

Acids, Bases and Salts

Mark Scheme 4

Level	IGCSE
Subject	Chemistry
Exam Board	CIE
Topic	Acids, Bases and Salts
Sub-Topic	
Paper Type	Alternative to Practical
Booklet	Mark Scheme 4

Time Allowed: 63 minutes

Score: /52

Percentage: /100

1 Experiment 1

(a) and (b) initial and final volumes completed correctly (1) 0.0, 32.0

Experiment 2

initial and final volumes completed correctly (1) 19.0, 35.0

all readings in both experiments to 1 decimal place (1)

both differences correctly calculated (1) [4]

(c) oxygen(1) [1]

(d) colourless **not** clear to purple/pink (1) **or** reverse [1]

(ii) potassium manganate is coloured/owtte (1) [1]
accept is not an acid/alkali reaction

(e) (i) experiment 1(1) **allow** ecf [1]

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

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

(f) half value from table result for experiment 2 / 8 (1) cm³ (1)
 half volume of peroxide used (1) [3]

(g) advantage easy to use/quick/convenient/fairly accurate (1)
 disadvantage not accurate owtte (1) [2]

- 2 (a)** points plotted correctly (2) [3]
smooth line graph missing anomalous point (1)
- (b)** point at 15 cm³/pH 2.6/third point (1) [1]
- (c) (i)** 12.6 (1) [1]
(ii) pH 1 (1) extrapolation shown (1) [2]
- (d) (i)** 7 (1) [1]
(ii) 25 (1) [1]
- (e)** repeat experiment (1) stop when 25 cm³ added/when pH7 (1)
evaporate/heat (1) use same volumes (1)
to crystallising point/until saturated (1) max [3]

- 3** measured volume of seawater (1)
using measuring cylinder (1)
into evaporating dish/beaker (1)
pre-weighed (1)
evaporate/heat (1)
to dryness/constant mass (1)
re-weigh (1)
indication of calculation method (1) max [6]
- would not work = max 0

4 (a) Table of results for Experiment 1

temperature boxes completed correctly (2), -1 for each incorrect [2]
23 3 35 3

(b) Table of results for Experiment 2

temperature boxes completed correctly (2), -1 for each incorrect [2]
23 2 27 2

(c) all points correctly plotted (3), -1 for any incorrect [6]
smooth line graphs (2) or two intersecting straight lines
labels (1)

(d) value from graph ± 1 small square (1) shown clearly (1) [2]

(e) experiment 1 (1) [1]

(ii) acid C more concentrated (1) [2]
stronger (1)
more collisions (1) max [2]

(f) to clean it/remove acid C owtte (1) [1]

(g) room temperature or initial temperature from table (1) [2]
reaction finished owtte (1)