

**MARK SCHEME for the October/November 2011 question paper
for the guidance of teachers**

0620 CHEMISTRY

0620/63

Paper 6 (Alternative to Chemistry), 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 must be read in conjunction with the question papers and the report on the examination.

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- 1 (a) funnel (1) stirrer/glass rod (1) evaporating dish (1)
- (b) filtration (1)
- (c) C/A (1) [1]
- 2 (a) temperatures correctly recorded (3) -1 for each incorrect
25, 41, 44, 29, 31
- temperature rises correct (1)
0, 16, 19, 4, 6 [4]
- (b) appropriate scale for y axis (1) **note** must be greater than half of grid
bars correct heights (2) plotting final temps = max 2
bars labelled correctly (1) no bar chart = max 1 [4]
- (c) (i) calcium (1) [1]
- (ii) no temperature rise (1)
no reaction/unreactive (1) **not** low/less reactive [2]
- (d) correct order of reactivity (2), two in wrong order (1) [2]
least copper
iron
zinc
magnesium
most calcium
- (e) temperature changes/rises would be less/lower/half (1)
more acid/volume (1) [2]
- 3 (a) smooth curve missing anomalous points (1) [1]
- (b) at 20 °C (1) [1]
- (c) decreases (1) [1]
- (d) line sketched below original curve (1) [1]
- 4 (c) Table of results
initial readings completed correctly 0.0, 1.9, 11.1 (1)
final readings completed correctly 10.4, 22.7, 16.3 (1) all readings to 1 dp (1)
differences completed correctly 10.4, 20.8, 5.2 (1) [4]

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- (d) pink (1) to colourless(1) **not** clear
- (e) neutralisation/exothermic (1)
- (f) (i) C/3 smallest, B/2 largest (1) [1]
(ii) order is C/3, A/1, B/2 (2) one correct = 1 [2]
- (g) Experiment 2 2x volume Experiment 1 or converse (1) [1]
- (h) 10.4 (1) cm³ (1) **allow** ecf from (c) [2]
- (i) use a pipette/burette [1]
- (j) no effect/owtte (1)
no change in concentration/temperature has no effect on quantities/only affects speed (1) [2]
- (k) any correct method that would work – precise details not needed
same method using different acids = 0
reagents (1) method (1) result (1) [3]

e.g. to sodium hydroxide add named acid (1)
measure temperature change (1)
largest change = strongest/more concentrated solution (1)

to sodium hydroxide add named (excess) metal salt solution (1)
filter precipitate (1)
largest mass = strongest/more concentrated solution (1)
- 5 (a) (i) yellow/brown/orange (1) [1]
- (b) (i) no change/no reaction/owtte (1) [1]
(ii) white (1) precipitate (1) [2]
(iii) brown (1) precipitate (1) [2]
(iv) brown precipitate (1) [1]
- (d) carbon dioxide (1) [1]
- (e) carbonate/hydrogen carbonate (1)
non transition metal/named metal e.g. sodium (1) [2]

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- 6 (a) substance/liquid that dissolves/owtte (1)
- (b) (in)flammable/catches fire easily (1)
- (c) fractional distillation (1) [1]
- (d) chromatography (1)
apply spot of oil to paper (1) use of solvent (1)
description of process (1) results (1) max [4]

[Total: 60]