

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

Cambridge Ordinary Level

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## **MARK SCHEME for the October/November 2014 series**

### **5070 CHEMISTRY**

**5070/41**

Paper 4 (Alternative to Practical), maximum raw mark 60

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Page 2	Mark Scheme	Syllabus
	Cambridge O Level – October/November 2014	5071

- 1 (a) round bottomed flask (1) [1]
- (b) ethanoic acid (1) [1]
- (c) orange to green (1) [1]
- [Total: 3]
- 2 (a)  $\text{Zn} + \text{H}_2\text{SO}_4 \rightarrow \text{ZnSO}_4 + \text{H}_2$  (1) [1]
- (b) hydrogen (1)  
lighted splint pops (1) [2]
- (c) 65, 65 (1) [1]
- (d) flask or suitable container in which reaction occurs (1)  
gas syringe/inverted burette **OR** measuring cylinder with water (1)  
flask and collection vessel closed **AND** no blockage for gas to collection vessel (1) [3]
- (e) all acid is used up (1) [1]
- (f) catalyst (1) [1]
- [Total: 9]
- 3 (a) tripod (1) [1]
- (b) heat to constant mass (1) [1]
- (c) (i) 0.45 g (1) [1]  
(ii) 106, 18 (1) [1]  
(iii) 0.0025, 0.025 (1) [1]
- (d) 10 (1) [1]
- [Total: 6]
- 4 (d) (1) [Total: 1]

Page 3	Mark Scheme	System	paper
	Cambridge O Level – October/November 2014	507	

- 5 (c) (1)
- 6 (b) (1) [Total: ]
- 7 (a) (1) [Total: 1]
- 8 (c) (1) [Total: 1]
- 9 (a) 5.04 (1) g [1]
- (b) volumetric flask (1) [1]
- (c) pipette (1) [1]
- (d) purple/pink (1) [1]
- (e) 

17.8	37.5	27.3
0.0	20.4	10.0
17.8	17.1	17.3

 1 mark for each correct row or column to the benefit of the candidate (3)
- average volume = 17.2 (1) cm<sup>3</sup> [4]
- (f) 0.000344 (1) moles [1]
- (g) 0.00172 (1) moles [1]
- (h) 0.0172 (1) moles [1]
- (i) 0.963(2) (1) g [1]
- (j) 19.1 (1) % [1]
- [Total: 13]

Page 4	Mark Scheme	System Paper
	Cambridge O Level – October/November 2014	507

10 (a) no transition metal or element present/  
L is not a compound of a transition metal or element (1)

- (b) (i) white precipitate (1)
- (ii) soluble in excess (1)

- (c) (i) white precipitate (1)
- (ii) soluble in excess (1)

(d) add NaOH (1) and Al (1) warm / heat (1)  
ammonia evolved / gas turns litmus blue (1)

(e)  $Zn(NO_3)_2$  (1)

[Total: 10]

11 (a) (i) 0.25 (1) g [1]

(ii) 9.6 (1) g [1]

(b) (i) 46 (1) [1]

(ii) 0.00543 (1) moles [1]

(iii) -1485 (1) kJ/mol [1]

(c) exothermic (1) [1]

(d) all points plotted correctly (1) correct straight line of best fit (1) [2]

(e) temperature 38 °C circled on graph (1) correct temperature is 34 (1) °C [2]

(f) 6 (1) °C [1]

(g) (i) 90 (1) °C [1]

(ii) final temperature would exceed the boiling point of water/100 °C (1) [1]

(iii) use more water / start at a lower temperature (below 15 °C) **OR**  
use a liquid with a higher boiling point (than 100 °C) (1) [1]

[Total: 14]