UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2009 question paper for the guidance of teachers

0620 CHEMISTRY

0620/06 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)** (conical) flask (1) (gas) syringe (1)

(b) to stop loss of gas owtte/stop mixing/so that they don't react

(c) glowing splint (1) relights (1)
lighted splint = 0 ignore 'pops' [2]

2 **(a)** **(i)** prevent rusting or corrosion/more attractive or shiny/so it doesn't oxidise
not less reactive or answers about value [1]

(ii) silver wears off/will need re-coating
ignore references to rusting [1]

(iii) so that silver can coat the spoon/stick to the spoon owtte [1]

(b) negative/cathode [1]

(c) silver [1]

3 **(a)** add aluminium/Devarda's alloy and sodium hydroxide (warm) (1)

ammonia/alkaline gas formed/turns red litmus blue (1)
for a 'near miss' in reagents allow a mark for ammonia [2]

(b) boiling point (1) 100°C (1) [2]

(c) bromine (water) (1)
goes colourless (1)
not clear [2]

4 **(a)** Table of results

Initial temperature boxes correctly completed (2)
24
26
25
24
26

Highest temperature boxes correctly completed (2)
39
37
35
31
29 [4]

Differences correctly completed (1) 15, 11, 10, 7, 3, allow ecf [1]

(b) all 5 bars correctly drawn (2) - 1 for each incorrect

labelled in the centre (1)

correct scale (at least half the grid for 'y' axis) (1) [4]
If plotting instead of bars only scale mark available

(c) exothermic/displacement/redox
not oxidation, reduction or neutralisation [1]

(d) **(i)** experiment 1/A [1]

(ii) sulfuric acid was most concentrated/strongest [1]

(e) **(i)** greater/higher ignore reference to rate [1]

(ii) half the value/half the value from the table/lower or less [1]
allow 7.5 as a temperature change or 31.5 as a final temperature

(iii) more/larger volume of acid for magnesium to react in [1]

(f) one error source from:

heat losses/use of low accuracy measuring cylinders/magnesium pieces vary in length or mass [1]

5 **(b)** pH of solution L 11-14 [1]

(d) **(i)** blue precipitate (1) both for one mark (soluble in excess = 0) [1]

(ii) white (1) precipitate (1)
dissolves/clears/soluble in excess (1) [3]

(c) weak (1) alkali/base (1) or ammonia (2) [2]

(d) hydrochloric acid (2)
or acid (1) chloride ion (1) **not** chlorine ion [2]

6 **(a)** points plotted correctly (2) - 1 for any incorrect
smooth curve (1) suitable scale (1) axes labelled (units not essential) (1) [5]
accept plot of loss in mass against time

(b) from graph, 180 g (ignore no units) (1)
indication on graph (1) [2]

(c) gas given off [1]

(d) to prevent loss of acid
not loss of water or steam

(e) 4 minutes [1]

(f) sketched curve above original (1)
levelling out at 174 s or heading towards it (1) [2]

7 **(a)** pestle/mortar/solvent/sand (any three)
ignore water and/or heat [3]

(b) NB marks can be obtained from a diagram
chromatography or chromatogram (1)
paper (1)
apply spot/extract to paper (1)
description or name of solvent used (1)
and separation e.g. spots on paper (1) (max 4) [4]

If water used as solvent (max 3)
If paper dipped into extract (max 3)
If method would not work (max 2)