www.dynamicpapers.com

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.

CAMBRIDGE
International Examinations

www.dynamicpapers.com

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) $2C_3H_6 + 9O_2 \rightarrow 6CO_2 + 6H_2O$
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) $2Cl^- \rightarrow Cl_2 + 2e^-$ **or** $2Cl^- - 2e^- \rightarrow Cl_2$ (1) [1]

(c) (i) oxygen (1)
glowing splint relights (1) [2]

(ii) $4OH^- \rightarrow 2H_2O + O_2 + 4e^-$ **or** $4OH^- - 4e^- \rightarrow 2H_2O + O_2$ (1) [1]

[Total: 7]

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

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

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

© Cambridge International Examinations 2015

www.dynamicpapers.com

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 (cm^3) (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 $H_2C_2O_4$ = 90
126 – 90 = 36 (1)
36 / 126 × 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]

© Cambridge International Examinations 2015

www.dynamicpapers.com

(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 (cm^3) (1) [1]

(ii) 31.8 (°C) (1) [1]

(f) **(i)** $2NaOH + H_2SO_4 \rightarrow Na_2SO_4 + 2H_2O$ (1) [1]

(ii) 0.05 moles of NaOH react with 0.025 moles of H_2SO_4 (1)
concentration of H_2SO_4 = 0.96 (mol / dm^3) (1) [2]

(g) **(i)** 7.6 (°C) (1) [1]

(ii) 76 (cm^3) (1) [1]

(iii) moles of NaOH = 0.05 (1)
ΔH = 48.5 (kJ / 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]

© Cambridge International Examinations 2015