

2005 Chemistry

Intermediate 1

Finalised Marking Instructions

These Marking Instructions have been prepared by Examination Teams for use by SQA Appointed Markers when marking External Course Assessments.

Intermediate 1 Chemistry

General information for markers

The general comments given below should be considered during all marking.

- 1 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 'distiling' (for 'distillation') and 'it gets hotter' (for 'the temperature rises') should be accepted.

- 2 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.

- 3 If a right answer is followed by additional information which does not conflict, the additional information should be ignored, whether correct or not.

Example: Why can the tube not be made of copper?

If the correct answer is related to a low melting point, and the candidate's answer is 'It has a low melting point and is coloured grey' this would **not** be treated as having a cancelling error.

- 4 Full marks should be awarded for the correct answer to a calculation on its own; the part marks shown in the marking scheme are for use when working is given.

- 5 A half mark should be deducted in a calculation for each arithmetic slip **unless stated otherwise in the marking scheme.**

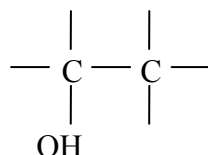
- 6 A half mark should be deducted for incorrect or missing units **only when stated in the marking scheme.**

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

- 8 Ignore the omission of one H atom from a full structural formula provided the bond is shown.

- 9 With structures involving an -OH or an -NH₂ group, a half mark should be deducted if the 'O' or 'N' are not bonded to a carbon, ie OH-CH₂ and NH₂-CH₂.

- 10 When drawing structural formulae, a half mark should be deducted if the bond points to the 'wrong' atom, eg

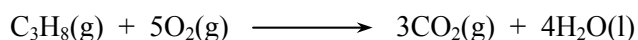


- 11 A symbol or correct formula should be accepted in place of a name **unless stated otherwise in the marking scheme.**

- 12 When formulae of ionic compounds are given as answers it will only be necessary to show ion charges if these have been specifically asked for. However, if ion charges are shown, they must be correct. If incorrect charges are shown, no marks should be awarded.

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

Example: A student found that 0.05 mol of propane, C₃H₈ burned to give 82.4 kJ of energy.

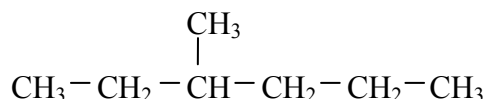


Name the kind of enthalpy change which the student measured.

No marks should be given for 'burning' since the word 'burned' appears in the text.

- 14 A guiding principle in marking is to give credit for (partially) correct chemistry rather than to look for reasons not to give marks.

Example 1: The structure of a hydrocarbon found in petrol is shown below.



Name the hydrocarbon.

Although not completely correct, the answer '3, methyl-hexane' should gain the full mark ie ignore wrong use of commas and dashes.

Example 2: A student measured the pH of four carboxylic acids to find out how their 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.

- 15 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.

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

2005 Chemistry Intermediate 1

Marking scheme

Section A

1	C	11	D
2	B	12	C
3	A	13	C
4	B	14	B
5	D	15	A
6	A	16	C
7.	D	17.	B
8	A	18	B
9	C	19	D
10	D	20	A

Marking Instructions**Chemistry Intermediate 1 2005****Section B**

Question	Acceptable Answer	Mark	Worth ½	Worth 0
1 (a)	Saturated	1		
(b) (i)	More dissolves	1		
(ii)	$52 \pm 1\text{g}$	1		

Question	Acceptable Answer	Mark	Worth $\frac{1}{2}$	Worth 0
2 (a)	Calcium chloride (1 mark) Water ($\frac{1}{2}$ mark) Carbon dioxide ($\frac{1}{2}$ mark) (correct formulae acceptable)	2	Salt ($\frac{1}{2}$ mark)	
(b) (i)	Gas given off Or bubbles of gas Or fizzing	1		
(ii)	Smaller particles in powdered calcium carbonate Or greater surface area	1		

Question	Acceptable Answer	Mark	Worth ½	Worth 0
3 (a)	<p>pH Acid/alkali/neutral 11 alkali 9 alkali 3 acid 7 neutral</p> <p>pH's correct (1 mark) Classification of Acid/alkali/neutral correct 1 mark. (follow through)</p>	2	3 of 4 pH's correct	
(b)	<p>Substances do not form solutions; Or Substances are insoluble</p>	1		

Question	Acceptable Answer	Mark	Worth $\frac{1}{2}$	Worth 0
4 (a)	D – A – B – C	1		
(b)	label (½ mark) scale (½ mark) points (½ mark) line (½ mark)	2		

Question	Acceptable Answer	Mark	Worth ½	Worth 0
5 (a)	To make the drink “fizzy”/sparkling To give it bubbles	1		
(b)	Glucose	1		sugar
(c)	To prevent spoiling Or To increase shelf-life Or To stop drink going off	1		

Question	Acceptable Answer	Mark	Worth $\frac{1}{2}$	Worth 0
6 (a)	Hydrogen	1		
(b) (i)	Volume greater than that shown for zinc	1		
(ii)	Copper or mercury or silver or gold	1		

Question	Acceptable Answer	Mark	Worth $\frac{1}{2}$	Worth 0
7 (a)	One which cannot be reshaped on heating Or Can be shaped only once Or One which does not soften on heating	1		
(b)	Electrical conductor	1		
(c) (i)	Alloy	1		
(ii)	40 g	1	$\frac{160}{4}$ or 25% of 160	

Question	Acceptable Answer	Mark	Worth ½	Worth 0
8 (a)	Plastic will “rot”; bacteria will break it down	1		
(b)	May produce pollutant gases Or May produce toxic/harmful gases Or May produce poisonous gases	1		
(c)	Oil is a finite resource/reserves of oil are running out.	1		

Question	Acceptable Answer	Mark	Worth $\frac{1}{2}$	Worth 0
9 (a)	500 cm ³ (½ mark) 2.5 g (½ mark)	1		
(b)	(i) 40°C ± 1°C (ii) Enzymes denatured/do not work at high temperature	1 1		

Question	Acceptable Answer	Mark	Worth $\frac{1}{2}$	Worth 0
10 (a)	Kill weeds	1		
(b)	Toxic or poisonous	1		
(c)	(i) Manure or seaweed or compost (ii) Potassium; or nitrogen; or phosphorous	1 1		

Question	Acceptable Answer	Mark	Worth $\frac{1}{2}$	Worth 0
11 (a)	Turns limewater milky/cloudy/chalky	1		
(b)	Photosynthesis	1		
(c)	Greenhouse effect or Global warming or Climate change or Hotter temperatures	1		
(d)	Carbon monoxide	1		

Question	Acceptable Answer	Mark	Worth $\frac{1}{2}$	Worth 0
12 (a)	Sugar on spoon below boiling tube containing water; thermometer inside boiling tube Water in a test-tube with thermometer ($\frac{1}{2}$ mark) Sugar on a burning spoon ($\frac{1}{2}$ mark) Apparatus properly arranged (1 mark).	2	Label for either water or sugar correct	
(b)	Oxygen	1		

[END OF MARKING INSTRUCTIONS]