

**MARK SCHEME for the October/November 2010 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 [12]

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 hydrogen ions in P [2]

$$= \frac{25 \times 0.1}{24.8} (1)$$

$$= 0.101 (1)$$

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

(c) moles of hydrogen ions in 10000 dm³ of contaminated water [1]

$$= 0.101 \times 10000 (1)$$

$$= 1010$$

(d) mass of calcium carbonate needed to neutralise the acid [2]

$$= 1010/2 (1)$$

$$= 1010 \times 100 (1)$$

$$= 50500 \text{ g}$$

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2 R is aluminium S is potassium nitrate

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>	
Solution R	
Test 1 effervescence (1) pops with a lighted splint (1) hydrogen (1)	
Test 2 white ppt (1) soluble in excess (1) colourless solution (1)	
Test 3 white ppt (1) insoluble in excess (1)	
Test 4 (a) effervescence (1) pops with a lighted splint (1) hydrogen (1) (b) white ppt (1) soluble in excess (1) colourless solution (1)	
Test 5 (a) no reaction (1) (b) red/brown solid formed (1) blue colour fades (1) effervescence (1)	

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Test 6		
(a) liquid turns green	(1)	accept green-yellow or colourless
(b) green ppt	(1)	black/dirty green ppt
insoluble in excess	(1)	
Test 7		
turns litmus blue	(1)	
ammonia	(1)	

[20]

R is aluminium/Al (ppt must dissolve in test 2 and ppt must not dissolve in test 3) (1)

R is acting as a reducing agent (any green in test **6(a)** or green/black in test **6(b)**) (1)

S contains nitrate or NO_3^- (test 7 correct – allow alkaline gas, smell of ammonia) (1)

[3]

Note: 26 marking points, maximum 23.