



GCSE Additional Science Chemistry 2

Foundation Tier

Chemistry 2F

SPECIMEN MARK SCHEME

Version 1.0

Quality of Written Communication and levels marking

In Question 8 candidates are required to produce extended written material in English, and will be assessed on the quality of their written communication as well as the standard of the scientific response.

Candidates will be required to:

- use good English
- organise information clearly
- use specialist vocabulary where appropriate.

The following general criteria should be used to assign marks to a level:

Level 1: basic

- Knowledge of basic information
- Simple understanding
- The answer is poorly organised, with almost no specialist terms and their use demonstrating a general lack of understanding of their meaning, little or no detail
- The spelling, punctuation and grammar are very weak.

Level 2: clear

- Knowledge of accurate information
- Clear understanding
- The answer has some structure and organisation, use of specialist terms has been attempted but not always accurately, some detail is given
- There is reasonable accuracy in spelling, punctuation and grammar, although there may still be some errors.

Level 3: detailed

- Knowledge of accurate information appropriately contextualised
- Detailed understanding, supported by relevant evidence and examples
- Answer is coherent and in an organised, logical sequence, containing a wide range of appropriate or relevant specialist terms used accurately.
- The answer shows almost faultless spelling, punctuation and grammar.

In order to attain a mark within a certain level, **both** the science **and** the QWC must be of a standard appropriate to that level.

COMPONENT NUMBER: CH2FP

COMPONENT NAME: GCSE Additional Science Chemistry 2F

STATUS: Specimen V1.0

question	answers	extra information	mark
1(a)	metals		1
1(b)	copper atoms are arranged in layers		1
	copper atoms can slide over each other		1
1(c)	the layers of atoms are distorted in bronze		1
Total			4

question	answers	extra information	mark
2(a)(i)	all		1
2(a)(ii)	four		1
2(a)(iii)	covalent		1
2(a)(iv)	hard		1
2(b)	carbon dioxide	accept carbon monoxide accept CO ₂ or CO	1
Total			5

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question	answers	extra information	mark
3(a)	4		1
3(b)	A		1
3(c)	it is alkaline	accept alkali / basic / base	1
3(d)(i)	salt		1
3(d)(ii)	nitric		1
3(d)(iii)	fertiliser		1
3(e)	because energy is taken in (from the surroundings)		1
		second mark must be linked to energy	1
Total			8

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question	answers	extra information	mark
4(a)	because nano-sized particles are smaller than normal-sized particles		1
4(b)	may cause harm when they are <u>inside</u> the body		1
Total			2

question	answers	extra information	mark
5(a)(i)	element		1
5(a)(ii)	compound		1
5(b)	an / one electron from the sodium atom		1
	is lost / transferred to form a sodium ion		1
5(c)(i)	8 electrons drawn on outer energy level / shell		1
5(c)(ii)	because oppositely charged ions attract each other or because chloride ions are negative and sodium ions are positive		1
Total			6

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STATUS: Specimen V1.0

question	answers	extra information	mark
6(a)	a solid / insoluble salt is formed	accept salt / substance that does not dissolve forms	1
6(b)	hydroxide		1
6(c)	filtration		1
6(d)	risk is that chromium ions are toxic or harmful		1
Total			4

question	answers	extra information	mark
7(a)	13	numbers must be in the order shown	1
	14		1
7(b)	electrons have a very small mass compared to protons		1
7(c)	electrolysis of molten aluminium oxide		1
Total			4

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8			
Marks awarded for this answer will be determined by the Quality of Written Communication (QWC) as well as the standard of the scientific response. Examiners should also refer to the information on page 2.			
0 marks	Level 1 (1-2 marks)	Level 2 (3-4 marks)	Level 3 (5-6 marks)
No relevant content.	There is a brief description of the method or a risk assessment.	There is some description of the method that may include a risk assessment.	There is a clear, balanced and detailed description of the method and a risk assessment.
examples of chemistry points made in the response • sulfuric acid is heated in a <u>beaker</u> and copper oxide is added with stirring • until the copper oxide is in <u>excess</u> • the mixture is <u>filtered</u> or the mixture is poured through a <u>funnel</u> and <u>filter paper</u> • to remove the <u>excess</u> copper oxide • some of the solution is <u>evaporated</u> or heated in an <u>evaporating basin/dish</u> • the solution is allowed to <u>crystallise / cool down</u> examples of the risk assessment points made in the response • wear safety goggles – to protect eyes because sulfuric acid is corrosive / an irritant • care when heating – to protect against burns • wash hands after the preparation – copper sulfate is harmful • care when handling glass apparatus – to protect against cuts		extra information the underlined words are needed to gain each bullet point	
Total			6

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question	answers	extra information	mark
9(a)(i)	curve missing anomalous point		1
9(a)(ii)	answer in the range of 100.35 to 100.5		1
9(a)(iii)	reaction goes quickly at first reaction stops	accept reaction slows down	1
			1
9(b)	because carbon dioxide is produced	accept gas is produced	1
	carbon dioxide / gas escapes, therefore the mass of the flask and contents decreases		1
9(c)(i)	balance B		1
9(c)(ii)	because during the experiment a gas / carbon dioxide escapes from the flask		1
	therefore the balance needs a high resolution to measure the small changes in the mass		1
9(d)	the (marble) powder has a larger surface area than the (marble) chips		1
	therefore there would be more collisions with the acid particles (within the same amount of time)		1
Total			11

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question	answers	extra information	mark
10(a)(i)	column		1
10(a)(ii)	mass spectrometer		1
10(b)(i)	165	if answer is not correct then evidence of correct working gains one mark eg (10x12) + 15 + 14 + 16	2
10(b)(ii)	10.37 (%)	accept 10 / 10.4 / 10.37..... if answer is not correct then evidence of correct working gains one mark eg minimum evidence would be 14/135	2
10(c)	any two from: • faster • more accurate • detects smaller amounts		2
10(d)	to avoid bias to improve reliability	accept to check / compare the result	1 1
Total			10