**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**GCE Ordinary Level**

# MARK SCHEME for the October/November 2012 series

## 5070 CHEMISTRY

**5070/41** 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 is publishing the mark schemes for the October/November 2012 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

CAMBRIDGE
International Examinations

**1** **(a)** **C** (1)

**(b)** **E** (1)

**(c)** **B** (1)

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

**2** **(a)** **(i)** silvery/grey metal or solid (1)

**(ii)** white powder/solid (1)

**(b)** **(i)** hydrogen (1)

**(ii)** pops in a flame (1)

**(iii)** $Mg + 2HCl \rightarrow MgCl_2 + H_2$ (1)

**(c)** **(i)** burn or heat magnesium in oxygen, air or steam (1)

**(ii)** $2Mg + O_2 \rightarrow 2MgO$

**or** $Mg + H_2O \rightarrow MgO + H_2$ (1) **[Total: 7]**

**3** **(a)** add anhydrous copper(II) sulfate (1)

colour changes from white (1) to blue (1)

**or**

add anhydrous cobalt(II) chloride or cobalt chloride paper (1)

colour changes from blue (1) to pink (1)

**(b)** measure the boiling point (1)

boils at 100 °C (1) **[Total: 5]**

**4** **(a)** pass gas through lime water; turns milky/white (1)

**(b)** **(i)** effervescence or fizzing ceases (1)

**(ii)** solid remains (1)

**(c)** filtration/centrifuge/decantation (1)

**(d)** 0.05 (1)

**(e)** **(i)** molar mass = 161 (1); mass = 161 × 0.05 = 8.05 g (1)

**(ii)** volume of $CO_2$ = 0.05 x 24000 = 1200 $cm^3$ (1) **[Total: 8]**

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

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

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

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

**9** **(a)** pink to colourless (1)

**(b)** 27.1 48.8 34.1 1 mark for each correct row or column (3)

0.0 22.3 7.8

27.1 26.5 26.3

mean titre: 26.4 (1) $cm^3$

**(c)** 0.0025 (1)

**(d)** 0.0025 (1)

**(e)** 0.0947 (1)

**(f)** 74 (1)

**(g)** 74 – 45 = 29 : $C_nH_{2n+1}$ = 29 (1)

*n* = 2 (1)

$C_2H_5CO_2H$ (1)

**(h)** **(i)** $C_3H_7OH$/propanol (1)

**(ii)** potassium dichromate(VI) or potassium manganate(VII) or formulae (1) **[Total: 14]**

**10** **(a)** transition metal ions absent (1)

**(b)** **(i)** white ppt.

**and**

**(ii)** soluble in excess (1)

**(c)** **(i)** white ppt

**and**

**(ii)** soluble in excess (1)

**(d)** $HNO_3$ (1)/$AgNO_3$ or $Pb(NO_3)_2$ (1)/yellow ppt (1)

$ZnI_2$ (1)

**[Total: 7]**

**11** **(a)** 18, 29, 38, 40 (1) all correct

**(b)** all points plotted correctly (1)

passing through zero (1)

two smooth curves through the points (1)

**(c)** **(i)** 35 (1)

**(ii)** 50 (1)/3 = 16.67 (1)

**(iii)** 0.15 mol/$dm^3$ (1) as 50% more hydrogen produced in 2 (1)

**(d)** greater slope (1) same finishing line as 1(1)

**[Total: 11]**