

Rate(speed) of Reaction

Mark Scheme 1

Level	IGCSE
Subject	Chemistry
Exam Board	CIE
Topic	Chemical Reactions
Sub-Topic	Rate (speed) of Reactions
Paper Type	Alternative to Practical
Booklet	Mark Scheme1

Time Allowed: 53 minutes

Score: /44

Percentage: /100

Question	Answer	Marks	Guidance
1(a)	all time readings correctly recorded: 48, 68, 96, 132 4 correct = 3 3 correct = 2 2 correct = 1 0 or 1 correct = 0 in seconds;	3 1	
1(b)	all points correctly plotted: 48, 68, 96, 132 4 correct = 2 3 correct = 1 2 or fewer correct = 0 smooth line graph;	2 1	
1(c(i))	value from the graph, 0.7; shown clearly on the graph;	1 1	

Question	Answer	Marks	Guidance
1(c)(ii)	value from the graph, e.g. 34 s; extrapolation shown clearly;	1 1	
1(d)	idea of fair test / comparability;	1	
1(h)	(°C); 49 (°C);	1 1	
1(i)(i)	exo / redox / displacement;	1	I: neutralisation
1(i)(ii)	hy	1	
1(i)(iii)	halved;	2	'smaller temperature change' = 1 mark
1(j)	<i>apparatus</i> gas syringe / thermometer;	1	
	<i>measurements</i> volume of gas / temperature of reaction; over time;	1 1	

- 2 (a) smooth curve missing anomalous point (1) [1]
- (b) **composition of mixture**
double volume / 100 cm³ of hydrogen peroxide (1)
more than 1 g of manganese(IV) oxide / powdered (1) [2]
ignore: references to water
note: double the concentration is valid for (2)
- explanation**
double volume of gas (1)
faster reaction (1) [2]
- (c) catalyst / increase the rate of the reaction (1) [1]
- (d) sketch graph less steep than original for Experiment 1 (1)
to same level (1) [2]

3 (a) volumes completed correctly (4), -1 each incorrect [4]

time / s	catalyst R	catalyst S
0	0	0
30	23	16
60	34	36
90	59	51
120	66	63
150	71	69
180	72	72

(b) points plotted correctly (3) smooth curves (2) labels (1) [6]

(c) result at 60s / volume 34 / third result (1) [1]

(d) R (1) rate faster (1) [2]

(e) sketch to left of R graph / steeper (1) to same level (1) [2]