UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2011 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.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

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1 (a) (i) (gas) syringe (1) [1]

    (ii) arrow indication under copper (1) [1]

(b) spatula (1) [1]

(c) black (1) [1]

(d) to return to room/initial temperature (1)
correct volume of gas (1) [2]

2 (a) points plotted correctly (2)
smooth line graph missing anomalous point (1) [3]

(b) point at 15 cm^3/pH 2.6/third point (1) [1]

(c) (i) 12.6 (1) [1]

    (ii) pH 1 (1) extrapolation shown (1) [2]

(d) (i) 7 (1) [1]

    (ii) 25 (1) [1]

(e) repeat experiment (1) stop when 25 cm^3 added/when pH7 (1)
evaporate/heat (1) use same volumes (1)
to crystallising point/until saturated (1) max [3]

3 (a) chromatography (1) [1]

(b) line drawn on diagram below origin (1) [1]

(c) does not interfere with results/owtte (1) [1]

(d) difference
A has more/3 colours/**B** has less/2 colours/**B** contains **F** but **A** doesn't/**A** contains **C**/
D but **B** does not (1)

similarity
both contain same colour/**E** (1) [2]

(e) **C**, **D** and **E** (1) [1]

4 **(a)** Table of results for Experiment 1
   temperature boxes completed correctly (3)
   20, 21, 21, 32, 39, 42, 44, 45, 45 [3]

(b) Table of results for Experiment 2
   temperature boxes completed correctly (3)
   20, 21, 21, 24, 32, 36, 37, 38, 38 [3]

(c) all points correctly plotted (3) -1 for each incorrect
   best fit smooth line graphs (1)
   labels (1) [5]

(d) value from graph ≈28°C ± half small square (1) unit (1) shown clearly (1) [3]

(e) exothermic/redox/displacement (1) [1]

(f) **(i)** temperature rises greater/faster in Experiment 1 (1) **allow** converse [1]

   (ii) zinc is more reactive (1) [1]

(g) temperature changes would be same/faster/owtte (1) metal in excess (1)/
   temperature changes would be greater (1) lower volume (1) [2]

(h) solid would react slower/temperature rises would be slower (1)
   smaller surface area (1) [2]

5 **(a)** **(i)** **P** colourless, no smell (1) [1]

   (ii) **P** pH 1–3 (1) [1]

(b) **P** fizzes/effervescence/bubbles (1)
   lighted splint pops (1) **not** hydrogen [2]

(c) white (1) precipitate (1) [2]

(e) weak acid (1) ethanoic acid (2) [2]

(f) water (1) [1]

6 measured volume of seawater (1)
   using measuring cylinder (1)
   into evaporating dish/beaker (1)
   pre-weighed (1)
   evaporate/heat (1)
   to dryness/constant mass (1)
   re-weigh (1)
   indication of calculation method (1)   max [6]

   would not work = max 0

[Total: 60]