

APOLLO

Counting particles by mass: The mole HL

Chemistry

First assessment 2025

11 questions | mark schemes

Mark-scheme answers

Chemistry HL | Paper 1A | May 2025 TZ2 | Q5 | 1 marks

5. D

Chemistry HL | Paper 1A | May 2025 TZ3 | Q1 | 1 marks

1. D

Chemistry HL | Paper 1A | May 2025 TZ3 | Q2 | 1 marks

2. B

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

3. B

7.	(a)	C = 2.59 «g» ✓ «$m(\text{O}) = 4.32 - (m(\text{C}) + m(\text{H}))$ $= 4.32 - (2.59 + 0.581) = 1.15 \text{ g}$ » $n(\text{O}) = \frac{1.15 \text{ g}}{16.00 \text{ g mol}^{-1}}$ / 0.0718 «mol» ✓ «$n(\text{C}):n(\text{H}):n(\text{O}) = 0.216 : 0.575 : 0.0718 = 3 : 8 : 1$ » $\text{C}_3\text{H}_8\text{O}$ ✓	M3 for finding empirical formula Award [3] for correct final answer.	3
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Question			Answers	Notes	Total
7.	(b)	(i)	$T = 373 \text{ K}$ AND $V = 5.57 \times 10^{-5} \text{ m}^3$ OR $T = 373 \text{ K}$ AND 0.0557 dm^3 and $1 \times 10^2 \text{ kPa}$ ✓ «$n = \frac{PV}{RT} = \frac{1.00 \times 10^5 \text{ Pa} \times 5.57 \times 10^{-5} \text{ m}^3}{8.31 \text{ J K}^{-1} \text{ mol}^{-1} \times 373 \text{ K}}$» $n = 0.00180 \text{ «mol»}$ ✓	Award [2] for correct final answer.	2
7.	(b)	(ii)	«$M = \frac{0.108 \text{ g}}{0.00180 \text{ mol}}$ » $60.0 / 60.1 \text{ «g mol}^{-1}\text{»}$ ✓	If $n = 0.00220 \text{ mol}$ is used, $M = 49.1 \text{ «g mol}^{-1}\text{»}$ Accept mass of 60	1
			H. .CH₃	Accept only correct structural	

Mark-scheme answers

Chemistry HL | Paper 1A | Nov 2025 TZ1 | Q4 | 1 marks

4. D

Chemistry HL | Paper 1A | Nov 2025 TZ1 | Q25 | 1 marks

25. C

Chemistry HL | Paper 1A | Nov 2025 TZ1 | Q26 | 1 marks

26. D

Chemistry HL | Paper 1A | Nov 2025 TZ3 | Q3 | 1 marks

3. C

Chemistry HL | Paper 1A | Specimen 2025 | Q4 | 1 marks

4. A

Chemistry HL | Paper 1A | Specimen 2025 | Q25 | 1 marks

25. C