CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge Ordinary Level

MARK SCHEME for the October/November 2014 series

5070 CHEMISTRY

5070/32 Paper 3 (Practical Test), maximum raw mark 40

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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CAMBRIDGE
International Examinations

1 (a) Titration

Accuracy 8 marks

For the two best titres give:
4 marks for a value within 0.2 cm^3 of supervisor
2 marks for a value within 0.3 cm^3 of supervisor
1 mark for a value within 0.4 cm^3 of supervisor

Concordance 3 marks

Give:
3 marks if all the ticked values are within 0.2 cm^3
2 marks if all the ticked values are within 0.3 cm^3
1 mark if all the ticked values are within 0.4 cm^3

Average 1 mark

Give 1 mark if the candidate calculates a correct average (error not greater than 0.05) of all his / her ticked values.

[12]

Calculations
Assuming a 25.0 cm^3 pipette and a titre of 25.2 cm^3.

(b) concentration of iodine in **P**

$= \frac{25.2 \times 0.1}{2 \times 25}$ (1)

= 0.0504 (1) [2]

(c) moles of calcium hypochlorite

$= \frac{0.0504}{2}$

= 0.0252 (1) [1]

(d) percentage by mass of calcium hypochlorite in bleaching powder

mass of calcium hypochlorite = 0.0252×143

= 3.60 g (1)

percentage by mass = $\frac{3.60 \times 100}{10}$

= 36.0 (1) [2]

[Total: 17]

2 **R** is aqueous ammonia; **S** is iron(III) chloride

Test			Notes
General points For ppt Allow solid, suspension, powder. For gases Name of gas requires test to be at least partially correct. Effervesces = bubbles = gas vigorously evolved, but not gas evolved. Solutions Colourless not equivalent to clear, clear not equivalent to colourless.			
Test 1 gas turns litmus blue ammonia	(1) (1)	[2]	To score ammonia mark there must be some indication of a test i.e. smell of ammonia, alkaline gas, tested with litmus.
Test 2 **(a)** white ppt **(b)** ppt disappears in **R** colourless solution	(1) (1) (1)	[3]	
Test 3 blue ppt ppt disappears in excess **R** dark blue solution	(1) (1) (1)	[3]	
Test 4 red-brown ppt insoluble in excess **R**	(1) (1)	[2]	

Test 5				
effervescence		(1)		
relights a glowing splint		(1)		
oxygen		(1)	[3]	To score oxygen mark there must be some indication of a test e.g. 'tested with a glowing splint', 'relights a splint'.
Test 6				
(a) white ppt		(1)		
(b) ppt remains in acid		(1)	[2]	
Test 7				
(a) solution turns purple / red / violet		(1)		accept dark brown
solution finally colourless / pale yellow		(1)		accept colour fades / becomes paler
(b) green ppt		(1)		accept black green ppt
insoluble in excess		(1)	[4]	

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Conclusions

R contains ammonia / ammonium hydroxide (gas tested / identified in test 1 or dark blue solution in test 3) (1)

Cation present in **S** is Fe^{3+} (test 4 red-brown ppt which does not dissolve in excess **R**) (1)

Anion present in **S** is Cl^- (test 6 white ppt which does not dissolve in nitric acid) (1)

Note: if correct names of ions for **S** given instead of formulae or formulae correct but reversed, allow 1 mark.

S is acting as an oxidising agent / oxidant (test 7(b) green ppt) (1)

[4]

[Total: 23]