CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2013 series

0620 CHEMISTRY

0620/62 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.

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1 **(a)** trough / tub / beaker / bowl / waterbath / basin (1) [1]
not: tray / container / dish

(b) arrow to space in boiling tube above liquid in trough (1) [1]

(c) to absorb / contain / store / trap / hold the alkane / liquid (1) [1]

(d) idea of large surface area / catalyst / speeds up reaction (1) [1]

(e) test bromine(water) (1)
result colourless (1) [2]
not: clear

2 **(a)** chromatography (1) [1]

(b) 3 dots above the line and must be vertical (1)
1 dot on base-line (1) [2]
allow: 1 mark for 4 dots above the base-line and must be vertical

(c) interferes with results / ink spreads / ink is soluble / owtte (1) [1]

(d) dyes would wash off / dissolves in propanone (1) [1]

3 **(a)** both masses correct 31.2 and 31.8 (1) [1]

(b) all masses correct (2), –1 each incorrect
31.9, 32.2, 32.2 [2]

(c) to allow air / oxygen in (1) [1]
not: release / allow gas to escape

(d) to make sure all calcium reacted / owtte (1)
eliminate anomalies / reduce errors / reference to accuracy (1)
constant mass (1) max [2]
not: fair test / take average / reference to reliability

(e) results table completed for mass of oxygen reacted (1)
0.21, 0.28, 0.31, 0.36 [1]

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(f) all points plotted correctly (4), –1 each incorrect
straight line drawn with a ruler through all points except 0.4 g (1) [5]

(g) point at 0.4 g mass calcium / 0.21 g oxygen / Experiment 4 (1) [1]

(h) any evidence of extrapolation / indication (1) 0.45 g oxygen reacted (1)
mass of calcium oxide = 1.15 g(1) [3]

4 **(c)** table of results for Experiments 1, 2 and 3
initial temperature boxes completed correctly (1)
23, 22, 21
maximum temperature boxes correctly completed (1)
26, 24, 71
temperature rises correct (1)
3, 2, 50 [3]

(e) table of results for Experiments 4 and 5
initial and maximum temperature boxes completed correctly (2)
19, 21 44, 29 ` [2]

all temperature rises correct in tables (1)
25, 8 [1]

(f) appropriate scale for *y* axis (1)
bars inserted at correct heights (3) –1 for any incorrect
not: a line graph
labels (1) [5]

(g) **(i)** temperature rises greatest in Experiment 3 (1)

(ii) magnesium is most reactive / more reactive (1) [2]

(h) hydrogen (1) [1]

(i) **(i)** copper (1)

(ii) displacement / redox / exothermic (1) [2]
allow: oxidation / reduction

(j) solid would react slower / temperature rises would be lower / less temperature change (1)
smaller / less surface area (1) [2]
or
same temperature (1)
same mass of magnesium used (1)

(k) dangerous / too reactive / explodes / owtte (1) [1]

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5 **(a)** colourless **and** smells acidic / vinegar / pungent / choking / sour (1) [1]
not: strong
red / orange / yellow (1) pH 1–6 (1) [2]

(b) fizzes / effervescence (1)
lighted splint (1) pops (1) [3]
not: glowing splint pops

(c) effervescence / fizz / bubbles (1) [1]
not: carbon dioxide unless limewater test described as an observation

(f) organic / hydrocarbon (1) fuel / flammable (1) reducing agent (1) max [2]
allow: 2 marks for alcohol / ethanol

6 x cm^3 of hydrogen peroxide / solution H (1)
add MnO_2 (1)
method to collect gas that works (1)
measurement of (total) volume of gas produced / counting bubbles in time interval (1)
repeat using solution J (1)
comparison / conclusion (1) max [5]
ignore: reference to heat
not: speed of relighting a glowing splint

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