SCOTTISH QUALIFICATIONS AUTHORITY

2006 Chemistry

Intermediate 1

Finalised Marking Instructions

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**.

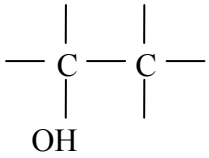
6 A half mark should be deducted for incorrect or missing units **only when stated in the marking scheme**.

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 $–NH_2$ group, a half mark should be deducted if the 'O' or 'N' are not bonded to a carbon, ie $OH–CH_2$ and $NH_2–CH_2$.

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, C_3H_8 burned to give 82·4 kJ of energy.

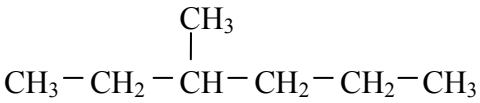
$$C_3H_8(g) + 5O_2(g) \longrightarrow 3CO_2(g) + 4H_2O(l)$$

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_3COOH	1·65
$CH_2ClCOOH$	1·27
$CHCl_2COOH$	0·90
CCl_3COOH	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 Cl_2, 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.

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Marking scheme

Section A

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

Section B

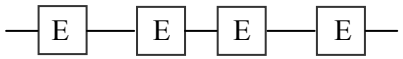
Question	Acceptable Answer	Mark	Worth ½	Worth 0
1 (a)	Mercury or Bromine	1		
(b) (i)	Germanium	1		
(ii)	Less than 5.9 but greater than 2.33	1	5·9 ⟶ 7·28	
2 (a) (i)	Nitrogen -196°C ; Oxygen – 183°C	1	Either entry correct	
(ii)	They have different boiling points	1		
(b)	Ar	1		
3 (a) (i)	SO_2	1		
(ii)	An acidic solution or acid rain or sulphuric acid	1		
(b)	Carbon or Carbon monoxide	1		Carbon oxide

Question	Acceptable Answer	Mark	Worth ½	Worth 0
3 (c)	1.5 tonnes	**1**		
4 (a)	To increase shelf life of food or To improve keeping quality of food or To stop food going mouldy	**1**		
(b) (i)	Brown	**1**		
(ii)	Green	**1**		
5 (a)	0.3 cm	**1**		
(b)	Increases	**1**		
(c)	Temperature of the water or The type of detergent used or Type/hardness of water or concentration of detergent	**1**		

Question	Acceptable Answer	Mark	Worth ½	Worth 0
6 (a)	Hydrogen	**1**		
(b)	Copper Magnesium Zinc	**1**		
(c)	Different metals react at different speeds or Hydrogen is given off faster when more reactive metals are used	**1**		
(d)	They prevent any splashes of acid getting into the eyes	**1**	to protect the eyes	
7 (a)	One hundred gram masses would be added to the hanger until the fibre breaks	**1**	add 100 g	
(b) (i)	Natural	**1**		
(ii)	Wool, Cotton, Silk, Polyester, Nylon	**1**		

Question	Acceptable Answer	Mark	Worth ½	Worth 0
8 (a) (i)	Combustion or Burning or Oxidation	**1**		
(ii)	Alcohol or Ethanol	**1**		
(b)	Benedict's test	**1**	turns orange	
9 (a)	Photosynthesis	**1**		
(b)	Oxygen relights a glowing splint	**1**	use a glowing splint	
(c)	Chlorophyll	**1**		

Question	Acceptable Answer	Mark	Worth ½	Worth 0
10 (a)	Increased burning of fossil fuels or Cutting down of rainforests	**1**		
(b) (i)	Distance of gas jars from the heater or the size of the jars or same type of jars or same amount of heat	**1**		
(ii)	5 ^{o}C	**1**	25 ^{o}C	

Question	Acceptable Answer	Mark	Worth ½	Worth 0
11 (a) (i)	Cracking	**1**		
(ii)	Catalyst	**1**		
(b)	C_2H_4; CH_2CH_2	**1**		
(c) (i)	Monomers	**1**		
(ii)	 Any representation of monomers linked in a chain	**1**		
12 (a)	Potassium	**1**		
(b) (i)	Water added to the test tubes, each solid added to different test tubes and the test tubes shaken	**1**		
(ii)	To be suitable the compound must be soluble.	**1**		

[END OF MARKING INSTRUCTIONS]