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)** $Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$ (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]**

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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) cm^3

[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 A*l* (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]

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