UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2010 question paper

for the guidance of teachers

0620 CHEMISTRY

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

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1 **(a)** flask (1)
tap/separating/dropping funnel (1) not burette
gas jar (1) accept measuring cylinder [3]

(b) gas should be collected downwards owtte (1) [1]

(c) to remove impurities/water (1) [1]

2 wrong reagent, correct result = 0

aqueous sodium iodide
(nitric acid)/silver/lead nitrate (1) yellow precipitate (1)

hexene
bromine (water) (1) goes colourless (1) not clear
accept lit splint burns

nitric acid
named indicator (1) correct colour change/pH (1)
or
magnesium forms hydrogen/fizzes
or
(named) carbonate forms carbon dioxide/fizzes [6]

3 **(a)** volumes completed correctly
0, 60, 68, 95, 98, 99, 100 –1 for each incorrect [4]

(b) points plotted correctly (3) –1 for each incorrect
smooth curve (1) [4]

(c) point at 2 minutes (1) off curve owtte (1) [2]

(d) steeper curve (1)
levels out at same volume (1) [2]

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4 **(a)** Table of results for Experiment 1

temperature boxes completed correctly (2), –1 for each incorrect [2]
23 33 35 33 31 29 27

(b) Table of results for Experiment 2

temperature boxes completed correctly (2), –1 for each incorrect [2]
23 25 27 26 25 24 23

(c) all points correctly plotted (3), –1 for any incorrect
smooth line graphs (2) or two intersecting straight lines
labels (1) [6]

(d) value from graph ±1 small square (1) shown clearly (1) [2]

(e) **(i)** experiment 1 (1) [1]

(ii) acid C more concentrated (1)
stronger (1)
more collisions (1) max [2] [2]

(f) to clean it/remove acid C owtte (1) [1]

(g) room temperature or initial temperature from table (1)
reaction finished owtte (1) [2]

5 tests on solid **E**

(c) **(i)** white (1)
precipitate (1)
with excess dissolves/clears/colourless (1) [3]

(ii) white precipitate (1)
insoluble/no change (in excess) (1) [2]

(d) contains water/hydrated (1) [1]

(e) ammonia (1) not ammonium [1]

(f) nitrate (1)
hydrated salt (1)
not a sulfate (1) max [2] [2]

6 **(a)** arrow must be underneath solid in tube (1) [1]

(b) red/pink to blue (1) [1]

(c) to cool/condense (the water/steam) (1) [1]

(d) pressure would build up/air or gases needs to escape owtte (1) [1]

7 crush malachite (1) using pestle/mortar (1) add named acid (1)
solution formed (1) add magnesium/zinc/iron (1) displacement (1)
obtain copper/filter (1) max [6] [6]

or first two steps (2) add carbon/reactive metal/hydrogen (1) heat (1)
displace/redox (1) until goes pink (1) obtain copper (1)
or first four steps (4) electrolyse solution (1) copper deposited at cathode (1)
obtain copper (1) NB If malachite anode used allow max 3 even if it would not work.

[Total: 60]