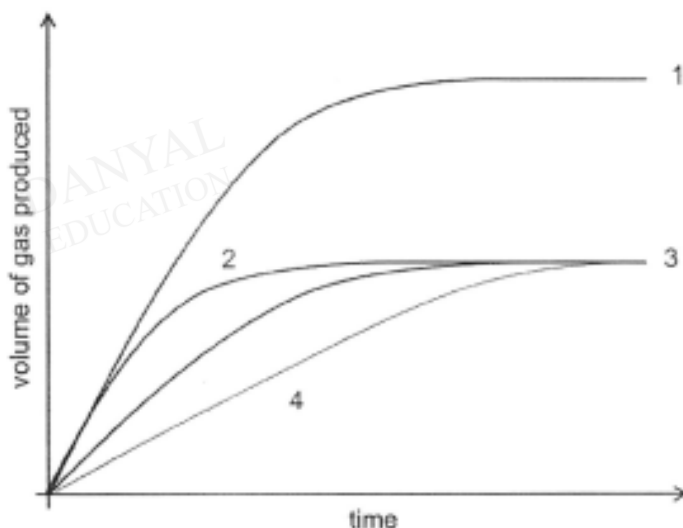


O Level Pure Chemistry MCQs

Speed of Reaction Test 1.0

Q1

Sodium carbonate is added to 1.0 mol/dm³ of excess ethanoic acid, hydrochloric acid and sulfuric acid separately.



Which correctly matches the graph to the acid used in each reaction?

	sulfuric acid	hydrochloric acid	ethanoic acid
A	1	2	4
B	1	4	3
C	2	3	4
D	2	4	3

Q2

The apparatus shown below can be used to investigate the rate of a reaction.



In which reaction could the rate of reaction be followed using these apparatus?

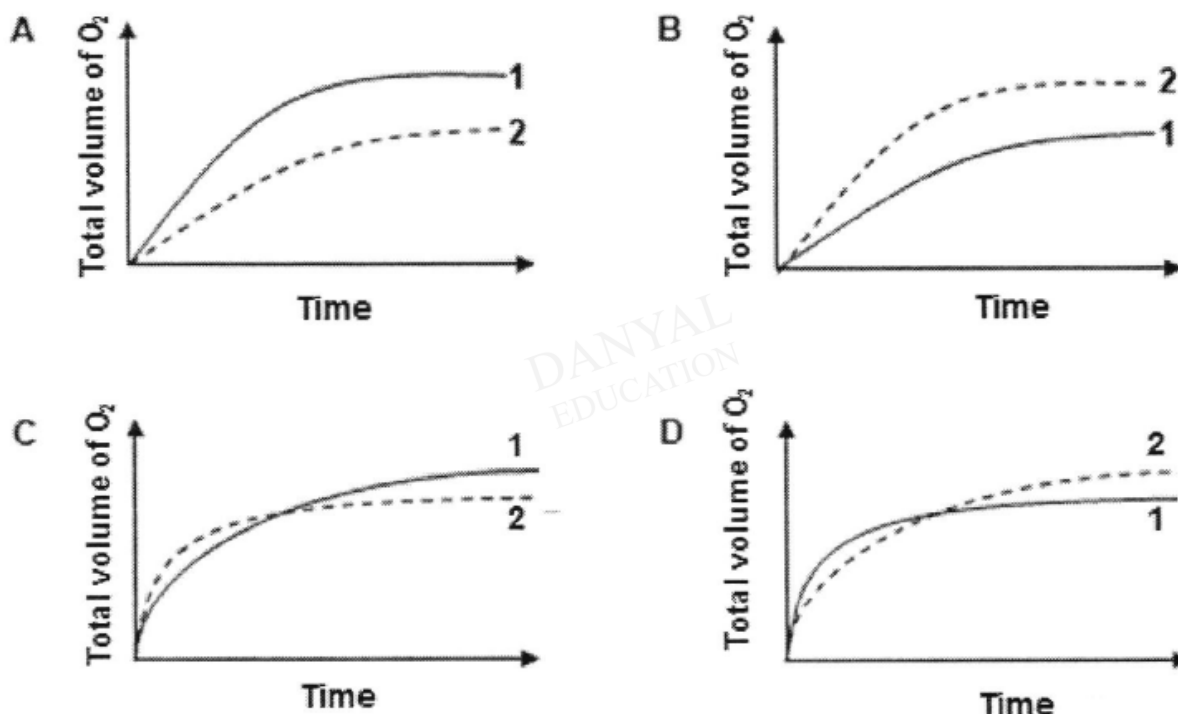
- A AgNO₃ + HCl
- B Mg + HCl
- C NaOH + HCl
- D NH₄NO₃ + HCl

Q3

Aqueous hydrogen peroxide decomposes to form water and oxygen gas. Two experiments were carried out to measure the rate of production of oxygen from aqueous hydrogen peroxide.

experiment	reagent used
1	400 cm ³ of 0.2 mol/dm ³ of hydrogen peroxide
2	100 cm ³ of 1.0 mol/dm ³ of hydrogen peroxide

Which graph best shows the results obtained?



Q4

Sodium thiosulfate reacts with hydrochloric acid to form sulfur.

Which sodium thiosulfate solution gives the highest initial rate of reaction?

- A 4 g of sodium thiosulfate dissolved in 50 cm³ of water.
- B 10 g of sodium thiosulfate dissolved in 100 cm³ of water.
- C 20 g of sodium thiosulfate dissolved in 500 cm³ of water.
- D 40 g of sodium thiosulfate dissolved in 2000 cm³ of water.

Q5

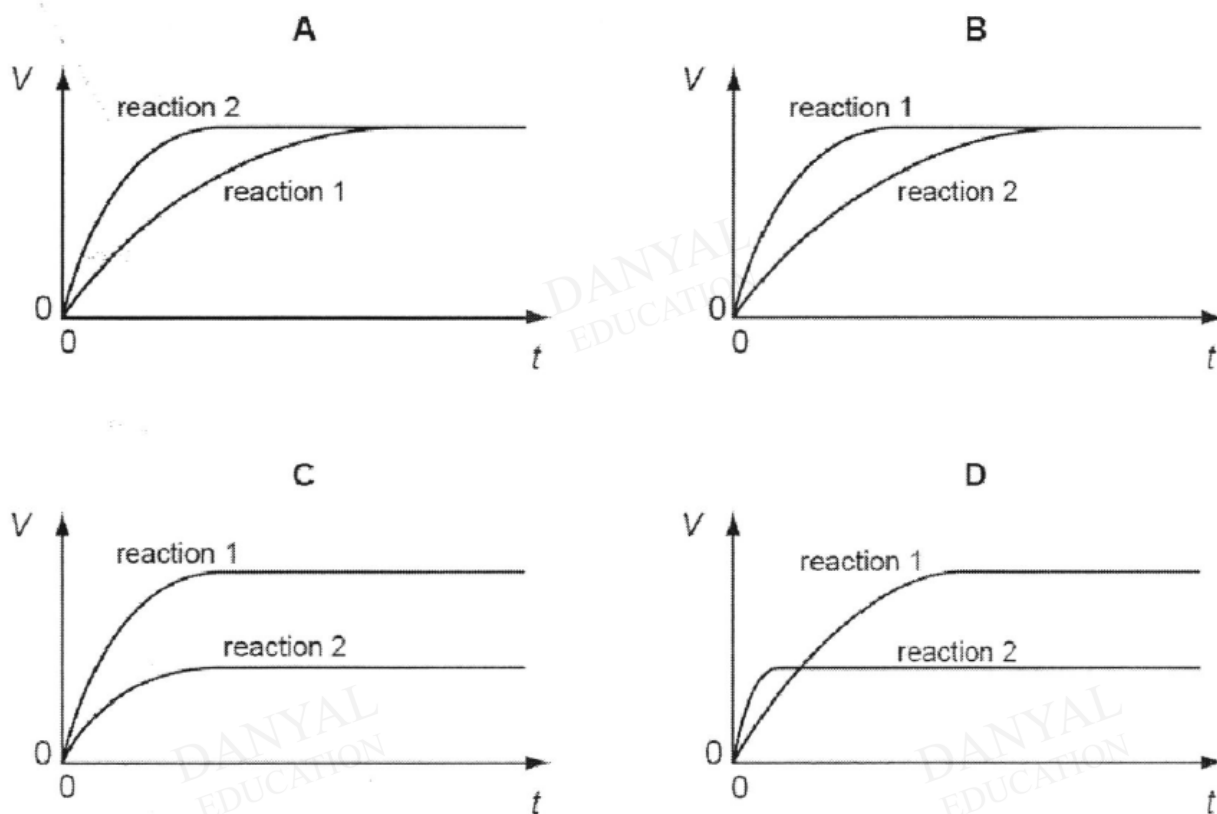
A student performs two reactions.

Reaction 1 10 g of magnesium ribbon with excess 2.0 mol/dm^3 dilute hydrochloric acid

Reaction 2 5 g of magnesium powder with excess 2.0 mol/dm^3 dilute hydrochloric acid

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

Which set of graphs is correct?



Q6

Which statement about the characteristic of catalysts is **not** true?

- A Catalysts increase the rate of a reaction.
- B The effect of catalysts depends on the amount of the catalyst used.
- C The mass of catalysts does not change after a reaction.
- D Catalysts increase the final amount of products of a reaction.

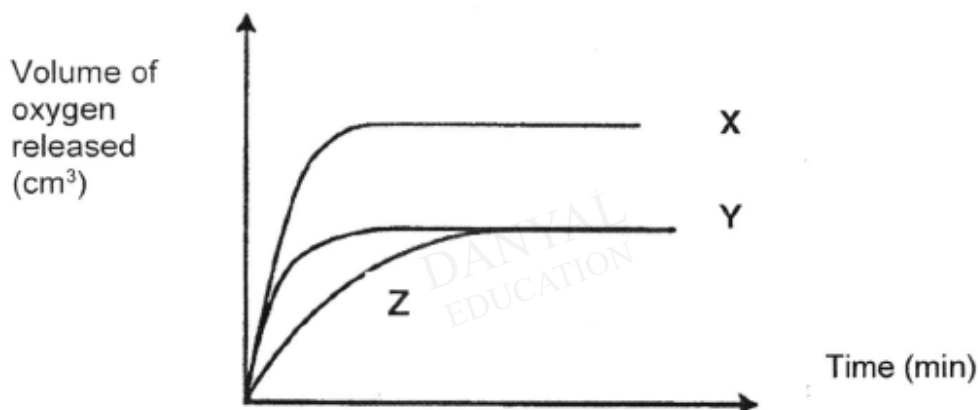
Q7

The rate of reaction increases as the temperature increases. Which of the following statements provides the **best** explanation for this?

- A At lower temperatures, the proportion of particles having sufficient energy to react is greater.
- B At higher temperatures the particles move faster and collide less often.
- C Increasing the temperature increases the number of moving particles, so they collide more often.
- D Increasing the temperature allows more particles to possess the minimum activation energy required when they collide.

Q8

The graph below shows the rate of decomposition of potassium chromate(V) to release oxygen gas using copper (II) oxide as a catalyst. There were three experiments conducted (I, II and III).



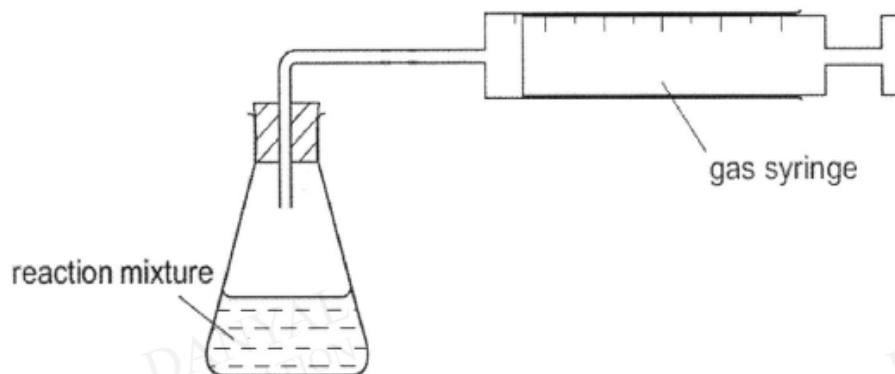
- I adding copper(II) oxide powder to 10 cm³ of 2.0 mol/dm³ potassium chromate(V) solution
- II adding copper(II) oxide pieces to 20 cm³ of 1.0 mol/dm³ potassium chromate(V) solution
- III adding copper(II) oxide powder to 20 cm³ of 2.0 mol/dm³ potassium chromate(V) solution

Which of the curves, X, Y, Z in the graph are associated with experiments I, II and III?

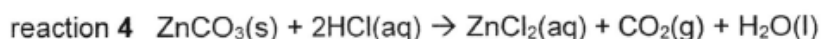
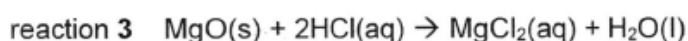
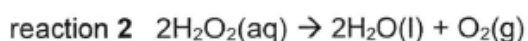
	I	II	III
A	X	Z	Y
B	X	Y	Z
C	Y	Z	X
D	Z	Y	X

Q9

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



For which two reactions would this apparatus be suitable?



A 1 and 2

B 1 and 3

C 2 and 4

D 3 and 4

Q10

Two experiments were carried out in which dilute hydrochloric acid was added to excess calcium carbonate.

experiment 1: 100 cm³ of 5.00 mol/dm³ dilute hydrochloric acid was used

experiment 2: 400 cm³ of 1.25 mol/dm³ dilute hydrochloric acid was used

The initial rate of production of carbon dioxide and the total volume of carbon dioxide were measured in each experiment.

How do the results in Experiment 1 compare with those in Experiment 2 when all other conditions are identical?

	rate of production of carbon dioxide	total volume of carbon dioxide
A	faster in 1	greater in 1
B	faster in 1	same in both
C	slower in 1	greater in 1
D	slower in 1	same in both

Answers

Speed of Reaction Test 1.0

Q1 C

Q2 B

Q3 B

Q4 B

Q5 D

Q6 D

Q7 D

Q8 C

Q9 C

Q10 B

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