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

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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]

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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]	

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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) solution finally colourless / pale yellow (1) **(b)** green ppt (1) insoluble in excess (1) [4]			accept dark brown accept colour fades / becomes paler accept black green ppt

[19]

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]

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