

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

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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
<p>General points For ppt allow solid, suspension, powder</p> <p>For gases Name of gas requires test to be at least partially correct. Effervesces = bubbles = gas vigorously evolved (but not just gas evolved)</p> <p>Solutions Colourless not equivalent to clear, clear not equivalent to colourless</p>	
<p>Test 1 2 marks</p> <p>White ppt (1) Insoluble in excess (1)</p>	<p>Ppt must be white Any indication ppt dissolves 0</p>
<p>Test 2 2 marks</p> <p>White ppt (1) Insoluble in excess (1)</p>	<p>Ppt must be white Any indication ppt dissolves 0</p>
<p>Test 3 2 marks</p> <p>No reaction (1) No reaction (1)</p>	
<p>Test 4 2 marks</p> <p>No reaction (1) White ppt (1)</p>	<p>Ppt must be white</p>
<p>Test 5 3 marks</p> <p>Effervesces (1) Gas turns limewater milky (1) Carbon dioxide (1)</p>	

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

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.