AQA Level 1/2 Certificate in Science: Double Award

CHEMISTRY PAPER 2F

SPECIMEN MARK SCHEME

MARK SCHEME

Information to Examiners

1. General

The mark scheme for each question shows:

- the marks available for each part of the question
- the total marks available for the question
- the typical answer or answers which are expected
- extra information to help the Examiner make his or her judgement and help to delineate what is acceptable or not worthy of credit or, in discursive answers, to give an overview of the area in which a mark or marks may be awarded.

The extra information is aligned to the appropriate answer in the left-hand part of the mark scheme and should only be applied to that item in the mark scheme.

At the beginning of a part of a question a reminder may be given, for example:
where consequential marking needs to be considered in a calculation;
or the answer may be on the diagram or at a different place on the script.

In general the right hand side of the mark scheme is there to provide those extra details which confuse the main part of the mark scheme yet may be helpful in ensuring that marking is straightforward and consistent.

2. Emboldening

2.1 In a list of acceptable answers where more than one mark is available 'any **two** from' is used, with the number of marks emboldened. Each of the following lines is a potential mark.

2.2 A bold **and** is used to indicate that both parts of the answer are required to award the mark.

2.3 Alternative answers acceptable for a mark are indicated by the use of **or**. (Different terms in the mark scheme are shown by a / ; eg allow smooth / free movement.)

3. Marking points

3.1 Marking of lists

This applies to questions requiring a set number of responses, but for which candidates have provided extra responses. The general principle to be followed in such a situation is that 'right + wrong = wrong'.

Each error/contradiction negates each correct response. So, if the number of error/contradictions equals or exceeds the number of marks available for the question, no marks can be awarded.

However, responses considered to be neutral (indicated as * in example 1) are not penalised.

Example 1: What is the pH of an acidic solution? (1 mark)

Candidate	Response	Marks awarded
1	4,8	0
2	green, 5	0
3	red*, 5	1
4	red*, 8	0

Example 2: Name two planets in the solar system. (2 marks)

Candidate	Response	Marks awarded
1	Pluto, Mars, Moon	1
2	Pluto, Sun, Mars, Moon	0

3.2 Use of chemical symbols / formulae

If a candidate writes a chemical symbol / formula instead of a required chemical name, full credit can be given if the symbol / formula is correct and if, in the context of the question, such action is appropriate.

3.3 Marking procedure for calculations

Full marks can be given for a correct numerical answer, as shown in the column 'answers', without any working shown.

However if the answer is incorrect, mark(s) can be gained by correct substitution / working and this is shown in the 'extra information' column.

3.4 Interpretation of 'it'

Answers using the word 'it' should be given credit only if it is clear that the 'it' refers to the correct subject.

3.5 Errors carried forward

Any error in the answers to a structured question should be penalised once only.

Papers should be constructed in such a way that the number of times errors can be carried forward are kept to a minimum. Allowances for errors carried forward are most likely to be restricted to calculation questions and should be shown by the abbreviation e.c.f. in the marking scheme.

3.6 Phonetic spelling

The phonetic spelling of correct scientific terminology should be credited **unless** there is a possible confusion with another technical term.

3.7 Brackets

(…..) are used to indicate information which is not essential for the mark to be awarded but is included to help the examiner identify the sense of the answer required.

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COMPONENT NAME: Chemistry Paper 2F

STATUS: Accredited

question	answers	extra information	mark
1(a)(i)	neutrons		1
1(a)(ii)	Electrons have a very small mass compared with protons.		1
1(b)(i)	atomic / proton mass isotopes		1 1 1
1(b)(ii)	17 17 18 20	 18 and 20 can be in either order	1 1 1 1
Total			**9**

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question	answers	extra information	mark
2(a)(i)	water		1
2(a)(ii)	the cold water / ice (cubes)	accept 'it was cooled down' **or** references to cold	1
2(b)(i)	blue white	 allow **1** mark for white to blue	1 1
2(b)(ii)	reversible reaction		1
2(c)(i)	the student made errors in weighing during the experiments the student did not heat the copper sulfate for long enough in one of the experiments		1 1
2(c)(ii)	obtain a mean of (at least) three results ensuring that anomalous results are not included in order to reduce the effect of random errors **or** heat sample again to constant mass to ensure all the water has been lost		1 1 1
Total			**10**

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question	answers	extra information	mark
3(a)	base line drawn in ink which will run (and confuse the spots) **or** spots under water will wash off the paper **or** will dissolve into water from paper	explanation must match problem	1 1
3(b)	Cu(II) and Fe(III)		1
3(c)	2.1 / 5.1 0.41	correct measurements (allow ± 0.1cm) correct division (allow ecf from measurements)	1 1
3(d)	chromatography		1
Total			**6**

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question	answers	extra information	mark
4(a)(i)	iodine		1
4(a)(ii)	fluorine or chlorine		1
4(a)(iii)	2,7		1
4(a)(iv)	astatine		1
4(b)(i)	chlorine > bromine > iodine	accept symbols in place of names (Cl_2 or Cl, etc)	1
4(b)(ii)	any **two** suitable comparisons about the extent to which the iron wool glowed eg chlorine is more reactive than bromine because iron glowed more brightly with chlorine than bromine eg bromine is more reactive than iodine because iron glowed with bromine but not with iodine eg iodine is the least reactive because it is the only one that did not glow eg chlorine is the most reactive as it was the only one that glowed brightly **or** glowed most brightly		max. 2
Total			**7**

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question	answers	extra information	mark
5(a)	sulfur / S		1
5(b)(i)	point at 20°C circled		1
5(b)(ii)	16°C	allow value between 15 and 17	1
5(b)(iii)	repeat		1
5(b)(iv)	as the temperature increases, the time taken to go cloudy decreases **or** the rate of reaction increases		1
5(b)(v)	5 (seconds)	allow value between 4 and 6	1
5(c)	energy faster / more quickly collide / hit each other		1 1 1
Total			**9**

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question	answers	extra information	mark
6(a)	bubble through limewater limewater goes white / cloudy	 allow milky	1 1
6(b)(i)	gas syringe		1
6(b)(ii)	the volume stays constant **or** does not change **or** at 96 cm^3 after 5 minutes		1
6(c)(i)	Bubbles/effervescence/fizzing		1
6(c)(ii)	6 minutes	accept any time between 5.9 minutes and 6 minutes	1
6(c)(iii)	the volume increases quickly at first **or** the rate decreases until the volume becomes constant/levels off		1 1 1
Total			**9**

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question	answers	extra information	mark
7(a)	alkane catalyst		1 1
7(b)(i)	many small molecules join to form a very large molecule	allow many ethene molecules	1 1
7(b)(ii)	start: both orange end ethene: colourless end poly(ethene): orange		1 1 1
7(b)(iii)	because ethene has a double bond but poly(ethene) does not **or** because poly(ethene) has only single bonds		1 1
7(c)	because poly(ethene) is not biodegradable		1
Total			**10**