

**MARK SCHEME for the May/June 2012 question paper
for the guidance of teachers**

5070 CHEMISTRY

5070/32

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 values.

Assuming a 25 cm³ pipette and a titre of 24.8 cm³.

(b) concentration of ethanedioic acid in P [2]

$$= \frac{25.0 \times 0.15}{24.8 \times 2} \quad (1)$$

$$= 0.0756 \quad (1)$$

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

(c) concentration of ethanedioic acid in P in g/dm³ [1]

$$= 0.0756 \times 90 \quad (1)$$

$$= 6.80$$

(d) mass of water in g [1]

$$= 9.45 - 6.80 \quad (1)$$

$$= 2.65$$

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(e) the value of x

$$\text{mole H}_2\text{O} = \frac{2.65}{18}$$

$$= 0.147$$

$$x = \frac{0.147}{0.0756}$$

$$= 1.94 \text{ or } 2$$

Shows the working to obtain value of x (1)

The value of x

i.e. the correct arithmetical answer or the nearest whole number (1)

[Total: 18]

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2 R is potassium iodide S is hydrogen peroxide

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 gas evolved</p> <p>Solutions Colourless not equivalent to clear, clear not equivalent to colourless</p>	
Solution R	
<p>Test 1</p> <p>(a) yellow ppt (1)</p> <p>(b) insoluble in acid (1)</p>	accept pale yellow
<p>Test 2</p> <p>red/brown solution (1)</p>	
<p>Test 3</p> <p>(a) turns brown (1)</p> <p>solid formed (1)</p> <p>(b) turns green (1)</p> <p>solid disappears (1)</p>	accept black

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Test 4 (a) yellow/red/brown solution (1) (b) black solid (1)	allow dark brown solid
Test 5 (a) yellow solution (1) (b) red-brown ppt (1) insoluble in excess (1) bubbles (1) gas relights a glowing splint (1) oxygen (1)	allow brown
Test 6 purple colour lost (1) bubbles (1) oxygen (1)	turns colourless/decolourised
Test 7 (a) no reaction (1) (b) bubbles (1) oxygen (1) liquid turns blue (1)	

Conclusions

- The anion in **R** is iodide or I^- (in Test 1 yellow ppt remains in acid) (1)
- S** is acting as an oxidising agent (in Test 5 yellow solution or red-brown ppt) (1)
- S** is acting as a reducing agent (in Test 6 indication purple colour lost) (1)

Note: 25 marking points, maximum 22.

[Total: 22]