



# **CHEMISTRY**

# BOOKS - EVERGREEN CHEMISTRY (ENGLISH)

# STUDY OF AMMONIA $(NH_3)$

# Question

1. Write balanced equation for the following:

Action of warm water on magnesium nitride.



4. Which compound is normally used as a

drying agent for ammonia?

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5. What would you observe in the following case ?

Water is added to the product formed, when

aluminium is burnt in a jar of nitrogen gas.

6. The questions below are related to the

manufacture of ammonia.

Name the process.

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**7.** The questions below are related to the manufacture of ammonia.

In what ratio must the reactants be taken?

8. The questions below are related to the

manufacture of ammonia.

Name the catalyst used.

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9. The questions below are related to the manufacture of ammonia.Give the equation for the manufacture of

ammonia.



**10.** The questions below are related to the manufacture of ammonia.

Ammonia can act as a reducing agent - write a

relevant equation for such a reaction.



**11.** You enter a laboratory after a class has completed the Fountain Experiment. How will you be able to tell whether the gas used in the experiment was hydrogen chloride or ammonia ?



#### 12. The diagram shows a simple arrangement

of the fountain experiment:

Name the two gases you have studied which

#### can be used in this experiment.





13. The diagram shows a simple arrangement

of the fountain experiment:

What is the common property demonstrated

by this experiment?





14. From the list given below, select the word(s) required to correctly complete the blanks (i) to (v) in the following passage: Note : words chosen from the list are to be used only once. Write only the answers. Do not copy the passage.

[reddish brown, ammonium, nitrogen dioxide, hydroxyl, dirty green, ammonia, acidic, alkaline] Nitrogen and hydrogen combine in the presence of a catalyst to give (i) ......gas. When the above mentioned gas is passed through water it forms a solution which will be (ii) .....in nature and the solution contains (iii) .....ions and (iv) ..... ions. The above solution when added to iron (II) sulphate solution, gives a (v) ..... coloured precipitate of iron (II) hydroxide. Watch Video Solution

**15.** Write a balanced chemical equation for burrning of ammonia in air .





16. State your observation for the following

cases :

Ammonia gas is burnt in an atmosphere of

oxygen in the absence of a catalyst.

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17. What is observed when

Glass rod dipped in ammonium hydroxide is

brought near to the mouth of the

concentrated hydrochloric acid bottle.



**18.** Of the two gases, ammonia and hydrogen chloride, which is more dense ? Name the method of collection of this gas.



**19.** Give one example of a reaction between the above two gases which produces a solid compound.



**20.** Name the substance used for drying ammonia.

21. Write an equation to illustrate the reducing nature of ammonia.Watch Video Solution

**22.** With reference to Haber's process for the preparation for ammonia, write the equation and the conditions required.

23. Write balanced chemical equation for the

following: Action of warm water on AIN.

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**24.** Write balanced chemical equations for each of the following:

When excess of ammonia is treated with

chlorine.

**25.** Write balanced chemical equations for each of the following:

An equation to illustrate the reducing nature

of ammonia.



**26.** State your observations when ammonium hydroxide solution is added drop by drop and then in excess to each of the following solutions :

copper sulphate solution



presence of a catalyst.



**28.** Give balanced equation for the following:

Reduction of hot Copper(II) oxide to copper

using ammonia gas.





**30.** Write a balanced chemical equation for

each of the following:

Laboratory preparation of ammonia from

ammonium chloride.



**31.** State one appropriate observation for the following: Excess of chlorine gas is reacted with ammonia gas.

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**32.** What do you observe when :

Ammonium hydroxide is added to copper

sulphate solution first a little, then in excess.

33. State your observation when

Ammonium hydroxide solution is added to

magnesium chloride

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**Questions For Practice** 

**1.** Write a balanced chemical equation for the preparation of ammonia from ammonium



**4.** Which one of  $H_2SO_4, P_2O_5$ , and CaO is

used as drying agent for ammonia?

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5. Write the reaction for the preparation of

ammonia from magnesium nitride.

6. Write the reaction for the preparation of

ammonia from magnesium nitride.

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7. How will you obtain ammonia by heating a mixture of ammonium chloride and calcium hydroxide?

**8.** Under what conditions do nitrogen and hydrogen combine to form ammonia in Haber's process?



**9.** Name the gas with the manufacture of which the Haber's process is associated.



10. Mention the main conclusions derived from

the Fountain experiment with ammonia.



11. Write a reaction in which ammonia shows

its basic character.



12. What happens when (write balanced

chemical equations):

Ammonia is dissolved in water.



**13.** What happens when (write balanced chemical equations):

Ammonia is passed through hydrochloric acid.

**14.** What happens when (write balanced chemical equations):

Sulphuric acid is added to ammonia solution.

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**15.** What happens when (write balanced chemical equations):

Ammonia and oxygen combine in the presence

of platinum

16. What happens when (write balanced chemical equations):Ammonia burns in a current of oxygen.



**17.** What happens when (write balanced chemical equations):

Ammonia is passed over hot copper (II) oxide.

**18.** What happens when (write balanced chemical equations):

Chlorine gas comes in contact with excess of

ammonia.



**19.** What happens when (write balanced chemical equations):

Aluminium nitride is treated with hot water.

20. What happens when (write balanced chemical equations):Ammonium chloride is heated with calcium hydroxide.

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**21.** What happens when (write balanced chemical equations):

Ammonia gas is bubbled through red litmus solution.





22. State one use of ammonia in chemistry

laboratory.



**23.** Name a gas (other than hydrogen chloride gas) which gives dense white fumes with ammonia.



24. Name all the products formed when ammonia is passed over heated copper oxide.

25. What property of ammonia is illustrated by

its reaction with CuO?

26. Name one compound of ammonia which is

used in

dry cell



#### 27. Name one compound of ammonia which is

used in

explosive

28. Name one compound of ammonia which is

used in

fertiliser

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#### 29. Name one compound of ammonia which is

used in

medicine as stimulant

**30.** A gas (X) gives white dense fumes with chlorine. Its aqueous solution gives a blue colour with copper (II) hydroxide. Name the gas X and write its molecular formula.



**31.** A gas 'A' reacts with another gas 'B' in the presence of a catalyst to give a colourless gas 'C'. the gas 'C' when comes in contact with air produces a brown gas 'D'. The solution of 'A' in

water turns red litmus blue. Explain the

observations.



**32.** A gas 'X' combines with another gas 'Y' in the presence of a catalyst 'C' to form a colourless gas 'Z'. The gas Z gives dense white fumes with hydrogen chloride and the gas 'Y' turns red litmus blue.

Name the catalyst C.



**33.** A gas 'X' combines with another gas 'Y' in the presence of a catalyst 'C' to form a colourless gas 'Z'. The gas Z gives dense white fumes with hydrogen chloride and turns red litmus blue.

Write a balanced chemical equation for the formation of Z.



34. Name the experiment which demonstrates

that ammonia is highly soluble in water.

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**35.** When a substance 'X' was heated with slaked lime, a gas 'Y' with a pungent smell was formed. The gas y gave pink colouration to phenolphthalein.

Name the substances X and Y



**36.** When a substance 'X' was heated with slaked lime, a gas 'Y' with a pungent smell was formed. The gas y gave pink colouration to phenolphthalein.

Write a balanced chemical equation for the reaction.

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**37.** What is the purpose of the Haber process?

**38.** Name the gaseous inputs of the Haber process and state the ratio by volume in which

the gases are mixed.

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39. How is the rate of reaction increased in the

Haber process?

40. Give two different ways by which the product can be separated from the reactants.
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**41.** The following reactions are carried out:

Nitrogen + metal  $\rightarrow$  compound X

**42.** The following reactions are carried out:

X + water  $\rightarrow$  ammonia + another compound

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**43.** Write the formula of the compound X formed when nitrogen and magnesium react together. Write the balanced equation for reaction.



44. Industrially, ammonia is obtained by direct combination between nitrogen and hydrogen.Write the balanced chemical equation for the direct combination of nitrogen with hydrogen.



**45.** Industrially, ammonia is obtained by direct combination between nitrogen and hydrogen. Of the metals iron, platinum, copper which will catalyse this direct combination?

**46.** Industrially, ammonia is obtained by direct combination between nitrogen and hydrogen. Is the formation of ammonia promoted by the use of high pressure or low pressure?



### 47. Is ammonia more dense or less dense than

air?



**48.** Name two gases which can be used in the study of the fountain experiment. State the common property demonstrated by the fountain experiment.

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#### 49. Write balanced equation for the reaction

between ammonia and sulphuric acid.

**50.** What is the difference between the chemical nature of an aqueous solution of hydrogen chloride and an aqueous solution of ammonia?

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**51.** Give suitable reason(s) for each of the following:

 $H_2SO_4$  is not used to dry ammonia.

**52.** Give suitable reason(s) for each of the following:

 $P_2O_5$ , is not used to dry ammonia.



53. Give suitable reason(s) for each of the

following:

Calcium chloride is not used to dry ammonia.

**54.** Give suitable reason(s) for each of the following:

In the Fountain experiments with ammonia and hydrogen chloride, water is added into the Flask with a dropper but not in case of HCl.



**55.** Select from the given below (A to F), the one substance in each case which matches the descriptions given in parts (i) to (vi). Copy and

complete the given grid with your answers as

shown for part (i).

(A) Ammonia (B) Copper oxide

(C) Copper sulphate (D) Hydrogen chloride

(E) Hydrogen sulphide (F) Lead bromide

(i) Although this compound is not a metal hydroxide, its aqueous solution is alkaline in

nature.

(ii) A solution of this compound is used as the electrolyte when copper is purified.

(iii) When this compound is electrolysed in the molten state, lead is obtained at the cathode.

(iv) This compound can be oxidized to chlorine.

(v) This compound smells of rotten eggs.

(vi) This compound can be reduced to copper

when heated with coke.

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#### Name the gas collected in the jar.





Name the drying agent used.

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How is the gas being collected ?

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Name the drying agent used.

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How will you find that the jar is full of gas?



#### 61. Identify each of A, B, C, D and E in the

#### following table:

Lab preparation of	Reactants used	Products formed	Drying agent	Method of collection
HCl gas	NaCl + H <sub>2</sub> SO <sub>4</sub>	A	conc. H <sub>2</sub> SO <sub>4</sub>	В
NH <sub>3</sub>	С	$Mg(OH)_2 + NH_3$	D	E



