

International AS and A-level

Chemistry (9620)

CH01 Chemistry

Report on the Examination

Version: 1.0
January 2026

REPORT ON THE EXAMINATION: INTERNATIONAL – JANUARY 2026

Students were able to access all the marks on the paper. Students were more able to answer questions involving numerical answers better than those questions that required explanation. Students often gave equations that involved the wrong products or gave unbalanced questions. Students occasionally lost marks due to poor handwriting. Students should show their working in numerical answers so that examiners are able to award intermediate marks even if their final answer is incorrect.

QUESTION 1.1

About a quarter of students gained both marks in this question. Some students did not attempt to answer the question in terms of VSEPR theory: they used symmetry arguments to explain the structure. Some students did not gain the second mark because they stated that bonds repelled instead of stating that the three bond pairs of electrons repelled equally.

QUESTION 1.2

This was answered well by the majority of students. Some students lost the second mark by stating that boron donated the electron pair.

QUESTION 1.3

Most students scored the mark in this question.

QUESTION 2.1

This question was answered well; most students made good progress and many gained full marks. Common errors included not multiplying by 20 to give the moles of the acid in 500 cm³, using the wrong M_r and incorrect rounding during the calculation.

QUESTION 2.2

Most students gained one mark by stating that water needed to be added dropwise. The second mark proved more challenging; a common insufficient answer was to add water until it was on the line without mentioning the meniscus.

QUESTION 2.3

This question was answered very well. Some students lost the second mark by using the wrong titres to get their average.

QUESTION 2.4

About half the students answered this correctly; some students lost marks by stating that the process was more accurate or the mass was more accurately known.

QUESTION 2.5

Less than a fifth of students gained full marks in this question. Some students wrote about the difficulty making up the solutions or that the titration would be more difficult to carry out. Some students thought the uncertainty in mass would increase and the uncertainty in the titre would increase or decrease.

QUESTION 2.6

About one third of students gained both marks in this question. Many students stated why the flask needed to be rinsed and gained the first mark. The second part was more challenging; water is not a reactant was a common insufficient answer.

QUESTION 3.1

Students found this question challenging with about one fifth of students giving a correct answer. Very few students explained periodicity in terms of repeating patterns/trends across periods; common errors included referring to increasing proton number or increasing shells.

QUESTION 3.2

Just over half the students answered this question correctly; common incorrect answers included sodium, argon and fluorine.

QUESTION 3.3

Less than half the students gained two marks for this definition. Common errors included omitting energy needed for the first mark and gaseous for the second mark. Some students mixed moles with single atoms e.g. energy needed to remove an electron from one mole of gaseous atoms and some students used element instead of atom e.g. energy required to remove an electron from a gaseous element.

QUESTION 3.4

This question was answered well; common errors included magnesium, silicon, phosphorus and argon.

QUESTION 3.5

This question was answered well; common errors included phosphorus and sulfur.

QUESTION 4

About two thirds of students gained full marks in this question. Common errors included not converting volume into cm^3 , not converting temperature into K and not giving their answer to three significant figures.

QUESTION 5.1

Many students answered this question well; common errors included using energy change instead of enthalpy change and leaving out that the change is independent on the route.

QUESTION 5.2

This question was answered well by many students. Some students lost marks by failing to multiply by the moles in the equation or by having the sum of the enthalpies of combustion the wrong way round; +2881 was a common error.

QUESTION 5.3

About a third of students gained both marks in this question. Many students did not realise that the enthalpy change was positive, and many students did not divide by 5.

QUESTION 5.4

About half of the students correctly answered this question. Many students had the correct value of 1050kJmol^{-1} but then divided by 4 instead of by 3.

QUESTION 6.1

Students found this question challenging. Many students lost marks by mentioning increasing size without specifying atom or ion or by talking about shielding with no other points. Students often omitted attraction decreasing between nucleus and delocalised electrons and just wrote about the force decreasing. Other students discussed attraction between the nucleus and electrons but did not specify delocalised electrons.

QUESTION 6.2

About a third of students gained all the marks in this question. Many students a mark by not mentioning the idea of a giant lattice. Some students wrote about the force between ions rather than attraction and some students did not mention that the ions had opposite charges. A few students gave the wrong charge on the ion; Ba^+ was a common error. Many students wrote about covalent bonds, intermolecular forces and metallic structures.

QUESTION 6.3

Students found this question challenging; a quarter of students scored both marks. Many students lost the first mark by failing to mention that the water they needed to wash with should be deionised or distilled water. Drying of the precipitate was more well known.

QUESTION 6.4

This calculation was generally well answered; about two thirds of students scored all the marks. Some students calculated the moles of barium sulfate only, but did not know how to proceed.

QUESTION 6.5

About half the students answered this correctly; common errors included stating that magnesium chloride was insoluble and that magnesium didn't react with sulfate.

QUESTION 7.1

This question was answered well by most students; common errors included not giving the full electron configuration, ending with $4d^2$ instead of $4p^2$, and omitting the 3d electrons.

QUESTION 7.2

About one third of students scored both marks in this question; common errors included students thinking that higher energy orbitals need more energy to remove an electron or that the second electron in gallium was removed from the 3d orbital.

QUESTION 7.3

About half the students scored both marks in this question; common errors included the omission of the atomic number, use of the symbol Ge instead of Se and incorrect mass numbers.

QUESTION 7.4

This question was answered well. Some students lost the mark by not stating that the ion had the smallest mass and others stated that the ion had the highest velocity but did not explain why.

QUESTION 7.5

Just over a quarter of students answered this correctly. Many students stated that the ions gained electrons and caused a current but did say that the size of the current was proportional to the abundance.

QUESTION 7.6

The correct answer was given by about two thirds of students. Those who found the calculation challenging did not realise the significance of the percentages needing to add up to 100 and have only one unknown in the equation. Some students realised that the percentage abundance of the two isotopes they were calculating added up to 44.2 but many then did not use 100 as the denominator of the equation and only gained one mark.

QUESTION 8.1

Students found this question challenging. Many students lost the observation mark by stating the incorrect colour or not specifying that a solution was formed. Many students did not score the equation mark; common errors included not balancing the equation or not giving an ionic equation.

QUESTION 8.2

This question was answered well by many students. Most students gave the correct compound, but some lost the mark by giving an incorrect silver compound e.g. AgCl or an incorrect formula e.g. Ag(NO₃)₂. The observation was generally correct; the most common error was white precipitate.

QUESTION 8.3

Students found this question challenging. Many students did not give a correct equation; common errors included not balancing the equation or missing one of the

products out. Many students did not state a correct environmental problem; the commonest incorrect answer being global warming. Several students thought that bromide ions were oxidising agents.

QUESTION 8.4

Very few students gained all three marks in this question. Many students failed to mention that electron movement in one molecule caused a temporary dipole in that molecule, and that the temporary dipole in the molecule induced a temporary dipole in another/neighbouring molecule. Many students stated that $\delta +$ and $\delta -$ attracted each other but failed to state that this was in adjacent/different molecules.