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

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.

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CAMBRIDGE
International Examinations

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]

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]

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]