

Reversible Reactions & Equilibria

Question Paper

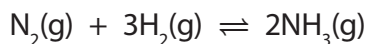
Level	Edexcel
Subject	Chemistry
Exam Board	GCSE(9-1)
Topic	Extracting Metals & Equilibria
Sub Topic	Reversible Reactions & Equilibria
Booklet	Question Paper

Time Allowed: 27 minutes

Score: /22

Percentage: /100

- 1 When nitrogen and hydrogen react to form ammonia, the reaction can reach a dynamic equilibrium.



- (a) Explain what is meant by a **dynamic equilibrium**.

(2)

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- (b) In industry, the reaction between nitrogen and hydrogen is affected by the conditions used.

- (i) The pressure used is 250 atmospheres.
Explain how the use of a higher pressure would affect the equilibrium yield of ammonia.

(2)

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- (ii) The reaction between nitrogen and hydrogen to form ammonia is exothermic.
The temperature used is 450 °C.

Explain how the use of a lower temperature would affect the equilibrium yield of ammonia.

(2)

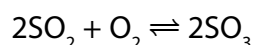
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2 Sulfur trioxide is produced by reacting sulfur dioxide with oxygen.



- (a) (i) This reaction takes place in industry at 1–2 atm pressure and can reach a dynamic equilibrium.

Explain the effect on the rate of attainment of equilibrium, if the process is carried out at a pressure higher than 1–2 atm.

(3)

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- (ii) What volume of oxygen, in cm³, would react completely with 500 cm³ sulfur dioxide? (1)

- A 500 ÷ 2
- B 500
- C 500 × 2
- D 500 × 32

- (b) When there are alternative methods of producing a product, the final pathway is chosen by considering atom economy, cost of energy, yield of product and rates of reactions.

State another factor that should also be considered.

(1)

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