UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the May/June 2012 question paper

for the guidance of teachers

0620 CHEMISTRY

0620/61 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)** tripod (1) **accept**: stand spatula (1) not: spoon [2]

(b) fizz/bubbles/effervescence stops (1)
solid/iron/powder visible / no more iron dissolves/reacts (1) [2]

(c) evaporation of water/steam (1) solid/residue/crystals formed (1)
colour change turns brown/darker green (1)
effect of heat on solid solid breaks down (1) max 3 [3]

[Total: 7]

2 **(a)** thermometer readings correct (3), –1 for any incorrect

methanol	25	28	3
ethanol	26	39	13
propanol	23	46	23
butanol	24	58	34

temperature rises correct (1) [4]

(b) points plotted correctly ±1/2 small square (3)
straight line drawn with a ruler (1) [4]

(c) value from graph (1) unit (1) 44°C
extrapolation shown on grid (1) [3]

(d) temperature rises would be greater/faster/quicker (1)
copper is a good conductor (1) [2]

[Total: 13]

3 **(a)** pestle (1) mortar (1) [2]

(b) stir/mix/shake (1) allow: heat/boil [1]

(c) diagram showing funnel (1)
indication of filter paper (1) note: labels not necessary [2]

(d) heat/evaporation (1)
to crystallising point or description (1)
in fume cupboard (1) max 2 [2]

(e) melting point/description of (1) **allow**: chromatography **ignore**: bp [1]

[Total: 8]

4 **(a)** Table of results **ignore**: units in table
volume of aqueous potassium chloride boxes completed correctly (1) 1, 2, 4. 5, 6, 7
heights of solid boxes completed ±1mm (2) 4, 8, 16, 20, 24, 24
in mm (1) [4]

(b) all points correctly plotted (2), –1 for any incorrect
straight line graphs (2) **note**: one for each line, doesn't have to go through origin [4]

(c) value from graph 14 (1) unit (1) shown clearly (1) [3]

(d) precipitation (1) **allow**: double decomposition ignore: exo/endothermic [1]

(e) **(i)** same (1) no ecf **not**: almost the same
all lead nitrate reacted/reaction finished/lead nitrate is limiting factor (1) [2]

(ii) same heights/owtte (1)
lead nitrate is limiting factor/same amount of lead nitrate/excess potassium chloride (1) [2]

(g) yellow (precipitate) (1) [1]

(h) improvement (1) e.g. use burette/pipette/leave solid to settle longer/repeat
explanation (1) e.g. instead of a measuring cylinder/heights more accurate/take average [2]

[Total: 19]

5 **(c)** fizz/bubbles/effervescence (1) limewater (1)
milky/cloudy/white ppt (1) **cond**: on limewater [3]

(e) ammonia (1) [1]

(f) non-transition metal (1)
ammonium (salt or carbonate) (2) **not**: ammonia max [2]

[Total: 6]

6 steel nail(s) in test-tube/suitable glass container (1)
x cm^3 (1)
water (1) no water = max 3
known volume of inhibitor added (1)
observe effect after suitable time (1) note: minimum time = 1 day
repeat using other inhibitors (1)
observe/comparison of results (1) [7]

[Total: 7]