



2015 Chemistry

Intermediate 1

Finalised Marking Instructions

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Part One: General Marking Principles for Chemistry Intermediate 1

This information is provided to help you understand the general principles you must apply when marking candidate responses to questions in this Paper. These principles must be read in conjunction with the specific Marking Instructions for each question.

- (a) Marks for each candidate response must always be assigned in line with these general marking principles and the specific Marking Instructions for the relevant question. If a specific candidate response does not seem to be covered by either the principles or detailed Marking Instructions, and you are uncertain how to assess it, you must seek guidance from your Team Leader/Principal Assessor.
- (b) Marking should always be positive ie, marks should be awarded for what is correct and not deducted for errors or omissions.

GENERAL MARKING ADVICE: Chemistry Intermediate 1

The marking schemes are written to assist in determining the “minimal acceptable answer” rather than listing every possible correct and incorrect answer. The following notes are offered to support Markers in making judgements on candidates’ evidence, and apply to marking both end of unit assessments and course assessments.

General information for markers

The general comments given below should be considered during all marking. It should be noted that these are general marking principles and may be superseded by decisions made at the Markers’ Meeting.

1. Markers are reminded to read candidate responses **in their entirety**. If the candidate shows a clear understanding of the chemistry but does not use the exact words of the Marking Instructions they should still be given credit.
2. Markers are reminded that **no** comments are to be written on scripts. Comments such as ‘ARITH’, ‘ERROR’ and ‘BOD’ (Benefit of doubt) are **not** acceptable.
3. A guiding principle in marking is to give credit for (partially) correct chemistry rather than to look for reasons not to give marks.

Example: A student measured the pH of four carboxylic acids to find out how the strength is related to the number of chlorine atoms in the molecule. The results are shown.

| Structural Formula | pH |
|------------------------|------|
| CH ₃ COOH | 1.65 |
| CH ₂ ClCOOH | 1.27 |
| CHCl ₂ COOH | 0.90 |
| CCl ₃ COOH | 0.51 |

How is the strength of the acids related to the number of chlorine atoms in the molecule?

Although not completely correct, an answer such as “the more Cl₂, the stronger the acid” should gain the full mark.

4. Marks should **not** be deducted for incorrect spelling or loose language as long as the meaning of the word(s) is conveyed.

Example: Answers like “hydrolic acid” (for “hydrochloric acid”) and “it gets hotter” (for “the temperature rises”) should be accepted.

However the example below would not be acceptable, as an incorrect chemical term, which the candidate should know, has been given.

Example: If the correct answer is “polyethene”, and the candidate’s answer is “polyethane”, this should not be accepted.

5. A right answer followed by a wrong answer should be treated as a cancelling error and no marks should be given.

Example: What is the colour of universal indicator in acid solution?

The answer “red, blue” gains no marks.

6. If a right answer is followed by additional information which does not conflict, the additional information should be ignored, whether correct or not. However, if selecting information from the Data Booklet is required, the information selected must be relevant and correct, as this would negate.

7. Full marks should be awarded for the correct answer to a calculation on its own; the part marks shown in the Marking Instructions are for use when working is given.

8. A half mark should be deducted in a calculation for each arithmetic slip.

9. A half mark should be deducted for incorrect or missing units **only when stated in the Marking Instructions**.

10. A half mark should be deducted for transcription errors.

11. Where a wrong numerical answer (already penalised) is carried forward to another step, no further penalty is incurred provided the end result is used correctly.

12. A symbol or correct formula should be accepted in place of a name **unless stated otherwise in the Marking Instructions**.

13. If an answer comes directly from the text of the question, no marks should be given.

Example: Propane burns to give out energy.

Name the type of chemical reaction taking place.

No marks should be given for “burning” since the word “burns” appears in the text.

14. Unless the question is clearly about a non-chemistry issue, eg costs in industrial chemistry, a non-chemical answer gains no marks.

Example: Why does the (catalytic) converter have a honeycomb structure?

A response such as “to make it work” may be correct but it is not a chemical answer and the mark should not be given.

15. When it is very difficult to make a decision about a partially correct answer, a half mark can be awarded.
16. When marks have been totalled, a half mark should be rounded up.

2015 Chemistry Intermediate 1

Part Two: Marking Instructions for each Question

Section A

| Question | Expected Answer(s) | Max Mark |
|----------|--------------------|----------|
| 1. | B | 1 |
| 2. | A | 1 |
| 3. | C | 1 |
| 4. | C | 1 |
| 5. | B | 1 |
| 6. | C | 1 |
| 7. | D | 1 |
| 8. | A | 1 |
| 9. | D | 1 |
| 10. | D | 1 |

| Question | Expected Answer(s) | Max Mark |
|----------|--------------------|----------|
| 11. | C | 1 |
| 12. | B | 1 |
| 13. | D | 1 |
| 14. | A | 1 |
| 15. | A | 1 |
| 16. | C | 1 |
| 17. | B | 1 |
| 18. | C | 1 |
| 19. | B | 1 |
| 20. | A | 1 |

Section B

| Question | | | Expected Answer(s) | Max Mark | ½ mark | Unacceptable |
|----------|---|----|---|----------|-------------------------|--------------|
| 1 | a | | Increases/ Gets bigger/ Rises | 1 | | Decreases |
| 1 | b | i | (transition) metal | 1 | | |
| 1 | b | ii | Ni | 1 | | NI/nI |
| 2 | a | | value less than 7 | 1 | | |
| 2 | b | | Nu-skin | 1 | Treating acne scars 70% | |
| 2 | c | | corrosive | 1 | | |
| 3 | a | | C → D → A → B All correct for 1 mark | 1 | | |
| 3 | b | | Sulphuric acid/ Sulfuric acid Accept loose spelling | 1 | | |

| Question | | | Expected Answer(s) | Max Mark | ½ mark | Unacceptable | | | | | | | | | | | | |
|------------------|--------------------------|----------------|---|----------|--------------------------|----------------|------------------|-----|------|--------|-----------|----------------|-------------|-----|--------|---|--|-------------------------|
| 4 | a | | New substance made/ Colour change/ Gas given off/ Potassium hydroxide made/ Carbon dioxide made/ Potassium permanganate turns brown | 1 | | Energy change | | | | | | | | | | | | |
| 4 | b | i | Fuel circled | 1 | | | | | | | | | | | | | | |
| 4 | b | ii | combustion | 1 | | | | | | | | | | | | | | |
| 5 | a | | Stops oxygen/air Stops water Stops oxygen and water Stops air and water | 1 | | | | | | | | | | | | | | |
| 5 | b | | Oxygen/ O/ O ₂ | 1 | | | | | | | | | | | | | | |
| 5 | c | | 11 | 1 | | | | | | | | | | | | | | |
| 6 | a | | <table border="1" data-bbox="354 1272 884 1485"> <thead> <tr> <th>Metal</th> <th>Bubbles of gas produced?</th> <th>Reaction speed</th> </tr> </thead> <tbody> <tr> <td>magnesium</td> <td>yes</td> <td>fast</td> </tr> <tr> <td>copper</td> <td>no</td> <td>None/no</td> </tr> <tr> <td>zinc</td> <td>yes</td> <td>medium</td> </tr> </tbody> </table> <p>Metals: Magnesium and zinc (1) reaction speed: no and none/no (1)</p> | Metal | Bubbles of gas produced? | Reaction speed | magnesium | yes | fast | copper | no | None/no | zinc | yes | medium | 2 | | slow instead of none/no |
| Metal | Bubbles of gas produced? | Reaction speed | | | | | | | | | | | | | | | | |
| magnesium | yes | fast | | | | | | | | | | | | | | | | |
| copper | no | None/no | | | | | | | | | | | | | | | | |
| zinc | yes | medium | | | | | | | | | | | | | | | | |
| 6 | b | | Hydrogen/ H/ H ₂ | 1 | | | | | | | | | | | | | | |

| Question | | Expected Answer(s) | Max Mark | ½ mark | Unacceptable |
|----------|---|---|----------|--------------------|------------------|
| 7 | | 1. Finite 2. Carbon dioxide/CO ₂ / carbon monoxide/CO | 2 | 2. CO ₂ | 1. non-renewable |
| 8 | a | Poly(styrene)/ Polystyrene | 1 | | |
| 8 | b | % (percentage) label (½) Scale on % axis (½) Bars labelled (abr. accepted) (½) Correct height of bars (½) Allow ½ box tolerance Allow 1 plotting error – ½ mark for using less than half graph paper Line graph – max of 1 mark for labels and scale Use label not required Bars can be different widths Spaces between bars can be different | 2 | | |
| 9 | a | Dissolves in both grease/oil and water | 1 | | |
| 9 | b | Scum | 1 | | |
| 9 | c | Enzyme won't work/ Enzyme gets destroyed Enzyme denatured | 1 | | Won't clean |
| 9 | d | Amino acids | 1 | | |

| Question | | | Expected Answer(s) | Max Mark | ½ mark | Unacceptable |
|----------|---|----|--|----------|--------|--------------------------|
| 10 | a | | Thermometer | 1 | | |
| 10 | b | | Type V | 1 | | |
| 11 | a | | <p>Nitrogen potassium phosphorous</p> <p>Ammonium potassium phosphate and nitrates compounds (compounds)</p> <p>leaf fruit root growth growth growth</p> <p>½ mark each</p> | 2 | | |
| 11 | b | | Pesticides | 1 | | |
| 12 | a | i | energy | 1 | | Energy and muscle repair |
| 12 | a | ii | <p>Iodine and black</p> <p>Both correct for 1 mark No follow through</p> | 1 | | |
| 12 | b | | <p>Preservatives/ Appearance/ Nutritional content/ Flavour of food</p> <p>Accept pupil description</p> | 1 | | |

| Question | | Expected Answer(s) | Max Mark | ½ mark | Unacceptable |
|----------|---|---|----------|------------------------------|--------------|
| 13 | a | Heart disease/ Heart attack | 1 | | |
| 13 | b | Greater than 66 million tonnes | 1 | | |
| 13 | c | Labels top going anti-clockwise Saturated fat Omega 3 (oil) Omega 6 (oil) Omega 9 (oil) All correct 1 mark | 1 | | |
| 14 | a | Alters the way the body works | 1 | | |
| 14 | b | $C_9H_8O_4$ | 1 | $C_9H_8O_4$ / $C_9H^8O^4$ | |
| 14 | c | Cocaine/ Heroin/ Coke Amphetamines/ LSD Anything illegal | 1 | | |

[END OF MARKING INSTRUCTIONS]