

Haber Process

Q1. (2019)

- 7 (a) Fertilisers contain compounds that promote plant growth.
- (i) State the name of an element in these compounds that promotes plant growth. (1)

Q2. (2019) – 7b (iii)

- (b) In the Haber process, hydrogen and nitrogen react to form ammonia.



- (iii) Figure 7 shows a graph of world ammonia production, in millions of tonnes, from 1945 to 2015.

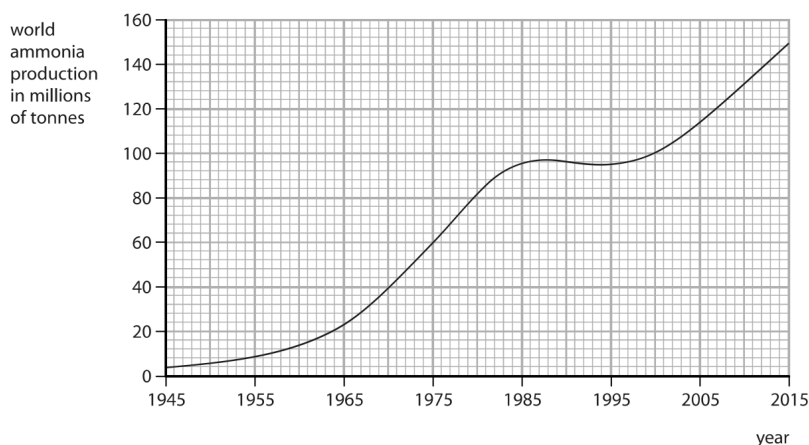


Figure 7

State the overall trend in world ammonia production from 1945 to 2015.

(1)

Q3. (2020)

- 3 In industry, ammonia is manufactured by reacting nitrogen with hydrogen.
- (a) (i) Give the name of the industrial process used to manufacture ammonia. (1)

Q4. (2020) – 3c

A)

- (c) Most of the ammonia manufactured in industry is used to produce fertilisers.
- (i) A fertiliser is made by reacting ammonia with nitric acid.
- What is the name of this fertiliser? (1)
- ☐ A ammonia nitrate
- ☐ B ammonia nitric
- ☐ C ammonium nitrate
- ☐ D ammonium nitric

B)

- (ii) Explain the importance of fertilisers in farming. (2)

Q5. (2021)

- 1** (a) Fertilisers are sometimes added to soil.
(i) State why fertilisers are added to soil.

(1)

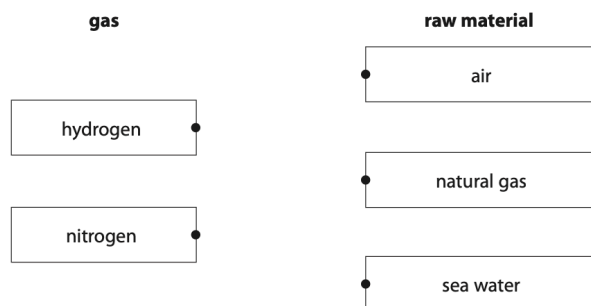
Q6. (2021)

- 5** Ammonia is made by reacting nitrogen with hydrogen.

- (a) The nitrogen and hydrogen are obtained from raw materials.

Draw one straight line from each gas to the raw material it is obtained from.

(2)



Q7. (2021) – 5c

- (c) The reaction between nitrogen and hydrogen happens at a pressure of 200 atmospheres.

Another unit of pressure is Pascals, Pa (1 atmosphere = 101 325 Pa).

Calculate the value of 200 atmospheres in Pascals.

(2)

Q8. (2022)

- 1 (a) Figure 1 shows a bag of NPK fertiliser.



Figure 1

N, P and K are the symbols of three elements that are essential for plant growth.

N is the symbol for nitrogen.

Name the other two elements, P and K, that are essential for plant growth.

You may want to refer to the periodic table.

(2)

P

K

Q9. (2022) – 1b

- (b) Many fertilisers are produced using ammonia.

Ammonia is produced on an industrial scale from the reaction of nitrogen with hydrogen.

The equation for the reaction is



- (i) State the name of this industrial process.

(1)

Q10. (2023) – 7a (i, iii)

- 7 (a) Figure 10 shows some information on a container of plant fertiliser.

contains	percentage by mass
ammonium nitrate (NH_4NO_3)	46%
phosphorus oxide (P_2O_5)	0%
potassium nitrate (KNO_3)	54%

Figure 10

A)

- (i) State which element, often present in fertilisers, is **not** present in this fertiliser.

(1)

B)

- (iii) State why farmers spread fertilisers on their fields.

(1)

Q11. (2023) – 7b (ii)

- (b) Ammonium sulfate is a fertiliser and is produced on a large scale in industry.

In this process, ammonia reacts with sulfuric acid.

- (ii) Ammonium sulfate can also be made in the laboratory by titrating ammonia solution with dilute sulfuric acid.

Give **one disadvantage** of using this laboratory method to produce ammonium sulfate as a fertiliser compared with an industrial method.

(1)

Q12. (2024) – 2b (iii)

- (iii) Explain why some farmers spread ammonium sulfate on their fields.

(2)