

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
GCE Ordinary Level

MARK SCHEME for the May/June 2009 question paper
for the guidance of teachers

5070 CHEMISTRY

5070/03

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 cm³ of supervisor

2 marks for a value within 0.3 cm³ of supervisor

1 mark for a value within 0.4 cm³ of supervisor

Concordance 3 marks

Give:

3 marks if all the ticked values are within 0.2 cm³

2 marks if all the ticked values are within 0.3 cm³

1 mark if all the ticked values are within 0.4 cm³

Average 1 mark

Give 1 mark if the candidate calculates a correct average (error not greater than 0.05) of all his ticked value. [12]

Assuming a 25 cm³ pipette and a titre of 24.6 cm³.

(b) moles of hydrogen ions in 1.00 dm³ of P

$$= \frac{25.0 \times 0.1}{24.6} \quad (1)$$

$$= 0.102 \text{ (correct to 0.001)} \quad (1)$$

(c) moles of hydrogen ions in 150 of cm³ vinegar.

$$= 0.102 \quad (1)$$

Give 1 mark for the same answer as in **(b)**

(d) mass of ethanoic acid present in 150 of cm³ vinegar.

$$= 0.102 \times 60$$

$$= 6.12 \text{ g} \quad (1)$$

Give 1 mark for the result of multiplying the answer in **(c)** by 60.

(e) percentage by mass of ethanoic acid in vinegar.

$$= \frac{6.12 \times 100}{150}$$

$$= 4.08 \% \quad (1)$$

Give 1 mark for the result of multiplying the answer in **(d)** by 100 and dividing by 150. [5]

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2 **R** is magnesium sulfate **S** is sodium hydrogencarbonate

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 just gas evolved) Solutions Colourless not equivalent to clear, clear not equivalent to colourless	
Test 1 2 marks White ppt (1) Insoluble in excess (1)	Ppt must be white Any indication ppt dissolves 0
Test 2 2 marks White ppt (1) Insoluble in excess (1)	Ppt must be white Any indication ppt dissolves 0
Test 3 2 marks No reaction (1) No reaction (1)	
Test 4 2 marks No reaction (1) White ppt (1)	Ppt must be white
Test 5 3 marks Effervesces (1) Gas turns limewater milky (1) Carbon dioxide (1)	

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Test 6 4 marks Condensation (1) Gas turns limewater milky (1) Effervesces (1) Gas turns limewater milky (1)	 Accept carbon dioxide on its own if correctly tested for and identified in any other test. Accept carbon dioxide on its own if correctly tested for and identified in any other test.
Test 7 3 marks Effervesces (1) Gas turns limewater milky (1) Blue ppt (1)	 Accept carbon dioxide on its own if correctly tested for and identified in any other test. Accept all shades of blue e.g. light, pale, and blue-green
Test 8 2 marks Gas turns litmus blue (1) Ammonia (1)	 Allow ammonia mark if an indication of gas e.g. smell of ammonia, test gas with litmus.
Test 9 4 marks (a) Colourless solution/no reaction (1) (b) White ppt (1) Effervesces (1) Gas turns lime water turns milky (1)	 Accept carbon dioxide on its own if correctly tested for and identified in any other test.

R is sulphate or SO_4^{2-} (must be a white ppt in test 4) (1)

S contains carbon and oxygen (identification of CO_2 in an appropriate test) (1)

Note 26 marking points, maximum 23.