CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Ordinary Level

MARK SCHEME for the May/June 2014 series

5070 CHEMISTRY

5070/42 Paper 4 (Alternative to Practical), maximum raw mark 60

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1 **(a)** **(i)** (gas) syringe (1) [1]

(ii) 16 (1) cm^3 [1]

(b) **(i)** carbon dioxide / CO_2 (1)
limewater turns milky (1)
$CaCO_3 + 2HCl \rightarrow CaCl_2 + H_2O + CO_2$ (1) [3]

(ii) Hydrogen / H_2 (1) pops in a flame (1)
$Zn + H_2SO_4 \rightarrow ZnSO_4 + H_2$ (1) [3]

[Total: 8]

2 **(a)** **(i)** off white or cream or pale yellow (1) [1]

(ii) filtration / filter (1) [1]

(b) **(i)** 0.05 (1) moles [1]

(ii) 0.06 (1) moles [1]

(c) 0.05 (1) $\times$ 188 = 9.4 g (1) [2]

(d) 0.03 (1) $\times$ 188 = 5.64 g (1) [2]

[Total: 8]

3 **(a)** C_6H_{14} **AND** C_7H_{16} (1) [1]

(b) reaction flask with some form of heat indicated (1)
thermometer + cork / bung / closed (1)
condenser with water circulating in the correct direction (1)
receiver flask, not closed (1) [4]

[Total: 5]

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4 **(c)** **[Total: 1]**

5 **(d)** **[Total: 1]**

6 **(d)** **[Total: 1]**

7 **(b)** **[Total: 1]**

8 **(c)** **[Total: 1]**

9 **(a)** 3.85 g (1) [1]

(b) $ZnO + H_2SO_4 \rightarrow ZnSO_4 + H_2O$ (1) [1]

(c) red / pink to yellow (1) [1]

(d) 25.2 31.1 48.3 (1)
0.0 6.8 23.8 (1)
25.2 24.3 24.5 (1)
Mean titre = 24.4 cm^3 (1)
1 mark for each correct row or column to the benefit of the candidate. [4]

(e) 0.00244 (1) moles [1]

(f) 0.00122 (1) moles [1]

(g) 0.0122 (1) moles [1]

(h) 0.05 (1) moles [1]

(i) 0.0378 (1) moles [1]

(j) 0.0378 (1) moles [1]

(k) 3.06 g (1) [1]

(l) 79.5% (1) [1]

[Total: 15]

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10 **(a)** colourless (1) to brown / black (1)

(b) orange (1) to green (1)

(c) purple / pink (1) to colourless (1)

[Total: 6]

11 **(a)** maximum temperature: 24.5, 29, 27, 23.5 (1)
temperature rise: 4.5, 9.0, 7.0, 3.5 (1) [2]

(b) All four points plotted correctly (1)
Draw two straight lines only (1)
Line 1 must involve points 1 and 2
Line 2 must involve points 3 and 4
Lines intersect without use of a curve (1) [3]

(c) **(i)** mixture 1: **H** = 74 cm^3 **AND J** = 26 cm^3 (1)
mixture 2: **H** = 34 cm^3 **AND J** = 66 cm^3 (1) [2]

(ii) 9.8 °C (1) [1]

(iii) **H** = 56 cm^3 **AND J** = 44 cm^3 (1) [1]

In questions **(c)** read candidate's graph to +/– half a small square.
In answers **(c)(i)** and **(iii)** totals must add up to 100 cm^3.

(d) No. of moles of **J** (1)
M = 44 × 1.00 / 56 × 2 = 0.393 (0.39) mol/dm^3 (1) [2]

(e) **(i)** 4.9 °C (1) [1]

(ii) 56 cm^3 **H AND** 44 cm^3 **J** (1) [1]

[Total: 13]

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