

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
GCE Ordinary Level

MARK SCHEME for the May/June 2011 question paper
for the guidance of teachers

5070 CHEMISTRY

5070/31

Paper 3 (Practical Test), maximum raw mark 40

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1 (a) Titration [12]

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 the ticked values.

Assuming a 25 cm^3 pipette and a titre of 24.8 cm^3 :

(b) concentration of iodine in P [2]

$$= \frac{24.8 \times 0.1}{2 \times 25} (1)$$

$$= 0.0496 \text{ mol/dm}^3 (1)$$

Answers should be correct to + or – 1 in the third significant figure.

(c) mass of iodine in 1 dm^3 of P [1]

$$= 0.0496 \times 254$$

$$= 12.6 \text{ g}$$

(d) amount of iodine present in seaweed [1]

$$= 12.6 \times 1000000 / 15000$$

$$= 840 \text{ ppm}$$

[Total: 16]

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2 R is hydrochloric acid S is sodium hydroxide

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	
Solution R	
Test 1 effervescence (1) gas turns limewater milky (1) carbon dioxide (1) solid disappears (1)	
Test 2 (a) white ppt (1) (b) soluble in excess (1) colourless solution (1)	
Test 3 (a) effervescence (1) gas pops with a lighted splint (1) hydrogen (1) liquid gets hot (1) solid disappears (1) (b) white ppt (1) insoluble in excess (1)	
Test 4 white ppt (1) soluble in excess (1) colourless solution (1)	
Test 5 (a) green ppt (1) soluble in excess (1) green solution (1) (b) green ppt (1) soluble in excess (1) green solution (1)	

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Test 6	
gas turns damp litmus blue (1)	
ammonia (1)	

Conclusions

Cation in **R** is hydrogen (indication of gas in test **1** or **3(a)**) (1)

Anion in **R** is chloride (white ppt in test **2(a)**) (1)

Anion in **S** is hydroxide (ammonia in test **6** or ppt in test **3(b)**, **4** or **5**) (1) [3]

Note: 28 marking points, maximum 24.

[Total: 24]