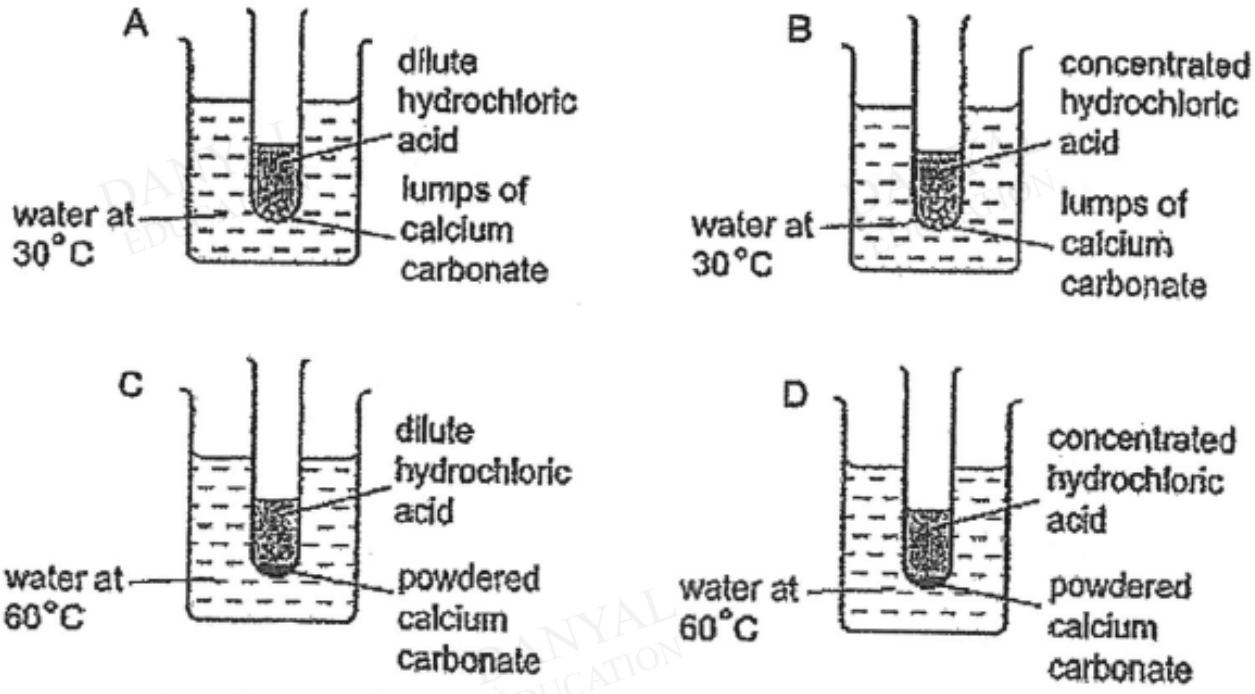
O Level Combined Chemistry MCQs

Speed of Reaction Test 1.0

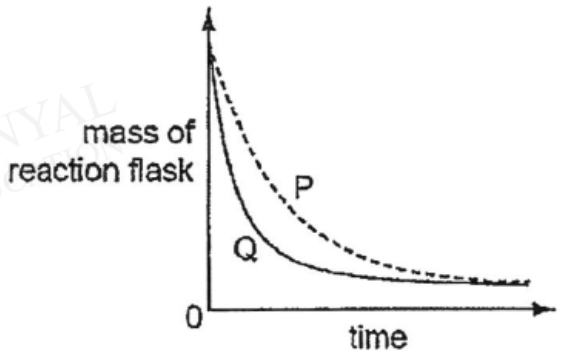
Q1

Which experiment shown below is the slowest?



Q2

A student investigates the rate of reaction between marble chips and dilute hydrochloric acid.
The loss in mass of the reaction flask is measured.
The graph shows the results of two experiments, P and Q.



Which of the following change explains the difference between P and Q?

A A catalyst is added in P
B A higher temperature is used in P
C Larger marble chips are used in Q
D Hydrochloric acid of a higher concentration is used in Q

Q3

Dilute hydrochloric acid was reacted with 1.2 g of magnesium ribbon at room temperature in two experiments, experiment 1 and experiment 2.

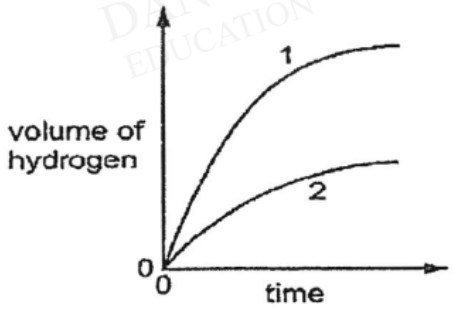
In experiment 1, 100 cm^3 of 1 mol/dm^3 of hydrochloric acid was used.

In experiment 2, 50 cm^3 of 2 mol/dm^3 of hydrochloric acid was used.

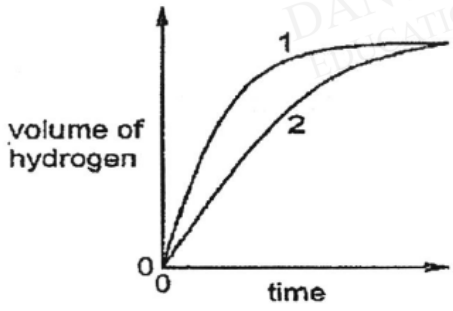
The volume of hydrogen given off was plotted against time.

Which graph is correct?

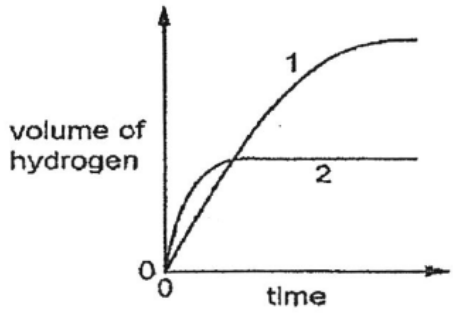
A



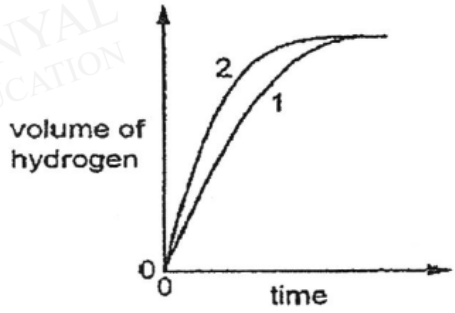
B



C



D



Q4

A student conducted two experiments.

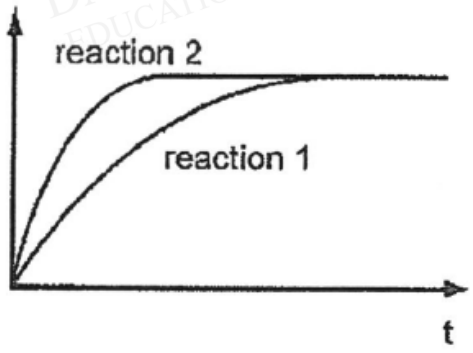
Reaction 1: 20 g of magnesium ribbon with excess 1.5 mol/dm^3 dilute nitric acid.

Reaction 2: 10 g of magnesium powder with excess 1.5 mol/dm^3 dilute nitric acid.

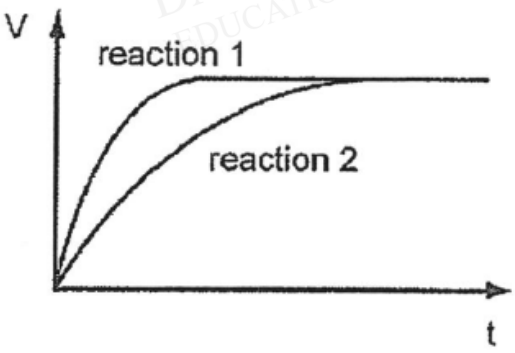
In both experiments, the volume of hydrogen produced, V, is measured against time, t, and the results plotted graphically.

Which set of graphs is correct?

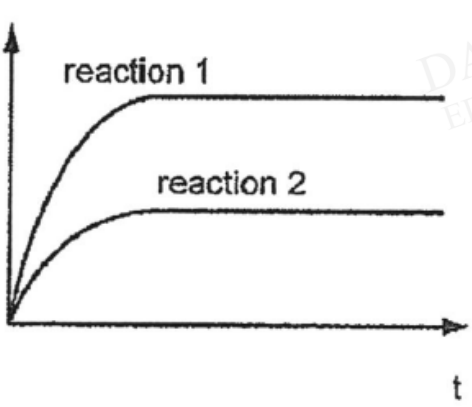
A



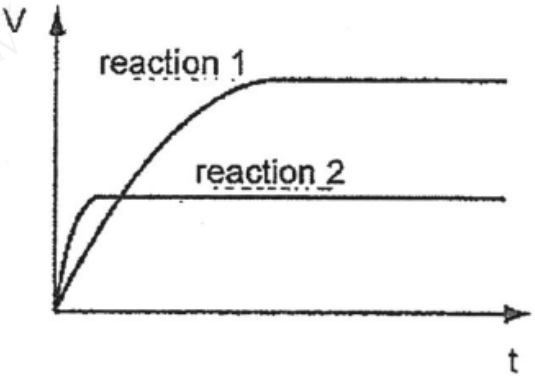
B



C

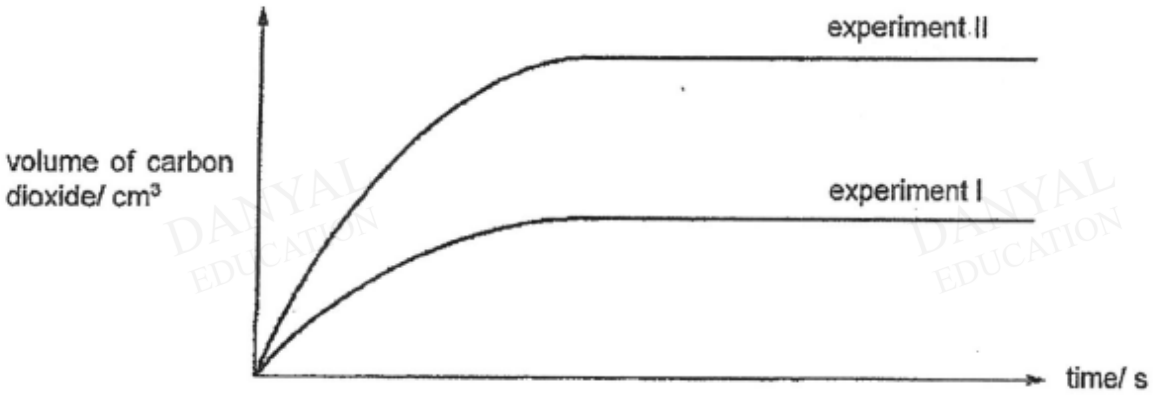


D



Q5

Two experiments were carried out at 30 °C. In experiment I, 25 cm^3 of hydrochloric acid at 0.75 mol/dm^3 was reacted with excess calcium carbonate. The volume of carbon dioxide collected in experiment II was double that of experiment I. The results obtained were plotted into a graph as shown.

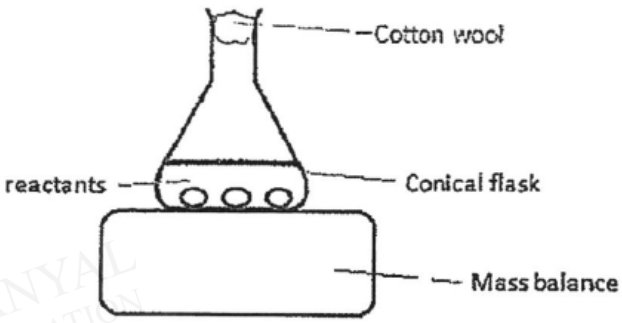


Which factor best accounts for the shape of the graph of experiment II?

A addition of a catalyst
B increasing the concentration of hydrochloric acid from 0.75 mol/dm^3 to 1.50 mol/dm^3
C increasing the temperature of hydrochloric acid from 30 °C to 60 °C
D increasing the volume of hydrochloric acid from 25 cm^3 to 50 cm^3

Q6

The apparatus shown can be used to measure the rate of some chemical reactions.



For which two reactions would this apparatus be suitable?

reaction 1 $AgNO_3(aq) + HCl(aq) \rightarrow AgCl(s) + HNO_3(aq)$

reaction 2 $2H_2O_2(aq) \rightarrow 2H_2O(l) + O_2(g)$

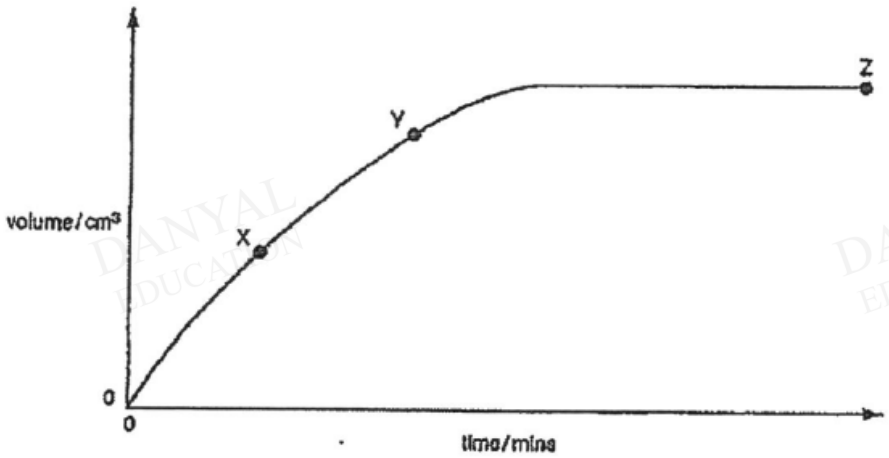
reaction 3 $FeO(s) + 2HCl(aq) \rightarrow FeCl_2(aq) + H_2O(l)$

reaction 4 $MgCO_3(s) + 2HCl(aq) \rightarrow MgCl_2(aq) + CO_2(g) + H_2O(l)$

A 1 and 2
B 2 and 4
C 1 and 3
D 3 and 4

Q7

The graph shows the total volume of carbon dioxide evolved, plotted against time, when excess calcium carbonate reacts with 20 cm^3 of hydrochloric acid containing 2 mol/dm^3.



Which statement is correct?

A The reaction is faster at point Y than at point X.

B The reaction first reaches completion at point Z.

C The time taken to reach completion increases if 20 cm^3 of hydrochloric acid containing 4 mol/dm^3 is used.

D The total volume of carbon dioxide produced remains the same when a greater mass of calcium carbonate is used.

Q8

A student wants to find out the rate of reaction between 2.0 g of calcium carbonate and 25.0 cm^3 of dilute hydrochloric acid.

Which apparatus should the student use?

A electronic balance, digital stopwatch, measuring cylinder, gas syringe

B electronic balance, digital stopwatch, pipette, gas syringe

C electronic balance, digital stopwatch, measuring cylinder, thermometer

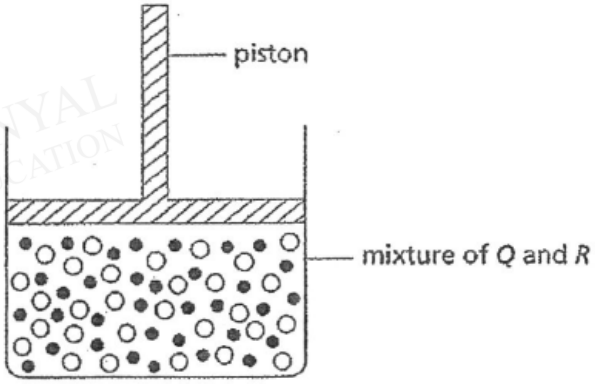
D electronic balance, digital stopwatch, pipette, thermometer

Q9

Gases Q and R react according to this equation:

$$Q\ (g) + R\ (g) \rightarrow T\ (g)$$

The reaction mixture is placed in a container at room temperature as shown in the figure below.



Which of the following actions can increase the speed of reaction?

A placing the container in a dark room

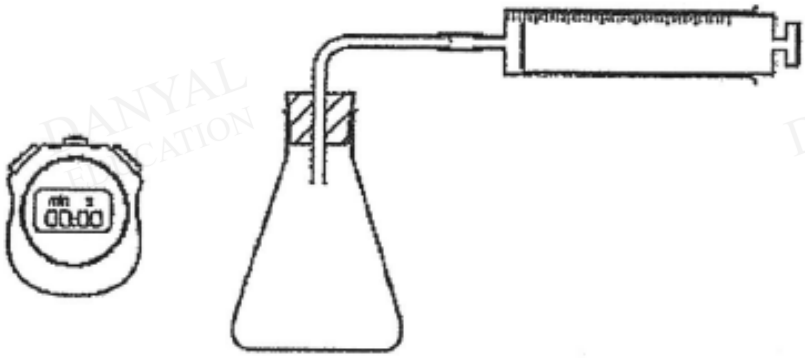
B lowering the piston in the container

C placing the container in water at 0°C

D using a bigger container

Q10

The apparatus shown can be used to find the rate of some chemical reactions.



Which of the following reactions can be measured using the above set-up?

A calcium and hydrochloric acid
B silver nitrate and sodium chloride
C potassium hydroxide and sulfuric acid
D sodium hydroxide and iron(III) sulfate

Answers

Speed of Reaction Test 1.0

Q1 A

Q2 D

Q3 D

Q4 D

Q5 B

Q6 B

Q7 D

Q8 B

Q9 B

Q10 A