

CAMBRIDGE INTERNATIONAL EXAMINATIONS

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 / 3.8g [1]
(ii) $4.2(\text{g}) \pm 0.1$ (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 / H₂ (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