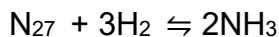


Equilibria (F)

1. Look at the equation for the Haber process.



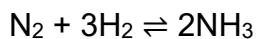
What is meant by the symbol \rightleftharpoons in the equation?

- A A reaction that involves a catalyst.
- B A reaction that is exothermic.
- C A reaction with 100% atom economy.
- D A reversible reaction.

Your answer

[1]

2. The Haber process is used to make ammonia, NH_3 .



The reaction reaches a **dynamic equilibrium**.

- i. What happens to the **rate** of the forward and backward reactions at dynamic equilibrium?

[1]

- ii. What happens to the **concentrations** of the reacting substances at equilibrium?

[1]

3 (a). The reversible reaction between carbon dioxide and hydrogen makes methane and water.



In a sealed container this reversible reaction forms a **dynamic equilibrium**.

What is meant by the term dynamic equilibrium?

Refer to both concentration and rate of reaction in your answer.

[2]

