CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Ordinary Level

MARK SCHEME for the October/November 2012 series

5070 CHEMISTRY

5070/42 Paper 4 (Alternative to Practical), maximum raw mark 60

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1 **(a)** 25 (1) cm^3

(b) yellow (1) allow e.g light, dark but not greyish yellow

(c) filtration / centrifuge / decantation (1)

(d) 0.02 (1) moles

(e) 0.02 (1) moles

(f) 0.80 (1) moles
(ecf for **(e)** and **(f)** from **(d)**) **[Total: 6]**

2 **(a)** CuO (1) black (1)

(b) $CuO + H_2SO_4 \rightarrow CuSO_4 + H_2O$ (1)

(c) copper sulfate, blue (1) (both)

(d) zinc dissolves / disappears (1)

copper / brown / orange / pink / red-brown (not red)

deposit / residue / metal / substance / powder / solid (1) (both)

(blue) colour of solution reduces / fades or is lost (1)

gas evolved / effervescence / fizzing / bubbles (1)

(not hydrogen evolved) (maximum 3 marks)

(d) silver / gold / platinum / mercury / copper (1) **[Total: 8]**

3 **(a)** **(i)** propanol (1)
C_3H_7OH / C_3H_8O (1)

(ii) condenser (1)
(not fractionating column)
to return unreacted compounds to flask (1)
(not changes vapour to liquid)

(iii) electric heater – alcohols (reactants) are flammable (1)
(not dangerous)

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(b) (i) 100 °C (1)

(ii) thermometer reads or temperature rises to 140 °C (1)

not just temperature rises

(iii) to prevent build up of pressure or explosion (1)

not to allow gas to escape **[Total: 8]**

4 **(b)** (1) **[Total: 1]**

5 **(b)** (1) **[Total: 1]**

6 **(a)** (1) **[Total: 1]**

7 **(a)** (1) **[Total: 1]**

8 **(a)** 1.61 (1) g

(b) pink to colourless (1)

(c)

26.3	29.3	47.1	1 mark for each
0.0	3.6	21.6	correct row **or**
26.3	25.7	25.5	column (3)

mean value = 25.6(1) cm^3

(d) 0.00256 (1) moles (0.0026 loses mark)

(e) $HCl + NaOH \rightarrow NaCl + H_2O$ (1)

(f) 0.00256 (1) moles

(g) 0.0256 (1) moles

(h) 0.05 (1) moles

(i) 0.0244 (1) moles

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(j) 0.0122 (1) moles

(k) 132 (1)

(l) 132 – 90 (1) = 42
hence C_3H_6 / **x** = 3, **y** = 6 (1)

ecf throughout and for values of **y** in (**k**) **[Total: 16]**

9 **(a)** transition metal ions / transition metal present (1)
not **M** is a transition metal / it is a transition metal / transition metal on its own

(b) **(i)** green ppt (1)

(ii) ppt insoluble in excess (1)

(iii) ammonia evolved (1) gas turns litmus blue (1)
or ammonia turns litmus blue (2)

(c) $BaCl_2$ or $Ba(NO_3)_2$(1) with HCl or HNO_3 (1) white ppt (1)
omission of Ba salt in test = 0 marks
use of sulfuric acid or sulfates = 0 marks **[Total: 8]**

10 **(a)** all points plotted correctly (1)
smooth curve through the points (1)

(b) **(i)** 13 (1)

(ii) 7(1)

(iii) 27.5 cm^3 (1)

(c) **(i)** $H_2SO_4 + 2NaOH \rightarrow Na_2SO_4 + 2H_2O$ (1)

(ii) 0.455 (allow 0.45 or 0.46 dm^3) (1)

(d) heat / evaporate / boil / leave in sun (1)
to crystallisation point / saturation point / evaporate some of water / leave solution to cool / leave to crystallise / leave on its own (1)
wash and dry crystals (1) **[Total: 10]**

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