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

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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]

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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]

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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]

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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]

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