**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**GCE Ordinary Level**

# MARK SCHEME for the October/November 2013 series

## 5070 CHEMISTRY

**5070/41** (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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**1** **(a)** **(i)** conical flask (1) [1]

**(ii)** gas syringe/syringe (1) [1]

**(b)** **(i)** 0.002 (1) [1]

**(ii)** 0.048 (g) (1) [1]

**(c)** pops in a flame/lighted splint (1) [1]

**(d)** **(i)** greater (1) [1]

**(ii)** smaller (1) [1]

**[Total: 7]**

**2** **(a)** **(i)** pink/red brown/brown/copper solid or deposit (1) [1]

**(ii)** $Cu^{2+} + 2e^- \rightarrow Cu$ (1) [1]

**(iii)** blue solution turns colourless/blue colour fades (1)
copper ions are removed from solution (1) [2]

**(iv)** oxygen (1)
glowing splint relights (1) [2]

**(v)** copper ions removed at cathode are replaced at anode/concentration of copper ions remains constant/ concentration of electrolyte remains constant (1) [1]

**(b)** **(i)** oxygen (1)
hydrogen (1)
bubbles (1)

**(ii)** iodine (1)
brown solution/grey or black solid (1)
hydrogen (1)

**(iii)** bromine (1)
brown solution/brown/red brown/orange vapour (1)
lead (1) [9]

**[Total: 16]**

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

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

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

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

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

**8** **(a)** 0.81 (g) (1) [1]

**(b)** pipette (1) [1]

**(c)** 23.7 24.8 32.9

0.0 2.0 10.3 1 mark for each correct row or column to benefit of candidate. (3)

23.7 22.8 22.6

mean titre = 22.7 $cm^3$ (1) [4]

**(d)** 0.00227 (moles) (1) [1]

**(e)** 0.00114 (moles) (1) [1]

**(f)** 0.000378 (moles) (1) [1]

**(g)** 0.00378 (moles) (1) [1]

**(h)** 214 (1) [1]

**(i)** 3 (1) [1]

**[Total: 12]**

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**9** **(a)** **(i)** carbon dioxide (1)
limewater turns milky (1) [2]

**(ii)** $2H^+ + CO_3^{2-} \rightarrow H_2O + CO_2$ (1) [1]

**(b)** transition metal not present (1) [1]

**(c)** **(i)** white precipitate (1)

**(ii)** insoluble in excess (1)

**(d)** no precipitate or slight white precipitate (1)

**(e)** nitric acid (1)
and silver nitrate solution (1)
accept correct formulae. Incorrect formula negates correct name and vice versa.
white precipitate (1) [7]

**[Total: 10]**

**10** **(a)** **(i)** exothermic (1) [1]

**(ii)** any **TWO** from
zinc dissolves/disappears (1)
copper/brown/red brown/pink solid or deposit (1)
bubbles/fizzing/effervescence (1)
solution goes from blue to colourless or blue colour fades (1) [2]

**(b)** all points plotted correctly (1)
straight line drawn (1)
line extended to y axis (1) [3]

**(c)** **(i)** 32.4 (°C) (1) [1]

**(ii)** 12.4 (°C) (1) [1]

**(iii)** 0.025 (moles) (1) [1]

**(d)** 52/52.08/52.1 (kJ/mol) (1) [1]

**[Total: 10]**

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