

These are the errors Cambridge's examiners report every session, ordered by how often they raise them. The × line is what candidates write; the ✓ line is what scores. 下列都是考官每年都点名的失分点。× 是常见写法, ✓ 是能得分的写法。General exam technique is in the Exam Technique guide; this booklet is Chemistry.

Across every paper

✗ Answering an EXPLAIN question with the rule alone – ‘because it is more electronegative’.

✓ **Give the chain: more protons, similar shielding, so a stronger attraction for the bonding pair, so a higher electronegativity.**

The most repeated point in the reports. A rule of thumb states a fact; an explanation shows how the facts combine.

“解释”要写出因果链

ER 6 sessions P4

✗ Writing a paragraph where three precise phrases were wanted.

✓ **Be concise and use the chemical terms exactly. Full sentences are rarely needed.**

Examiners praise concise, precise answers in every report. Accurate terminology is what removes ambiguity, not length.

答案要简洁准确

ER 4 sessions P4

✗ Writing the final number of a calculation with no working above it.

✓ **Show each step, including the mole calculation, so partial credit survives an arithmetic slip.**

Where an answer can be reached several ways, working is the only evidence of the right one.

计算要写过程

ER 8 sessions P4

✗ Rounding a mole value to two figures and then using it in the next line.

✓ **Carry the full value through and round once at the end.**

Examiners describe early rounding as leading to sizeable inaccuracies later – the final answer then falls outside the accepted range.

中途不要四舍五入

ER 8 sessions P4

✗ Giving one significant figure, or the calculator's full display, when the question sets no number.

✓ **Match the data: three significant figures is usually right, and one is almost never enough.**

The precision of the concentrations and masses given in the question sets the precision of the answer.

有效数字看题目数据

ER 4 sessions P4

✗ Listing five answers when the question asked for two, to be safe.

✓ **Give exactly the number asked for, and choose which ones.**

Extra answers are marked, and a wrong extra is penalised – offering more than was asked can cost the mark a right answer had earned.

问几个就写几个

ER 2 sessions P4

✗ Writing the corrected answer on top of the old one.

✓ **Cross the old answer out clearly and write the new one beside it.**

Examiners raise legibility in five separate reports. An overwritten answer that cannot be read cannot be credited.

改答案要划掉重写

ER 5 sessions P4

■ Learn each syllabus definition word for word. Examiners note that missing one key word – ‘metal’, ‘ligand’, ‘standard’ – is enough to lose the mark.

定义要逐字背准

ER 3 sessions P4; EX P4

2 · Atoms, molecules and stoichiometry 原子、分子与化学计量

✗ Using the moles of the reagent in excess in a limiting-reagent calculation.

✓ **Identify the limiting reagent first, then work from its moles.**

A named common error: 0.0150 mol HCl was used where 0.00658 mol Mg was limiting, so every later value was wrong.

先找限量试剂

EX P4

✗ Leaving an equation unbalanced for charge, or leaving spectator ions in an ionic equation.

✓ **Balance atoms AND charge, then cancel every species that appears unchanged on both sides.**

Examiners state this in three separate reports. An ionic equation with spectators in it is not an ionic equation.

原子和电荷都要配平

ER 3 sessions P4

✗ Answering in g dm^{-3} when the answer line is marked mol dm^{-3} .

✓ **Read the unit printed at the end of the answer line before you start.**

Examiners point specifically at calculations where a factor of 1000 hangs on that unit.

看清答题线上的单位

EX P5

✗ Giving the enthalpy change for 2 mol when the question asked for 1 mol.

✓ **Check what the equation as written represents, then scale.**

Many candidates calculated the decomposition of 2 mol HI correctly and never divided, losing a mark they had done the work for.

看清是几摩尔

EX P4

3 · Chemical bonding 化学键

✗ Drawing a d-orbital with its lobes along the x and y axes.

✓ **The d_{xy} lobes lie BETWEEN the axes; only $d_{x^2-y^2}$ lies along them.**

Examiners record many candidates drawing the wrong shape, which then wrecks the crystal-field explanation built on it.

d 轨道的形状要画准

EX P4

✗ Calling an octahedral complex ion polar because its ligands are polar.

✓ **Check the symmetry: in a symmetrical octahedral or linear ion the dipoles cancel.**

The most common incorrect answer in that question. Polarity is a property of the whole ion, not of one bond.

对称结构无极性

EX P4

✗ Explaining a lattice-energy trend by ionic size alone.

✓ **Say what the size does: a larger cation is further from the anion, so the attraction between the ions is weaker.**

Examiners note candidates recognising that Cd^{2+} is larger than Zn^{2+} but never stating the consequence.

写出“吸引力更弱”

EX P4

5 · Chemical energetics 化学能量学

✗ Treating ‘standard conditions’ and ‘standard states’ as the same phrase.

✓ **Standard conditions are 298 K and 100 kPa; the standard state is the physical form stable under them.**

Named as a misconception. Carbon exists as two crystalline solids at room temperature, so the state has to be specified separately.

标准条件 ≠ 标准状态

EX P4

✗ Using only the mass of the alkali in $q = mc\Delta T$.

✓ **Use the TOTAL mass of solution in the cup – acid plus water plus alkali.**

A named error: $10.0 + 10.0 \text{ cm}^3$ makes 20 g, and using 10 g halves every energy that follows.

用溶液总质量

EX P5

✗ Confusing enthalpy change of solution with enthalpy of solubility, or losing track of which term changed more.

✓ **Write the cycle out and name each term before comparing them.**

Examiners list both confusions together; the arithmetic is easy once the cycle is on paper.

先画能量循环

EX P4

7 · Equilibria 平衡

✗ Defining equilibrium as ‘the concentrations of reactants and products are equal’.

✓ **The concentrations stay CONSTANT, and the forward and backward rates are equal.**

A named common error. Equal concentrations are a special case and usually untrue.

浓度不变, 不是相等

EX P4

- ✗ Saying the equilibrium ‘shifts to the right’ when the question is about a stability constant.
- ✓ **A K value describes the position of the equilibrium at that temperature; it does not shift because a value differs.**

Listed as a common error – the reasoning imports Le Chatelier where the question asked about K .

K 值不随浓度移动

EX P4

- ✗ Answering a ‘use Le Chatelier’s principle’ question with the common ion effect.
- ✓ **Use the principle the question names, in its own terms.**

Examiners state that answers based on other reasoning were ignored, however chemically sound they were.

题目指定的原理才算

EX P4

- ✗ Writing curly brackets in a K_{stab} or K_c expression.

- ✓ **Square brackets, always: $K_c = \frac{[\text{C}]^2}{[\text{A}][\text{B}]}$.**

Listed among the common incorrect responses. The bracket is part of the notation being tested.

平衡常数用方括号

EX P4

9 · The Periodic Table: chemical periodicity 元素周期表：化学周期性

- ✗ Explaining an ionisation-energy trend by saying the nuclear charge increases, and stopping.
- ✓ **Finish it: the attraction between the nucleus and the outer electron decreases down the group because the electron is further away and better shielded.**

Examiners state explicitly that explanations often did not mention the attraction decreasing – the step that carries the mark.

要写“吸引力减小”

EX P4

- ✗ Describing the second electron affinity as repulsion between two electrons.
- ✓ **It is repulsion between the incoming electron and the negatively charged ANION.**

Examiners say the anion must be named; a general statement about electron repulsion was not sufficient.

是电子与负离子之间的排斥

EX P4

13 · An introduction to AS Level organic chemistry AS Level 有机化学导论

- ✗ Drawing a curly arrow starting at an atom rather than at a bond or a lone pair.
- ✓ **Start every arrow at an electron pair and end it where that pair goes.**

Examiners state that the start and finish points ARE the description of the mechanism, so a vague arrow scores nothing.

弯箭头起点是电子对

ER 2 sessions P4

- ✗ Naming a compound without checking the number of carbons in the chain the question drew.
- ✓ **Count the chain, then name the longest one containing the functional group.**

Examiners report answers that describe the right chemistry on the wrong molecule.

先数主链碳数

ER Nov24 P22

17 · Carbonyl compounds 羰基化合物

✗ Saying ethanoic acid gives a positive result with an oxidising agent.

✓ **Ethanoic acid has no -CHO group, so it cannot be oxidised under those conditions.**

Examiners name this directly. A carboxylic acid is already at that oxidation level.

乙酸不能再被氧化

EX P5

✗ Identifying an acid by effervescence with magnesium alone.

✓ **Add a test that separates them, since every acid in the set effervesces with magnesium.**

Examiners note that more explanation was needed for methanoic acid than for hydrogen peroxide – a shared observation identifies nothing.

共有现象不能区分

EX P5

22 · Analytical techniques 分析技术

✗ Writing a mass-spectrum fragment without its positive charge.

✓ **Every fragment detected in a mass spectrometer is a positive ion: $^+\text{COOH}$.**

Stated flatly by the examiners. An uncharged fragment would never reach the detector.

碎片都是正离子

EX P4

✗ Saying a molecule ‘has optical isomers’ when asked what an optically active substance does.

✓ **It ROTATES the plane of POLARISED light.**

Examiners record candidates missing the key words ‘rotate’ and ‘polarised’ – the two words the mark is for.

旋光: 旋转偏振光平面

EX P4

The practical papers – Paper 3 and Paper 5

✗ Making up a standard solution with a measuring cylinder.

✓ **Use volumetric apparatus – burette, pipette, volumetric flask – where accuracy is required.**

Examiners state this as a standing expectation; the apparatus chosen is itself assessed.

配标准液要用容量仪器

ER 2 sessions P3

✗ Treating a measuring cylinder as needing two readings when calculating its uncertainty.

✓ **One reading, and the error is half a graduation.**

Both mistakes are listed as common errors, and each doubles or halves the percentage uncertainty.

量筒只读一次

EX P5

✗ Recording 25 cm^3 from a burette.

✓ **Record to the precision of the apparatus: 25.00 cm^3 from a burette, 25.0 cm^3 from a pipette.**

Examiners require the data to reflect the precision of the apparatus used; trailing zeros are significant here.

读数体现仪器精度

ER 2 sessions P3

- ✗ Plotting the points and drawing the line freehand, or not drawing one at all.
- ✓ **Use a ruler, and draw the line even if the points scatter – it carries error-carried-forward marks.**
- Listed as a common error. A missing line loses the marks that depended on it as well as its own.
- 一定要用直尺画拟合线
- EX P5
- ✗ Taking gradient coordinates from the data table.
- ✓ **Take them from two well-separated points ON the line of best fit.**
- Named as a common error, together with misread and transposed coordinates.
- 斜率取线上的点
- EX P5
- ✗ Suggesting ‘use a lid’ or ‘repeat the experiment’ as an improvement.
- ✓ **Name the measurement that was hard and the change that fixes it.**
- Examiners record ‘use a lid’ as a common response that ignored the instructions actually given in the task.
- 改进要针对本实验
- EX P5
- ✗ Calling unreacted solid a ‘precipitate’.
- ✓ **Use the term that describes what it is: undissolved or unreacted solid.**
- Examiners state that both marks could not be awarded – chemistry-specific language has to be used correctly.
- 未反应固体不是沉淀
- EX P5
- ✗ Answering an ion test with ‘magnesium’.
- ✓ **Name the ion with its charge: Mg^{2+} .**
- Examiners call this an incomplete answer: a cation has a charge, and the charge is part of the identification.
- 阳离子要写电荷
- EX P5
- ✗ Removing an oxide layer from magnesium with dilute acid.
- ✓ **Abrade it – emery paper or sandpaper.**
- A named common incorrect answer: dilute acid attacks the magnesium underneath as well.
- 用砂纸去氧化层
- EX P5
- The molar gas volume and other constants are printed in the ‘Important values, constants and standards’ section of the paper. Look there before assuming a value.
- 常数在试卷上有
- EX P5