

CAMBRIDGE INTERNATIONAL EXAMINATIONS

GCE Ordinary Level

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## MARK SCHEME for the May/June 2014 series

### 5070 CHEMISTRY

5070/41

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

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Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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Page 2	Mark Scheme	Syllabus
	GCE O LEVEL – May/June 2014	5070

- 1 (a) (i)  $2\text{Cu} + \text{O}_2 \rightarrow 2\text{CuO}$  (1)
- (ii) black (1)
- (b) (i) 72 (1)  $\text{cm}^3$  [1]
- (ii) nitrogen (1) [1]
- (iii) 18 (1)  $\text{cm}^3$  [1]
- (iv) 0.00075 (1) moles [1]
- (v) 0.096 (1) g [1]
- (c) 300 (1)  $\text{cm}^3$  [1]

[Total: 8]

- 2 (a) (i) red/pink (1) [1]
- (ii) hydrochloric acid (1) [1]
- (iii) Universal indicator/pH meter/full range indicator (1) [1]
- (b) (i) diffusion (1) [1]
- (ii) ammonium chloride **AND**  $\text{NH}_4\text{Cl}$  (1) [1]
- (iii) **C** (1)

Explanation

Ammonia molecules move or diffuse faster (than  $\text{HCl}$  molecules), or reverse (1)

Ammonia has lower density than  $\text{HCl}$ /lower  $M_r$  than  $\text{HCl}$ /ammonia molecules are lighter than  $\text{HCl}$  molecules, or reverse (1)

If density of gases are compared to air, both densities must be stated e.g. ammonia lighter than air **AND** hydrogen chloride heavier than air. [3]

- (c) **Y** ( $\text{NH}_3$ ) (1); **X** ( $\text{HCl}$ ) (1)
- Both soluble in water (1)
- $\text{HCl}$  is more dense than air **AND**  $\text{NH}_3$  is less dense than air (1) [4]

[Total: 12]

Page 3	Mark Scheme	Syllabus	
	GCE O LEVEL – May/June 2014	5070	

- 3 (d) [Total: 1]
- 4 (b) [Total: 1]
- 5 (a) [Total: 1]
- 6 (b) [Total: 1]
- 7 (a) 1.70 (1) g [1]
- (b) carbon dioxide (1) turns lime water milky/white ppt (1) [2]
- (c) pink/red to yellow (1) [1]
- (d) 25.9 48.6 32.4 (1) 1 mark for each correct  
 0.0 23.3 6.9 (1) row or column to the benefit of the candidate (3)  
 25.9 25.3 25.5 (1)
- Mean value 25.4 (1) cm<sup>3</sup> [4]
- (e) 0.00254 (1) moles [1]
- (f) 0.00254 (1) moles [1]
- (g) 0.0254 (1) moles [1]
- (h) 0.05 (1) moles [1]
- (i) 0.0246 (1) moles [1]
- (j) 0.0123 (1) moles [1]
- (k) 138 (1) 39 (1) [2]
- [Total: 16]

Page 4	Mark Scheme	Syllabus
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8 (a) Transition metal ion/compound may be present (1)

(b) (i) green precipitate (1)

(ii) precipitate insoluble (1)

(iii) **gas** evolved that turns damp red litmus blue (1)  
ammonia (1)

(c)  $BaCl_2$  or  $Ba(NO_3)_2$  or names(1)

$HCl$  or  $HNO_3$  or names(1)

white ppt (1)

[Total: 8]

9 (a) yellow (1)

[1]

(b) 0.64, 1.27, 1.91, 2.35, 2.35, 2.35 all correct (1)

[1]

(c) all points plotted correctly (1)

two straight lines, one of which must go through zero (1)

lines intersect (1)

[3]

(d) (i) 3.2 (1)  $cm^3$

[1]

(ii) 2.35 (1) g

[1]

(iii) 7.4 (1)  $cm^3$

[1]

**All answers in (d) must come from the candidate's graph. Read candidate's graph to +/- half a small square.**

(e)  $AgNO_3 + KI \rightarrow AgI + KNO_3$  (1)

[1]

(f) 1.35 (1)  $mol/dm^3$

[1]

(g)  $M_r AgCl$ , 143.5 (1)

Mass of  $AgCl$  = 1.435 (1) g

[2]

[Total: 12]