CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2013 series

0620 CHEMISTRY

0620/61 Paper 6 (Alternative to Practical), maximum raw mark 60

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1 **(a)** electrode(s) / anode / cathode(either) (1)
allow: electrodes labelled wrong way round **not:** carbon/platinum

bulb / lamp / light (1) [2]

(b) lighted splint (1) pops (1) glowing splint = 0 [2]

(c) graduated test-tube / measuring cylinder (1) **not:** gas syringe as will not work

filled with electrolyte / acid / water inverted over electrode / owtte (1) [2]

(d) **(i)** sodium hydroxide (1) [1]

(ii) universal indicator with pH>7 / litmus turns blue (1) [1]
note: mark not awarded if **(d)(i)** is incorrect

2 **(a)** to prevent air / oxygen / bacteria entering jar (1) [1]

(b) pestle and / or mortar (1) [1]

(c) diagram of funnel and filter paper (1) labelled (1) [2]

(d) yeast would not work at high temperatures / kills yeast / denatures enzymes / owtte (1) [1]
allow: kills enzyme

(e) **(i)** bubbles / froth (1) [1]
not: gas / CO_2 given off / turns cloudy

(ii) (collect gas) and measure volume / count bubbles (1)

over certain time interval (1) [2]
allow: one mark for timing until bubbles / reaction stopped

(f) fractional distillation (1) [1]

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3 (c) Table of results for Experiments 1–4

mass of solids correctly recorded (1) 1, 2, 3, 5 g

initial and maximum temperature boxes correctly completed (1)

initial 21, 23, 22, 24

maximum 23, 27, 28, 34

temperature differences correct (1) 2, 4, 6, 10 [3]

(d) results for Experiment 5

initial and final temperatures completed 21 and 13 (1)

temperature change completed correctly and shown as negative –8 (1) [2]

(e) all points correctly plotted 3–1 for any incorrect

straight line graph drawn with a ruler (1) [4]

(f) (i) value from graph 12 °C ± half small square (1)

extrapolation shown clearly (1) **allow:** ecf [2]

(ii) value from graph 4.5 g ± half small square (1)

indication shown clearly (1) **allow:** ecf [2]

(g) endothermic (1) [1]

(h) lower temperature change (1)

3 °C (1)

greater volume/more acid (1) any 2 for [2]

(i) room temperature or initial temperature from table 24 °C (1)

reaction finished / owtte (1) [2]

(j) advantage, e.g. comparability of results / fair test (1)
ignore: reference to reliability / accuracy

disadvantage, e.g. reaction not finished / temperature still changing / may not reach maximum temperature (1) [2]

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4 tests on filtrate

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

(b) white (1) precipitate (1)

soluble in excess / dissolves (1) [3]

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

(d) white (1) precipitate (1) [2]

(e) no reaction / no change / no precipitate (1) [1]

(g) transition metal / copper (1) carbonate (1) [2]

5 **(a)** both lose mass (1) [1]
not: change mass

(b) mass loss increases constantly in graph **A** (1)

becomes constant in graph **B** (after about 7–9 hours) (1)

mass loss or change is greater in acid/less in alkali (1) [3]

(c) goggles / lab coat / tongs / fume cupboard / well ventilated area any two [2]
ignore: reference to hair

6 weigh mixture (1)

add excess (1) sulfuric acid (1)

heat / stir (1)

filter (1) wash (1) dry (1) the carbon / residue

reweigh(1) calculate percentage (1) max 6 [6]

will not work = 0
ignore: details of evaporation of copper sulfate solution
note: must have at least one weighing for 6 marks

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