UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2010 question paper for the guidance of teachers

0620 CHEMISTRY

0620/63 Paper 6 (Alternative to Practical), maximum raw mark 60

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1 **(a)** **(i)** fractional distillation

(ii) A = flask (1)
B = condenser (1) [

(b) alkanes are inflammable / risk of fire owtte [1]

(c) octane [1]

(d) temperature on the thermometer would rise / be 174°C / pause in the distillation of liquid [1]

[Total: 6]

2 **(a)** **(i)** measuring cylinder [1]

(ii) reaction will happen / is fast with cold acid [1]

(b) solid / powder visible / no more solid dissolves / fizzing stops when powder added [1]
not precipitate forms, **not** stops reacting

(c) diagram of funnel (1) and filter paper within (1) [2]

(d) heat to crystallising point owtte (1) to prevent loss of water of crystallisation (1) [2]
not heat and leave to cool

[Total: 7]

3 highest temperatures correct (1) 28, 30, 32, 32
temperature rises correct (1) 7, 9, 11, 11 [2]

(b) points plotted correctly (2), –1 any incorrect
two straight lines through points, must use ruler (1) [3]

(c) **(i)** 0.25 g (1) extrapolation shown (1) [2]
accept extrapolation to zero and subsequent mass

(ii) all copper sulfate solution used up after 1.5 g zinc added / zinc is in excess / owtte [1]

(d) sketch graph to left of original / steeper slope than original (1)
rising above original (1) [2]

[Total: 10]

4 **(a)** final volumes completed correctly (2)
13.0 and 34.0

initial volumes completed correctly (1)
0.0 and 8.0

differences correct (1)
13.0 and 26.0

–1 if any readings not to 1 dp, –1 if initial and final readings are reversed [4]

(b) hydroxide [1]

(c) **(i)** Experiment 2 / **G** [1]

(ii) Experiment 2 2× volume experiment 1 [1]

(iii) alkaline solution **G** more concentrated / stronger (1) or converse
2× as concentrated (2) [2]

(d) 13 (1) cm^3 (1)
half volume of **G** used (1) [3]

(e) **(i)** two sources of error
e.g. using a measuring cylinder to measure alkalis / going past end point owtte /
conical flask or measuring cylinder not cleaned [2]

(ii) two meaningful improvements related to above
e.g. use a pipette / burette / repeat experiment or use different indicator /
clean conical flask or measuring cylinder [2]

[Total: 16]

5 **(c)** green (solid) [1]

(d) **(i)** green (1) precipitate (1) [2]

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

(e) ammonia [1]

(f) ammonium (1) sulfate (1) not a halide (1) [3]

[Total: 9]

6 **(a)** powder has larger surface area (1) speeds up reaction / more collisions (1)

(b) red / brown / pink [1]

(c) the ice / condensation [1]

(d) test add anhydrous copper sulfate / cobalt chloride paper (1)
result turns blue / pink (1) [2]

[Total: 6]

7 **(a)** **(i)** less than 7 [1]

(ii) colour of orange drink obscures indicator colour owtte [1]

(b) chromatography (1)
apply orange drink to paper (1)
use of solvent (1)
comparison of spot heights or R_f with E numbers and/or carotenes (1) [4]

[Total: 6]