

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Ordinary Level

**MARK SCHEME for the May/June 2010 question paper  
for the guidance of teachers**

**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.

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- 1 (a) blue (1)
- (b) blue (1)
- (c) (i) (light) blue ppt. (1)
- (ii) ppt. dissolves (1) dark blue solution (1) [5]
- 2 (a) (i) B, reference to metal, positive ions, reduction occurs, –ve electrode etc. (1)
- (ii) copper (1)
- (b) (i) hydrogen (1)
- (ii) 'pops' in a flame (1)
- (c) (i) oxygen (1)
- (ii) relights a glowing splint (1)
- (d) (i) blue to colourless (1)
- (ii) copper is being removed from the solution etc./concentration decreased (1) [8]
- 3 (a) (i) 3.85 g (1)
- (b) (i) anhydrous/dehydrated (1)
- (ii) 2.30g (1)
- (iii) 1.55g (1)
- (c) (i) 152
- (ii) 18 (1)
- (d) (i) 0.0151 (1)
- (ii) 0.086 (1)
- (e)  $x = 5.70$  (1)  $\text{FeSO}_4 \cdot 6\text{H}_2\text{O}$  (1) [9]

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- 4 (c) [1]
- 5 (b) [1]
- 6 (c) [1]
- 7 steeper (1) horizontal line  $2 \times$  height (1) [2]
- 8 (a) pink to colourless (1)
- (b) 26.6 or 26.5      39.4      30.2  
0.0      13.6      4.2  
26.6 or 26.5      25.8      26.0  
[Mark rows or columns to the benefit of the candidate. One mark for each correct row or column] (3)  
Mean value  $25.9 \text{ cm}^3$  (1)
- (c) 0.0025 (1)
- (d) 0.0025 (1)
- (e) 0.0965 (1)
- (f) 88 (1)
- (g) (i)  $n = 3$  (1)  
(ii)  $\text{C}_3\text{H}_7\text{COOH}$  (1)
- (h) (i)  $\text{C}_3\text{H}_7\text{COOC}_2\text{H}_5$  (1)  
(ii) esters/alkanoates (1) [13]

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- 9 (a)** colourless solution (1)
- (b) (i)** aq. NaOH (1) white ppt. (1)  
**(ii)** excess aq. NaOH, ppt. dissolves (1)
- (c) (i)** white ppt. (1)  
**(ii)** ppt. dissolves (1)
- (d)** HNO<sub>3</sub>/aq. AgNO<sub>3</sub> (2) white ppt. (1) [9]
- 10 (a)** 27, 31, 32 (1)
- (b)** all points plotted correctly (1)  
Two intersecting straight lines (2)
- (c) (i)** 34° (1)  
**(ii)** 22 cm<sup>3</sup> (1)
- (d) (i)**  $2\text{NaOH} + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + 2\text{H}_2\text{O}$  (1)  
**(ii)** calculation based on moles and mole ratio (1)  
0.45 mol/dm<sup>3</sup> (1)
- (e)** sulfuric acid in excess (1) cools the solution (1) [11]