

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

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.

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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) [2]
 turns milky / cloudy / white (1)
- 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) $4.2(\text{g}) \pm 0.1$ (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