**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

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**1** **(a)** (conical) flask (1) (gas) syringe (1) [2]

**(b)** to stop loss of gas owtte/stop mixing/so that they don't react [1]

**(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 [1]

**(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)