measure the absorbance/transmittance «of the unknown» AND use graph to determine concentration ✓	Accept “Draw a line across from the absorbance/transmittance «on the y-axis» to the calibration curve and read off «intercept on» the concentration «axis». Accept use of the equation of the line. Do not accept “colour” instead of absorbance, unless applying ECF from 2(b).	1

Mark-scheme answers

Chemistry SL | Paper 1A | Nov 2025 TZ1 | Q22 | 1 marks

22. A

Chemistry SL | Paper 1A | Nov 2025 TZ1 | Q23 | 1 marks

23. D

Chemistry SL | Paper 1A | Nov 2025 TZ3 | Q19 | 1 marks

19. D

Chemistry SL | Paper 1A | Nov 2025 TZ3 | Q20 | 1 marks

20. A

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

21. D

Chemistry SL | Paper 1A | Specimen 2025 | Q22 | 1 marks

22. B

Chemistry SL | Paper 1A | Specimen 2025 | Q23 | 1 marks

23. A

2.	(a)		Any two for [1 max] type of orange juice temperature light intensity «initial» surface area OR «initial» volume AND flask ✓		1
2.	(b)	i	Any one of: to perform multiple titrations ✓ too concentrated «so using too much iodine solution» ✓ end-point colour easier to see ✓		1
2.	(b)	ii	flask has to be opened to withdraw samples «so not 0 h» OR air was present in the flask at the start «so the ascorbic acid was exposed to air» ✓		1
2.	(b)	iii	titrate only once after two weeks OR fill flask with nitrogen/argon/inert gas OR withdraw samples with syringe «without opening flask» ✓		1
2.	(c)		$\left\langle \frac{0.1 \text{ cm}^3}{15.0 \text{ cm}^3} \times 100 = \right\rangle 0.7 \text{ \%}$ ✓		1
2.	(d)	i	$\left\langle \frac{(5.3 \times 10^{-3} \text{ mol dm}^{-3} - 1.1 \times 10^{-3} \text{ mol dm}^{-3})}{14 \text{ d}} \right\rangle = 3.0 \times 10^{-4}$ ✓ mol dm ⁻³ d ⁻¹ ✓	Accept values in the range 2.9×10^{-4} - 3.1×10^{-4} . Accept values converted to other units, such as 3.4×10^{-9} - 3.6×10^{-9} mol dm ⁻³ s ⁻¹ or 0.29 - 0.31 mmol dm ⁻³ d ⁻¹ .	2

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2.	(d)	ii	«support» longer daily exposure leads to lower concentration of ascorbic acid OR 0 h decreases the least ✓ «doesn't support» no direct evidence of oxidation by oxygen ✓		2
2.	(d)	iii	should be stored in sealed container OR should be consumed in a few days after opening ✓		1
2.	(e)		Any one of: effect of temperature/light AND would show the value of refrigeration/darkness ✓ effect of preservative ✓ compare types of orange juice «e.g. fresh, from concentrate, etc.» ✓		1