

**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<sup>3</sup> of supervisor2 marks for a value within 0.3 cm<sup>3</sup> of supervisor1 mark for a value within 0.4 cm<sup>3</sup> of supervisorConcordance 3 marks

Give:

3 marks if all the ticked values are within 0.2 cm<sup>3</sup>2 marks if all the ticked values are within 0.3 cm<sup>3</sup>1 mark if all the ticked values are within 0.4 cm<sup>3</sup>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<sup>3</sup> pipette and a titre of 25.2 cm<sup>3</sup>.

## (b) concentration of iodine in P

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

$$= 0.0504 (1) \quad [2]$$

## (c) moles of calcium hypochlorite

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

$$= 0.0252 (1) \quad [1]$$

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

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

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

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

$$= 36.0 (1) \quad [2]$$

[Total: 17]

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

Test		Notes
<b>General points</b> 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 (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]		

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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)		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  $\text{Fe}^{3+}$  (test 4 red-brown ppt which does not dissolve in excess **R**) (1)

Anion present in **S** is  $\text{Cl}^-$  (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]