

Properties and Uses of Ammonia

Question Paper

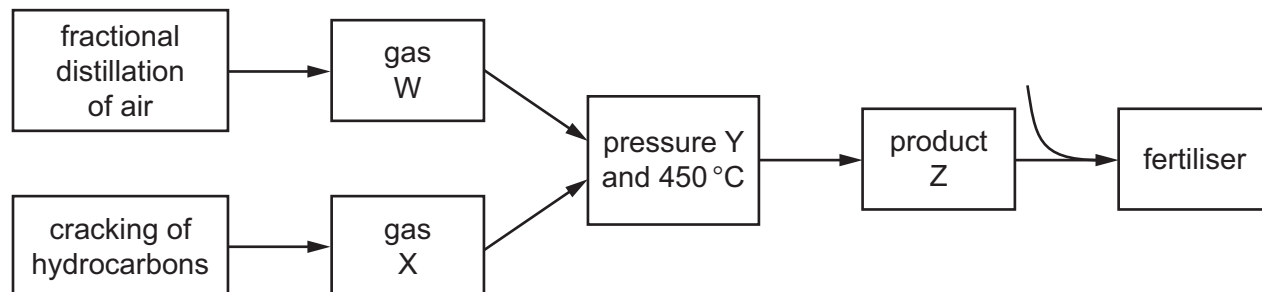
Level	O Level
Subject	Chemistry
Exam Board	Cambridge International Examinations
Topic	The Chemistry and Uses of Acids, Bases And Salts
Sub-Topic	Properties and Uses of Ammonia
Booklet	Question Paper

Time Allowed: 20 minutes

Score: /17

Percentage: /100

- 1 The diagram shows a flow chart for the manufacture of fertiliser.



In the flow chart, what are W, X, Y and Z?

	W	X	Y	Z
A	H ₂	N ₂	high	NH ₃
B	O ₂	SO ₂	high	SO ₃
C	O ₂	SO ₂	low	SO ₃
D	N ₂	H ₂	high	NH ₃

- 2 An ammonium salt was added to excess hot aqueous sodium hydroxide. Ammonia gas was evolved. When no more ammonia was evolved, aluminium was added to the solution remaining and more ammonia gas was given off.

What was the ammonium salt?

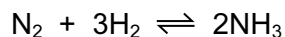
- A** NH₄Cl **B** NH₄NO₃ **C** (NH₄)₂CO₃ **D** (NH₄)₂SO₄

- 3 Ammonium nitrate, NH₄NO₃, is an artificial fertiliser produced from ammonia.

What is an advantage of using ammonium nitrate as a fertiliser?

- A** It contains a large percentage by mass of nitrogen.
B It gives off ammonia gas.
C Nitrates are insoluble.
D Nitrates can cause eutrophication.

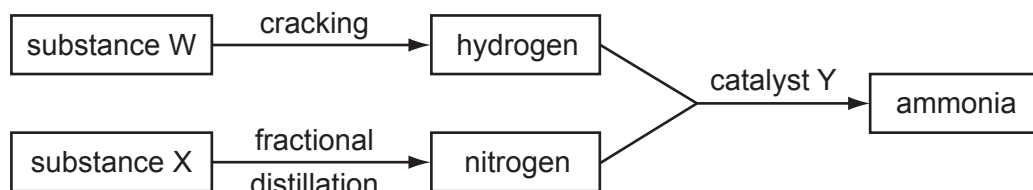
- 4 Hydrogen and nitrogen react to form ammonia.



Which statement is correct?

- A Ammonia is made in industry by the Contact process.
 - B Ammonia is used in industry to make hydrogen and nitrogen.
 - C Hydrogen, for the forward reaction, is obtained from cracking oil.
 - D Weed killers are manufactured from ammonia.
- 5 Which aqueous reagent liberates ammonia from ammonium nitrate on warming?
- A calcium nitrate
 - B potassium hydroxide
 - C sodium chloride
 - D sulfuric acid
- 6 Which of the following pairs of compounds react together to produce ammonia?
- 1. ammonium nitrate and calcium carbonate
 - 2. ammonium nitrate and calcium oxide
 - 3. ammonium sulfate and calcium hydroxide
 - 4. ammonium sulfate and calcium nitrate
- A 1 and 2 only
 - B 1 and 4 only
 - C 2 and 3 only
 - D 3 and 4 only
- 7 Which compound will **not** produce ammonia when heated with ammonium sulfate?
- A calcium oxide
 - B magnesium oxide
 - C sodium hydroxide
 - D sulfuric acid

8 The diagram shows processes that take place in the manufacture of ammonia.



What are substances W and X and catalyst Y?

	W	X	Y
A	air	oil	iron
B	air	oil	vanadium(V) oxide
C	oil	air	iron
D	oil	air	vanadium(V) oxide

9 Which gas reacts with sulfuric acid to form a fertiliser?

- A** ammonia, NH_3
- B** carbon dioxide, CO_2
- C** hydrogen, H_2
- D** nitrogen, N_2

10 Which type of compound will liberate ammonia when heated with ammonium sulfate?

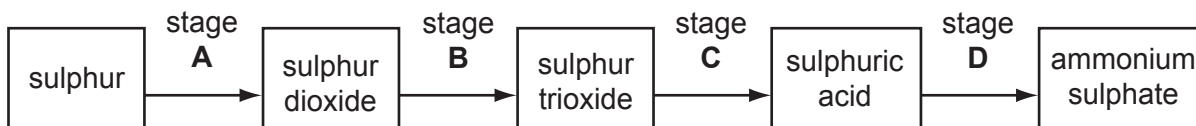
- A** an acid
- B** an alkali
- C** a reducing agent
- D** a salt

11 Ammonia gas is produced when solid ammonium chloride is heated with

- A calcium hydroxide.
- B calcium sulphate.
- C hydrochloric acid.
- D magnesium nitrate.

12 Ammonium sulphate is an important fertiliser.

During which stage in the manufacture of ammonium sulphate does a neutralisation reaction occur?



13 Ammonia may be obtained from ammonium chloride by heating with

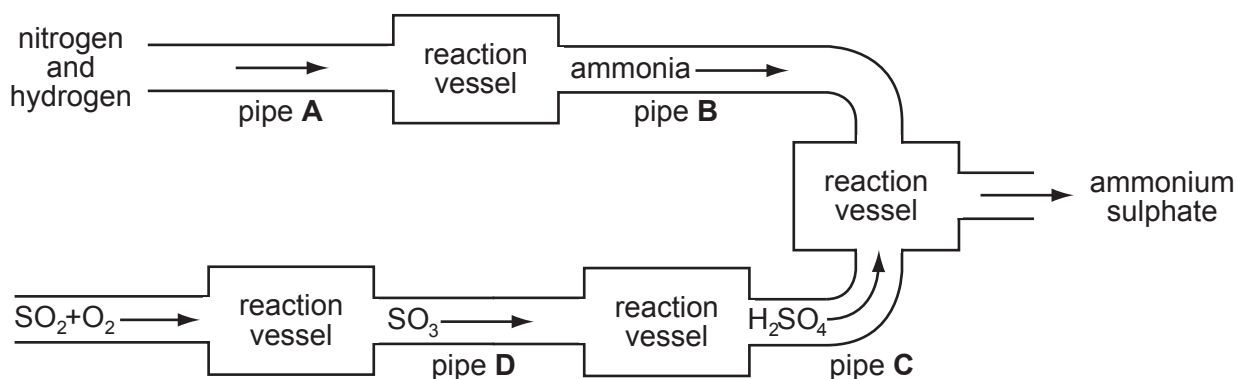
- A aqueous calcium chloride.
- B aqueous sodium hydroxide.
- C dilute hydrochloric acid.
- D water.

14 Which method would **not** produce ammonia gas?

- A heating concentrated aqueous ammonia
- B heating ammonium chloride with calcium hydroxide
- C heating ammonium sulphate with sodium hydroxide
- D heating ammonium sulphate with dilute hydrochloric acid

15 The diagram shows some of the stages in the manufacture of ammonium sulphate.

From which connecting pipe would a major leak most **increase** the pH value of rain?



16 Which statement about the manufacture of ammonia by the Haber Process is correct?

- A The reactants and product are elements.
- B The reactants and product are gases.
- C The reactants and product are compounds.
- D The reactants are both obtained from the air.

17 In the Haber process, nitrogen and hydrogen react to form ammonia.

What is the source of the hydrogen?

- A air
- B oil
- C limestone
- D sulphuric acid