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

0620/61 Paper 6 (Alternative to Practical), maximum raw mark 60

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1 **(a)** ethanol and aluminium oxide boxes correctly labelled

(b) arrow towards wool (1) arrow towards solid (1) [

(c) to prevent suck back or description of suck back owtte (1)
effect of suck back e.g. crack tube (1) [2]

[Total: 5]

2 **(a)** to speed up the reaction [1]

(b) solid visible owtte e.g. no more solid will dissolve [1]

(c) filtration / centrifuge **not** decant [1]

(d) to make sure water (of crystallisation) is not lost / stop dehydration /
so crystals do not turn into powder / does not decompose **not** crystals break [1]

(e) no heat needed / not necessary to warm acid (1)
carbonates react with acid at room temperature (1)
no bubbles would indicate that carbonate is in excess (1) [max 2]

[Total: 6]

3 **(a)** idea of fair test / only one variable [1]

(b) nitric acid [1]

(c) **(i)** points plotted (3), –1 for each incorrect
smooth curve (1) [4]

(ii) value from graph 18 s (1) indication on graph (1) [2]

(d) times would be less / reaction quicker (1)
particles have more energy / increased collisions (1) [2]

[Total: 10]

4 total volume of water boxes correctly completed (1)
10, 11, 12, 13, 14
temperature boxes completed (4) –1 each incorrect
68, 63, 59, 55, 51 [

(a) appropriate scale for y-axis (1)
points plotted correctly (4), –1 for each incorrect
best fit straight line graph (1) [6]

(b) clear liquid formed / no solid visible owtte [1]

(c) value from graph for 9 cm^3 of water, around 72 °C (1)
extrapolation of straight line shown (1) [2]

(d) temperatures at which crystals appear lower (1)
solution more dilute in same volume of water / less saturated owtte (1) [2]

(e) sketch graph below line (1) label (1) [2]

(f) one improvement from e.g.
don't use a beaker of cold water to cool solution /
do not remove thermometer from the solution /
use second person or IT method to note formation of crystals /
repeat

linked explanation
different rate of heat losses /
loss of solid on thermometer /
observing formation of first crystals may vary /
average
mean more accurate / increases reliability [2]
not just accurate

[Total: 20]

5 **(a)** **(i)** blue (1) [1]

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

(iii) blue precipitate (1)
deep / royal blue (1) solution (1) **or** precipitate dissolves [3]

(c) sulfuric acid (2) acid or sulfate only (1) [2]

[Total: 8]

6 **(a)** bubbles / fizzing / effervescence

(b) alkali formed [

(c) **(i)** chlorine [1]

(ii) indicator bleached / decolourised **allow** yellow [1]

[Total: 4]

7 **(a)** universal indicator / pH paper (1) **not** litmus
pH of 4–6 / yellow / orange (1) **not** red [2]

(b) sodium hydroxide / carbonate / oxide [1]

(c) marks can be obtained from diagram
chromatography (1) description of applying E110 to paper (1)
use of solvent (1) results / number of spots (1) [4]

[Total: 7]