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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International Examinations

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 his ticked values.

Assuming a 25 cm^3 pipette and a titre of 20.2 cm^3.

(b) concentration of hydrochloric acid in **P** [2]

$= \frac{25 \times 0.05 \times 2}{20.2}$ (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 × 10 (1)

= 1.24

Answer from **(b)** × 10

(d) mass of calcium carbonate removed [1]

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

= 124

Answer from **(c)** must be processed properly i.e. there must be working evident not just × 100.

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

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) relights a glowing splint (1) oxygen (1)	
Test 2 yellow or brown liquid (1)	
Test 3 **(a)** filtrate is yellow (1) **(b)** red-brown or brown (1) precipitate (1) insoluble in excess (1)	
Test 4 **(a)** no reaction (1) **(b)** white ppt (1)	
Test 5 **(a)** white, yellow or brown (1) precipitate (1) insoluble in excess (1) colour darkens (1) **(b)** dark (or black) brown solid (1) effervescence (1) relights a glowing splint (1) oxygen (1)	this mark is awarded for noting the darkening of the colour in either **(a)** or **(b)**

Test 6 turns colourless or decolourised (1) effervescence (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^- (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.