## UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS GCE Ordinary Level

# MARK SCHEME for the October/November 2011 question paper for the guidance of teachers

### **5070 CHEMISTRY**

5070/32

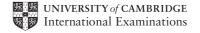
Paper 3 (Practical Test), maximum raw mark 40

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Mark schemes must be read in conjunction with the question papers and the report on the examination.

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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<sup>3</sup> of supervisor
- 2 marks for a value within 0.3 cm<sup>3</sup> of supervisor
- 1 mark for a value within 0.4 cm<sup>3</sup> of supervisor

Concordance 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 ticked values.

Assuming a 25 cm<sup>3</sup> pipette and a titre of 20.2 cm<sup>3</sup>.

(b) concentration of hydrochloric acid in P

[2]

$$=\frac{25\times0.05\times2}{20.2} (1)$$

$$= 0.124(1)$$

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

(c) concentration of hydrochloric acid in scale remover

[1]

$$= 0.124 \times 10 (1)$$

Answer from **(b)**  $\times$  10

(d) mass of calcium carbonate removed

[1]

$$= \frac{1.24 \times 100 \times 2}{2} (1)$$

Answer from (c) must be processed properly i.e. there must be working evident not just  $\times$  100.

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#### 2 R is manganese (IV) oxide, S is manganese(II) chloride, T is potassium manganate(VII)

Test			Notes
Genera For ppt allow so	l <b>points</b> lid, suspension, powder		
	es f gas requires test to be at least partially ces = bubbles = gas vigorously evolved		
Solution Colourle	s ess not equivalent to clear, clear not equ	ıival	ent to colourless
Solution	R		
Test 1			
	hts a glowing splint (	1) 1) 1)	
Test 2			
yell	ow or brown liquid (	1)	
Test 3			
(a)	filtrate is yellow (	1)	
(b)	precipitate (	1) 1) 1)	
Test 4			
(a)	no reaction (	1)	
(b)	white ppt (	1)	
Test 5			
(a)	precipitate (insoluble in excess (	1) 1) 1)	this mark is awarded for noting the darkening of the colour in either (a) or (b)
(b)	effervescence (relights a glowing splint (	1) 1) 1) 1)	(a) or (a)

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Test 6		
turns colourless or decolourised effervescence	(1) (1)	
Test 7		
(a) filtrate is green	(1)	
(b) filtrate turns pink, red or purple	(1)	

#### **Conclusions**

The anion in **S** is chloride or Cl<sup>-</sup> (white ppt in **test 4(b)**) (1) **R** is acting as an oxidising agent (**test 2** correct or **test 3(a)** yellow or **3(b)** brown) (1) **T** is acting as an oxidising agent (decolourised or effervescence in **test 6**) (1)

**Note:** 25 marking points, maximum 24.