

AQA, OCR, Edexcel

GCSE Science

GCSE Chemistry

**Rate of Reaction
Questions**

M M E

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Total Marks: /22

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Calculating rates of reactions

Q1: Complete the equations to show how the rate of a chemical reaction can be found.

a)

$$\text{Mean rate of reaction} = \frac{\text{quantity of reactant used}}{\text{time taken}}$$

(1 mark)

b)

$$\text{Mean rate of reaction} = \frac{\text{quantity of product formed}}{\text{time taken}}$$

(1 mark)

Q2: Give two ways, whereby the quantity of reactant or product can be measured.

A= Mass in grams (1 mark). Volume in cm³ (1 mark).

(2 marks)

Factors which affect the rates of chemical reactions

Q3: Name five factors which affect the rates of chemical reactions:

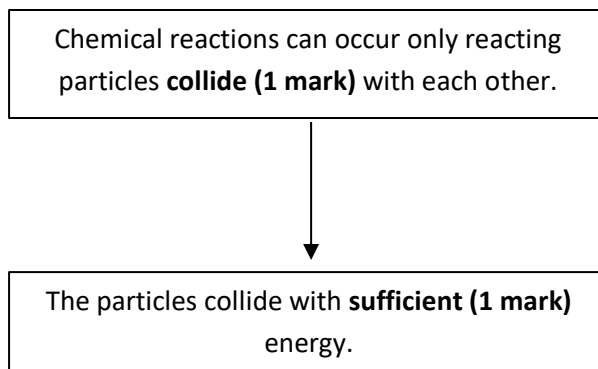
A= Concentration of reactants in solution (1 mark). The pressure of reacting gases (1 mark). The surface area of solid reactants (1 mark). The temperature (1 mark) and the presence of catalysts (1 mark).

(5 marks)

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Collision theory and activation energy

Q4: Complete the flow diagram to show how collision theory works.



(2 marks)

Q5: Explain how increasing the concentration of reactants and increasing the temperature increases the rate of reaction.

A= Increasing the concentration of reactants increases the frequency of collisions (1 mark), increasing the temperature makes the collisions more energetic/ increased frequency of successful collisions (1 mark).

(2 marks)

Catalysts

Q6: Describe what a catalyst is and why it is used.

A= Catalysts change the rate of chemical reactions (1 mark) but are not used up during the reaction (1 mark).

(2 marks)

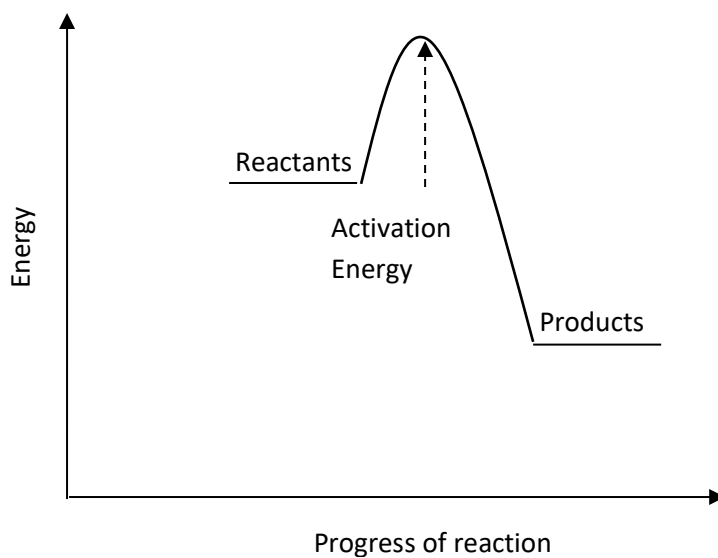
Q7: Give an example of a biological catalyst.

A= Enzymes act as catalysts in biological systems.

(1 mark)

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Q8: Below is a reaction profile. Draw on the same diagram, of a catalysed reaction.



A= diagram showing a lower activation energy with a catalyst.

(2 marks)

Q9: How do catalysts change reactions in this way?

A= Provide a different pathway (1 mark) with a lower activation energy (1 mark).

(2 marks)