**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**International General Certificate of Secondary Education**

# MARK SCHEME for the May/June 2013 series

# 0620 CHEMISTRY

**0620/62** Paper 6 (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 May/June 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

CAMBRIDGE
International Examinations

| Page 2 | Mark Scheme | Syllabus | Paper |
|---|---|---|---|
| | IGCSE – May/June 2013 | 0620 | 62 |

**1** **(a)** pestle and / or mortar (1) filter / funnel (1) [2]

**(b)** **(i)** labelled arrow at liquid in mortar (1)

**(ii)** labelled arrow at liquid in either tube or liquid in funnel or any combination (1) [2]

**(c)** **(i)** top line labelled (1) [1]

**(ii)** three (1) [1]

**2** **(a)** black (1) [1]

**(b)** **(i)** copper / Cu (1)

**(ii)** water / $H_2O$ (1) **accept:** steam [2]

**(c)** boiling point / freezing point (1)

100 °C / 0 °C (1)
**note:** do not accept a chemical test [2]

**3 (a)** table of results for Experiment 1

final and initial volumes and difference completed correctly 26.00, 0.0 and 26.0 (1)

to 1 decimal place (1) **accept:** volumes to 2 d.p. (e.g. 26.00) [2]

**(b)** table of results for Experiment 2

final and initial volumes and difference completed correctly 19.0 and 32.0 (1) 13.0 (1) [2]
**ignore:** decimal places, **accept:** 19, 32,13, **allow:** ecf on final and initial volumes

**(c) (i)** colourless **not:** clear to purple / pink (1) [1]
**accept:** colour change either way round

**(ii)** not an acid / alkali reaction or potassium manganate is coloured or pink / acts as an indicator / there is already a colour change / owtte (1) [1]

**(d) (i)** experiment 1 (1) **allow:** ecf on **(a)** and **(b)** [1]

**(ii)** experiment 1 is twice the volume of experiment 2 / experiment 2 is half the volume of experiment 1 (1) **note:** must be a quantitative comparison, do not allow quotes of figures from table **allow:** ecf (e.g. 13 times as much as experiment 2) [1]

**(iii)** solution B / experiment 1 more concentrated / stronger (1) or converse

double / twice (1) [2]
**ignore:** reference to reactivity

**(e)** half value from table result for experiment 2 (6.5) (1) **allow:** ecf

$cm^3$ (1)

half volume of **C** used (1) [3]

**(f)** oxidation (1) reduction (1)

**or:** electrons are lost (1) gained (1) transferred (2) [2]
**accept:** oxidation numbers increase (1) decrease (1)
**accept:** hydrogen / $H_2$ / H lost (1) gained (1)
**accept:** oxygen / $O_2$ / O gained (1) lost (1)

**(g)** advantage easy to use / quick / convenient (1) **ignore:** large volumes

disadvantage not accurate / owtte (1) [2]

**4** **(a)** colourless (1) **ignore:** clear, **not:** white [1]

**(b)** white (1) precipitate (1)

dissolves / clears (1) [3]

**(c)** white precipitate (1) insoluble / does not dissolve (1) [2]

**(d)** no change / colourless solution / no reaction (1) [1]

**(e)** white (1) precipitate (1) [2]

**(g)** carbon dioxide / $CO_2$ (1) [1]

**(h)** calcium / $Ca^{2+}$ (1) **accept:** any Group 2 metals carbonate / $CO_3^{2-}$ (1)
**note:** $CaCO_3$ = 2 [2]

**5** **(a)** thermometer diagrams completed correctly (3) –1 each incorrect

23, 29, 35, 41, 39, 35, 31 **ignore:** decimal places [3]

**(b)** points plotted correctly (3), –1 each incorrect

two intersecting straight lines (1) [4]
**allow:** lines extending beyond intercept but must be just two lines and no curves

**(c)** 16 ($cm^3$) ±0.5 (1) any indication (1) [2]

**(d)** 23 (°C) (1) [1]

**(e)** good insulator or reference to minimising heat losses (1) [1]

**(f)** reaction produced heat or energy (1) **accept:** reaction is exothermic

reaction finished / reactant(s) used up / KOH used up / neutralised (1)
**not:** acid used up/ neutralised [2]

**(g)** exothermic (1) [1]

**6** **note:** all methods can gain the first three marks but only methods that would give usable results can gain the last three marks

known / same mass / amount of metal (1)

known / same volume / amount of acid (1)

test both **A** and **B** (1)

a method of collecting results (1)

time or run side by side (1)

comparison of results (1)

max 6 [6]