Rate(speed) of Reaction
Mark Scheme 4

Level	IGCSE
Subject	Chemistry
Exam Board	CIE
Topic	Chemical Reactions
Sub-Topic	Rate (speed) of Reactions
Paper Type	Alternative to Practical
Booklet	Mark Scheme 4

Time Allowed: **63 minutes**

Score: **/52**

Percentage: **/100**

1   Volumes from cylinder diagrams

Experiment 2

0 16 31 39   all correct (2)   **[2]**

-1 for any incorrec

Experiment 3

0 9 17 21   all correct (2)   **[2]**

Experiment 4

0 6 11 14   all correct (2)   **[2]**

(a) Graph. All points plotted correctly (3). -1 for each incorrect

smooth curves (1), labels (1)   **[5]**

(b) (i) Experiment 1 (1)   **[1]**

(ii) Most concentrated solution (1), more collisions (1)   **[2]**

(c) (i) Two errors (2)

e.g. amount of catalyst/timing/volume of soluti   **[2]**

(ii) Two improvements (2)

e.g. measure mass of catalyst/use burette or pipette/data loggi   **[2]**

(d) Filter (1), same mass of catalyst before and after (1)/repeat experiment and compare
volumes of gas collected   **[2]**

2   table of results

       all volumes correct (2) 0, 9, 35, 62, 81, 88, 89   **[2]**

       -1 for any incorrec

  (a)   graph

         points (2) S-shaped curve joining all points(1)   **[3]**

  (b)   exothermic/displacement/oxidation/redox(1)   **[1]**

  (c)   (i)   slow at start/speeds up/slows down at end max 2   **[2]**

       (ii)   surface dirty owtte at start/then clean/calcium being used up/warms up

            max 2   **[2]**

3   same amount/measured volume of peroxide (1)

   add known mass of metal oxide (1)

   time (1) measure volume of oxygen (1)

   repeat with other oxide (1) compare/conclusion (1)   **[6]**

   method will not work = 0

4   **Table of results:**

volumes of gas correctly completed (21, 24, 39, 47 and 56)
- 1 for each incorrect   [3]

(a)   points correctly plotted in graph (3), - 1 for each incorrect

straight line (1)   [4]

(b)   experiment 2 (1)

not on line (1)   [2]

(c)   (i)   experiment 5 (1)

     (ii)   strongesVmore concentrated acid (1)

         more collisions (1)   [3]

(d)   marble chip visible (1)

acid used up (1)   [2]

(e)   **(i)**   e.g. size of chips differenl/starting the timer   [1]

     (ii)   measure mass of chips/time individual experiments   [1]