CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge Ordinary Level

MARK SCHEME for the May/June 2015 series

5070 CHEMISTRY

5070/32 Paper 3 (Practical Test), maximum raw mark 40

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2015 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.

® IGCSE is the registered trademark of Cambridge International Examinations.

CAMBRIDGE
International Examinations

1 (a) Titration

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/her ticked values.

[12]

Calculations
Assuming a 25.0 cm^3 pipette and a titre of 20.2 cm^3.

(b) moles of sodium hydroxide in 25.0 cm^3 of **P**

$$= \frac{25.0 \times 0.0984}{1000}$$

= 0.00246 [1]

(c) concentration, in mol / dm^3, of H_3PO_3 in **Q**

$$= \frac{5.04}{82}$$

= 0.0615 [1]

(d) moles of H_3PO_3 in average titre of **Q**

$$= \frac{20.2 \times 0.0615}{1000}$$

= 0.00124 [1]

© Cambridge International Examinations 2015

(e) moles of sodium hydroxide which react with 1 mole of H_3PO_3

$$= \frac{0.00246}{0.00124}$$

= 1.98 [1]

(f) balanced equation for the reaction

$2NaOH + H_3PO_3 \rightarrow Na_2HPO_3 + 2H_2O$

whole numbers consistent with answer in **(e)** on left hand side of equation (1)

correct formulae for products and balancing of the equation (1) [2]

[Total: 18]

2 **R** is ammonia **S** is iron(II) sulfate

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.	
1 gas turns damp red litmus blue (1) ammonia (1)	 to score ammonia mark there must be some indication of a test, i.e. smell of ammonia, alkaline gas, tested with litmus
2 white ppt (1) soluble in excess (1) colourless solution (1)	

© Cambridge International Examinations 2015

Test			Notes
3			
(a)	white ppt	(1)	
(b)	solid disappears	(1)	
	colourless solution	(1)	
4			
(a)	no reaction	(1)	
(b)	bubbles	(1)	
	gas relights a glowing splint	(1)	
	oxygen	(1)	to score oxygen mark there must be some indication of a test, e.g. 'tested with a glowing splint', 'relights a splint'
	blue solution	(1)	
5			
(a)	white ppt	(1)	
(b)	solid remains	(1)	
6			
	green ppt	(1)	
	insoluble in excess	(1)	
	turns brown at surface	(1)	

© Cambridge International Examinations 2015

Test		Notes
7		
(a) filtrate is yellow	(1)	
(b) red-brown ppt	(1)	
insoluble in excess	(1)	

Any 20 of the 21 scoring points [20]

Conclusions

R is ammonia / NH_3 or ammonium hydroxide / NH_4OH
(ammonia identified in test 1) (1)

S is iron(II) sulfate / $FeSO_4$
(in test 4 white ppt insoluble in acid and in test 6 green ppt) (1)

[2]

[Total: 22]

© Cambridge International Examinations 2015