

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge Ordinary Level

MARK SCHEME for the October/November 2014 series

5070 CHEMISTRY

5070/31

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 supervisor2 marks for a value within 0.3 cm^3 of supervisor1 mark for a value within 0.4 cm^3 of supervisorConcordance 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 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) mole of oxygen

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

$$= 0.0252 (1)$$

[1]

(d) percentage by volume of oxygen

$$\text{volume of oxygen} = 0.0252 \times 24 \text{ dm}^3$$

$$= 0.605 \text{ dm}^3 (1)$$

$$\text{percentage by volume of oxygen} = \frac{0.605 \times 100}{3}$$

$$= 20.2 (1)$$

[2]

[Total: 17]

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2 **R** is sodium hydroxide; **S** is copper(II) 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 (a) turns red (1) (b) turns yellow (1) [2]	accept orange
Test 2 white ppt (1) ppt disappears in excess of R (1) colourless solution (1) [3]	
Test 3 effervescence (1) gas pops with a lighted splint (1) hydrogen (1) all or some of metal disappears (1) [4]	to score hydrogen mark there must be some indication of a test e.g. 'popped with a splint', 'tested with a burning splint'
Test 4 (a) white ppt (1) (b) insoluble in acid (1) [2]	

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Test 5	
blue ppt (1)	
ppt soluble in excess ammonia (1)	
deep blue solution (1) [3]	
Test 6	
effervescence (1)	
gas relights a glowing splint (1)	
oxygen (1)	to score oxygen mark there must be some indication of a test e.g. 'tested with a glowing splint', 'relights a splint'
liquid turns black-brown (1)	
ppt formed (1)	
on standing deep blue solution formed (1) [6]	

[20]

Conclusions

Anion in **R** is OH^- (test 1 colour change of indicator or test 2 white ppt soluble in excess) (1)Cation in **S** is Cu^{2+} (test 5 blue ppt or deep blue solution in excess) (1)Anion in **S** is Cl^- (test 4 white ppt which does not dissolve in nitric acid) (1)

Note: if correct name of any ion(s) given instead of formula, deduct one mark (therefore max 2 marks for conclusions.)

[3]

[Total: 23]