AQA GCSE Chemistry | 8462

SPECIFICATION POINT 4.8.3.7

Flame emission spectroscopy

Mark schemes and examiner comments

Tier	**Foundation**
Question groups	**3**
Available paper years	**2010–2018**

Using this booklet

1. Booklet answer numbers match the question booklet.
2. Use the original question number within marking tables.
3. Examiner comments are included where available.

Name: _____ **Date:** _____

Where a precise marking extract is unavailable, the full source document is included in an appendix. Any missing mark scheme is explicitly identified.

4.8.3.7 Flame emission spectroscopy

Answer 01 · Mark scheme

June 2010 | CHY3F | Original Q4 | Legacy

Question 4

question	answers	extra information	mark
4(a)(i)	sodium hydroxide green solid		1 1 1
4(a)(ii)	barium chloride white sulfate ions, SO_4^{2-}		1 1 1
4(b)	some indication of contact between (colourless) flame and the chemical	ignore colour of flame	1
4(c)	any **one** from: • accurate • precise • sensitive • reliable • rapid • only small amount needed	ignore reference to cost / safer	1
Total			**8**

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Answer 01 · Mark scheme

June 2010 | CHY3F | Original Q4 | Legacy

CHY3F

4.8.3.7 Flame emission spectroscopy

Answer 02 · Mark scheme

June 2012 | CH2FP | Original Q6 | Legacy

Question 6

question	answers	extra information	mark
6(a)(i)	prevent evaporation of solvent	allow prevent loss of solvent allow to support the (chromatography) paper	1
6(a)(ii)	ink dissolves in the solvent **or** carbon / graphite does not dissolve in the solvent	allow ink 'runs' / spreads **or** pencil does not 'run' / spread allow ink would affect the result / mixes with colours accept pencil for carbon / graphite	1
6(b)(i)	4		1
6(b)(ii)	any **one** from: • because not all colours match • not all colours are safe • some colours could be unsafe • some colours travelled higher (than safe colours)	no mark for 'no / don't know' ignore numbers	1
6(c)(i)	any **two** from: • rapid / quick • accurate • sensitive **or** detects very small quantities	ignore reliable / precise accept small sample	2

Question 6 continues on the next page…

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CH2FP

Question 6 cont'd…

question	answers	extra information	mark
6(c)(ii)	separates		1
6(c)(iii)	identifies solvents / compounds / substances	accept (relative) molecular mass accept formula mass accept M_r accept relative mass accept molecular ion peak	1
Total			**8**

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Answer 02 · Mark scheme

June 2012 | CH2FP | Original Q6 | Legacy

CH2FP

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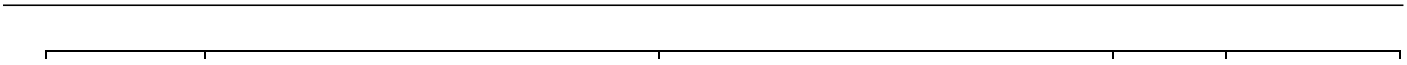
Answer 03 · Mark scheme June 2018 | 8462/2F | Original Q8

Question	Answers	Extra information	Mark	AO / Spec. Ref.
08.1	yellow	allow orange allow orange-yellow	1	AO1 4.8.3.1
08.2	copper (ion)	allow Cu^{2+} allow copper (II) allow barium (ion) allow Ba^{2+}	1	AO1 4.8.3.1
08.3	(flame) colours are masked	allow (flame) colours mix / blend allow only see one colour allow cannot see two colours at once ignore hard to distinguish	1	AO1 4.8.3.1
08.4	Li^+ Na^+		1 1	AO2 4.8.3.7
08.5	bromide (ion)	allow Br^- ignore bromine	1	AO1 4.8.3.4
08.6	add barium chloride (solution) add hydrochloric acid white precipitate produced	allow barium nitrate (solution) allow nitric acid allow acidified do **not** accept sulfuric acid dependent on use of a barium compound	1 1 1	AO1 4.8.3.5
Total			**9**	

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Answer 03 · Mark scheme

June 2018 | 8462/2F | Original Q8



Answer 03 · Examiner comments

June 2018 | 8462/2F | Original Q8

Question 8 (standard demand)

08.1 38% of students gave yellow or orange. There was a lot of variety in the wrong answers with all the colours of the spectrum represented.

08.2 Copper was the most common answer given although a few gave barium

08.3 A lot of students lost this mark as it was unclear if they were talking about the mixture of flame colours or the mixture of metal ions. 29% of students answered correctly.

08.4 57% of students correctly identified both of the ions in the flame emission spectrum.

08.5 3% of students identified the correct answer as bromide. A few put bromine but most seemed to guess.

08.6 The test for sulfate ions was not well known: 10% achieved the mark while 42% of students left it blank.