

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge Ordinary Level

MARK SCHEME for the October/November 2015 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.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2015 series for most Cambridge IGCSE[®], Cambridge International A and AS Level components and some Cambridge O Level components.

® IGCSE is the registered trademark of Cambridge International Examinations.

Page 2	Mark Scheme	Syllabus	Paper
	Cambridge O Level – October/November 2015	5070	41

- 1 (a) (i) propanol (1) [1]
- (ii) catalyst/ speeds up reaction (1) [1]
- (iii) displayed formula of propene (1) [1]
- (b) (aqueous) bromine (1)
(turns) colourless/ decolourises (1) [2]
- (c) (i) carbon dioxide (1)
limewater turns milky/ limewater forms a white precipitate (1) [2]
- (ii) $2\text{C}_3\text{H}_6 + 9\text{O}_2 \rightarrow 6\text{CO}_2 + 6\text{H}_2\text{O}$
species (1) balancing (1) [2]
- [Total: 9]**
- 2 (a) hydrogen (1)
lighted splint pops/ pops in a flame (1) [2]
- (b) (i) chlorine (1) [1]
- (ii) $2\text{Cl}^- \rightarrow \text{Cl}_2 + 2\text{e}^-$ or $2\text{Cl}^- - 2\text{e}^- \rightarrow \text{Cl}_2$ (1) [1]
- (c) (i) oxygen (1)
glowing splint relights (1) [2]
- (ii) $4\text{OH}^- \rightarrow 2\text{H}_2\text{O} + \text{O}_2 + 4\text{e}^-$ or $4\text{OH}^- - 4\text{e}^- \rightarrow 2\text{H}_2\text{O} + \text{O}_2$ (1) [1]
- [Total: 7]**
- 3 (b) [Total: 1]
- 4 (b) [Total: 1]
- 5 (d) [Total: 1]

Page 3	Mark Scheme	Syllabus	Paper
	Cambridge O Level – October/November 2015	5070	41

- 6 (a) 3.43(g) (1) [1]
- (b) volumetric flask / standard flask / graduated flask (1) [1]
- (c) (i) pipette (1) [1]
- (ii) purple / pink (1) [1]
- (d) 27.3 37.9 42.7 one mark for each correct row **or** column
0.0 10.0 15.6 to the benefit of the candidate (3)
27.3 27.9 27.1
average volume = $27.2 \text{ (cm}^3\text{)}$ (1) [4]
- (e) 0.000544 (mol) (1) [1]
- (f) 0.00136 (mol) (1) [1]
- (g) 0.0272 (mol) (1) [1]
- (h) 126 (1) [1]
- (i) M_r of $\text{H}_2\text{C}_2\text{O}_4 = 90$
 $126 - 90 = 36$ (1)
 $36 / 126 \times 100 = 28.6\%$ (1) [2]
- [Total: 14]**
- 7 (a) transition metal present / transition element present /
Z is a compound of a transition metal / Z is a compound of a transition element (1) [1]
- (b) (i) blue precipitate (1)
(ii) insoluble in excess (1) [2]
- (c) (i) blue precipitate (1)
(ii) deep / dark blue solution formed (1) [2]
- (d) (dilute / aqueous) nitric acid (1)
(aqueous) silver nitrate (1)
white precipitate (1) [3]

Page 4	Mark Scheme	Syllabus	Paper
	Cambridge O Level – October/November 2015	5070	41

(e) CuCl_2 (1) [1]

[Total: 9]

8 (a) to reach room temperature/steady temperature (1) [1]

(b) exothermic (1) [1]

(c) all sodium hydroxide has reacted/reaction is complete (1) [1]

(d) all points plotted correctly (1)
one mark each for two intersecting straight lines (2) [3]

(e) (i) $26.0(\text{cm}^3)$ (1) [1]

(ii) $31.8(^{\circ}\text{C})$ (1) [1]

(f) (i) $2\text{NaOH} + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + 2\text{H}_2\text{O}$ (1) [1]

(ii) 0.05 moles of NaOH react with 0.025 moles of H_2SO_4 (1)
concentration of $\text{H}_2\text{SO}_4 = 0.96(\text{mol}/\text{dm}^3)$ (1) [2]

(g) (i) $7.6(^{\circ}\text{C})$ (1) [1]

(ii) $76(\text{cm}^3)$ (1) [1]

(iii) moles of NaOH = 0.05 (1)
 $\Delta H = 48.5(\text{kJ}/\text{mol})$ (1) [2]

(h) heat **or** evaporate/warm **or** boil/leave in sun (1)
to crystallisation point/saturation point/leave some of water/leave (solution) to
cool/leave (solution) to crystallise/leave a concentrated solution (1)
wash and dry crystals (1) [3]

[Total: 18]