

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge Ordinary Level

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MARK SCHEME for the October/November 2014 series

5070 CHEMISTRY

5070/32

Paper 3 (Practical Test), maximum raw mark 40

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Page 2	Mark Scheme	Syllabus
	Cambridge O Level – October/November 2014	507

1 (a) Titration

Accuracy 8 marks

For the two best titres give:

4 marks for a value within 0.2 cm³ of supervisor

2 marks for a value within 0.3 cm³ of supervisor

1 mark for a value within 0.4 cm³ of supervisor

Concordance 3 marks

Give:

3 marks if all the ticked values are within 0.2 cm³

2 marks if all the ticked values are within 0.3 cm³

1 mark if all the ticked values are within 0.4 cm³

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 cm³ pipette and a titre of 25.2 cm³.

(b) concentration of iodine in P

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

$$= 0.0504 \quad (1)$$

[2]

(c) moles of calcium hypochlorite

$$= \frac{0.0504}{2}$$

$$= 0.0252 \quad (1)$$

[1]

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

$$\text{mass of calcium hypochlorite} = 0.0252 \times 143$$

$$= 3.60 \text{ g} \quad (1)$$

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

$$= 36.0 \quad (1)$$

[2]

[Total: 17]

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

Test		Notes
<p>General points For ppt Allow solid, suspension, powder.</p> <p>For gases Name of gas requires test to be at least partially correct. Effervesces = bubbles = gas vigorously evolved, but not gas evolved.</p> <p>Solutions Colourless not equivalent to clear, clear not equivalent to colourless.</p>		
Test 1		
gas turns litmus blue	(1)	
ammonia	(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	(1)	
(b) ppt disappears in R	(1)	
colourless solution	(1) [3]	
Test 3		
blue ppt	(1)	
ppt disappears in excess R	(1)	
dark blue solution	(1) [3]	
Test 4		
red-brown ppt	(1)	
insoluble in excess R	(1) [2]	

Page 4	Mark Scheme	Syllabus Paper
	Cambridge O Level – October/November 2014	507

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]	

[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]