

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge Ordinary Level

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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- 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) [1]
- [Total: 1]**

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5 (c) (1) [Total: 1]

6 (b) (1) [Total: 1]

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 1 mark for each correct row or column
 0.0 20.4 10.0 to the benefit of the candidate (3)
 17.8 17.1 17.3

average volume = 17.2 (1) cm³ [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]

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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) $\text{Zn}(\text{NO}_3)_2$ (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) $^\circ\text{C}$ [2]

(f) 6 (1) $^\circ\text{C}$ [1]

(g) (i) 90 (1) $^\circ\text{C}$ [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]