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Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2014 series

0620 CHEMISTRY

0620/63 Paper 6 (Alternative to Practical), maximum raw mark 60

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1 **(a)** suitable collection vessel, e.g. syringe / measuring cylinder, burette, test tube or gas jar in trough of water or by downward delivery (1) label (1) [2]

(b) tap / separating / dropping funnel (1) [1]

(c) reaction is fast at room temperature (1) [1]
allow: heat not needed / reacts anyway

(d) limewater (1)
turns milky / cloudy / white (1) [2]

2 **(a)** mass of beaker + contents column completed correctly
all 11 correct (2)
10 correct (1)
9 or fewer correct (0)
total loss column correct (1) [3]
note: if all readings are not to 1dp, max 2

time / min	mass / g	total loss / g
0	95.0	0.0
1	93.0	2.0
2	92.0	3.0
3	91.3	3.7
4	91.2	3.8
5	90.5	4.5
6	90.3	4.7
7	90.1	4.9
8	90.0	5.0
9	90.0	5.0
10	90.0	5.0

(b) points plotted correctly including origin (2)
smooth curve missing anomalous point (1) [3]

(c) gas / carbon dioxide evolved / formed / escapes / given off (1) [1]

(d) **(i)** result at 4 minutes / fifth point / 91.2 / 3.8 g [1]

(ii) 4.2 (g) ± 0.1 (1) [1]

(e) sketch with steeper graph than original (1)
starting at origin levelling at same height (1) [2]

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3 **(a)** carbon / graphite (1) [1]

(b) bulb lights / fizzing / bubbles (1) [1]
ignore: names of electrodes
allow: solution gets paler / changes colour / green colour fades

(c) copper (1)
negative electrode / cathode (1) [2]

(d) electrolysis (1) [1]

4 **(c)** table of results

initial temperature boxes completed correctly (1)
21, 22, 22, 19

final temperature boxes correctly completed (1)
41, 16, 11, 32

differences correct (1)
20, –6, –11, 13 [3]

(e) suitable scale – 2 cm is 5 or 10 °C (1)
all 4 bars at correct levels (2),
3 correct (1)
2 or fewer correct (0)
clear unambiguous labels, HJKL or 1, 2, 3, 4 (1) [4]

(f) to remove impurities / clean (1) [1]

(g) **(i)** Experiment 2 / J (1) [1]

(ii) Experiments 2 / J **and** 3 / K (1)
temperature decreased / energy or heat is absorbed (1) [2]

(h) **(i)** (–)5.5 (°C) (1) [1]

(ii) (+)6.5 (°C) (1) [1]

(iii) half amount of solid used (1) [1]

(i) room temperature / initial temperature / 22 °C (1)
reaction finished / all dissolved (1) [2]

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(j) carbonate (1)
carbon dioxide (1)
acid (1) max [2]

(k) repeat (1)
compare results / average results / mean (1) [2]

5 tests on solution **N**

(e) appearance colourless (1) [1]
pH 11–14 (1) [1]

(f) colourless / no change (1)
white (1)
precipitate (1) [3]

(g) litmus paper turns blue (1)
pungent smell (1) [2]

(h) **(i)** hydrogen / H_2 (1) [1]

(ii) ammonia (1) [1]

(i) hydrochloric acid (2) [2]
acid or chloride only, 1 mark.

6 **(a)** add water (1)
allow: named organic solvent
crush / grind stir / mix / heat plant material / description of (1)
filter (1)
extract each plant material separately / named apparatus (1) [4]

(b) add extract to acid (1)
add extract to alkali (1)
different colours shows suitable indicator (1) [3]
allow: named colours

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