

MARK SCHEME for the October/November 2008 question paper

5070 CHEMISTRY

5070/04

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

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Page 2	Mark Scheme	Syllabus
	GCE O LEVEL – October/November 2008	5070

- 1 (a) (i) nitrogen
(ii) 64 cm^3
(iii) $16/80 = 20\%$ [1]
- (b) (i) $2\text{Cu} + \text{O}_2 = 2\text{CuO}$ [1]
(ii) black [1]
- (c) (i) $0.16/64 = 0.0025$ moles [1]
(ii) 0.00125 moles [1]
(iii) 30 cm^3 [1]
(iv) 150 cm^3 [1]
(If dm^3 used in both (iii) and (iv) and stated, no deduction.
If not stated mark lost in (iii) but e.c.f for (iv).

[Total: 9]

- 2 (a) (i) orange to green [1]
(ii) oxidising agent etc. [1]
(iii) sulfur dioxide or hydrogen sulfide [1]
(iv) propanol, [1]
- (b) (i) propyl propanoate (e.c.f on incorrect alcohol in (a) (iv)) [1]
(ii) esters [1]
(iii) sweet or fruity smell (e.c.f for (i) and (ii) on propene only) [1]
- (c) yellow or orange (propanoic acid), red (sulfuric acid) [1]
- (d) (i) gas evolved, effervescence, fizzing, bubbles, Mg dissolves, or test-tube gets hot. [1]
(ii) reaction faster with sulfuric acid [1]
- (e) sulfuric acid is a stronger acid (than propanoic acid) [1]

[Total: 11]

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- 3 (c)
- 4 (d)
- 5 (b) [1]
- 6 (b) [1]
- 7 (b) [1]

[Total 3–7: 5]

- 8 (a) 1.32 g [1]
- (b) (i) 106 g [1]
- (ii) $1.32 \times 4 / 106 = 0.0498$ (0.05) mol/dm³ [1]
- (c) (i) yellow to (ii) orange, red, pink. [1]
- (d) titre was too small to obtain accuracy etc [1]
- (e) water – first (1) diluted acid or solution H – second (1) [2]
- (f)
- | | | |
|------|------|------|
| 23.7 | 40.6 | 44.2 |
| 0 | 17.5 | 20.9 |
| 23.7 | 23.1 | 23.3 |
- Mean value = 23.2 (1) cm³
- (1 mark for each correct row or column (3)) [4]
- (g) 0.00125 [1]
- (h) 0.0025 [1]
- (i) $0.0025 \times 1000 / 23.2 = 0.108$ [1]
- (j) 1.08 mol/dm³ [1]
- (k) Increase the concentration or amount of Na₂CO₃ (1)
by factor of 10 (1) [2]

[Total: 17]

Page 4	Mark Scheme	Syllabus
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- 9 (a) Colourless solution (1)
- (b) Al^{3+} (1) and Zn^{2+} (1) (or any correct ion e.g. Pb^{2+})
(If either or both charges are incorrect or missing -1)
- (c) No precipitate or slight white ppt. (1) (not no reaction)
- (d) HNO_3 (not conc) (1) $\text{Pb}(\text{NO}_3)_2$ or AgNO_3 (1)
yellow ppt. (1)
 CaI_2 (1) [8]

[Total: 8]

- 10 (a) 29, 49, 21, 18. (1) all correct.
37, 33, 28, 29. (1) all correct.
12, 8, 3, 4. (1) all correct. [3]
- (b) Points connected by a smooth curve [1]
- (c) (i) 10 cm^3 (read candidates graph). (Must show evidence of extending graph). [1]
(ii) The greater the atomic mass of the element the less moles or amount are/is involved.
(or w.t.t.e) [1]
- (d) Points connected by a series of straight lines (1)
all points plotted correctly in both graphs (1) [2]
- (e) graph does not show any relationship between the two,
not uniform, not a curve or a straight line, or w.t.t.e. [1]
- (f) Copper does not react with hydrochloric acid. [1]

[Total: 10]