CHEMISTRY

BOOKS - EVERGREEN CHEMISTRY (ENGLISH)

STUDY OF COMPOUNDS OF NITROGEN- AMMONIA

Worksheet 1 Fill In The Blanks

1. The specific gravity of ammonia is ..... .

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2. ..... is the dilute solution of liquor ammonia.

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3. Ammonia gas is dried by using .....

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4. When ammonia is prepared from ammonium chloride, the sublimable component is..... .

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5. Ammonia gas is collected by downward displacement of ..... .

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6. ..... tower is used to absorb carbon dioxide and moisture in Haber's process.

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7. Unreacted gases are circulated back to compression pump through ..... .

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8. Ammonium compounds are ..... in water.

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9. ..... reacts with water to produce ammonia.

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Worksheet 1

1. Why ammonia gas is not dried by using conc. H_2SO_4 ?

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2. Define Le-chateliers principle.

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3. Give balanced equation for Habers process.

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4. What is laboratory bench reagent?

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5. Complete the following equation :

$(NH_4)_3PO_4 \xrightarrow{\Delta}$

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6. Complete the following equation :

$(NH_4)_2SO_4 + NaOH \rightarrow$

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7. Complete the following equation :

$NH_3 + H_2SO_4 \rightarrow$

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8. Complete the following equation :

$NH_3 + P_2O_5 + H_2O \rightarrow$

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9. Complete the following equation :

$CaCl_2 + NH_3 \rightarrow$

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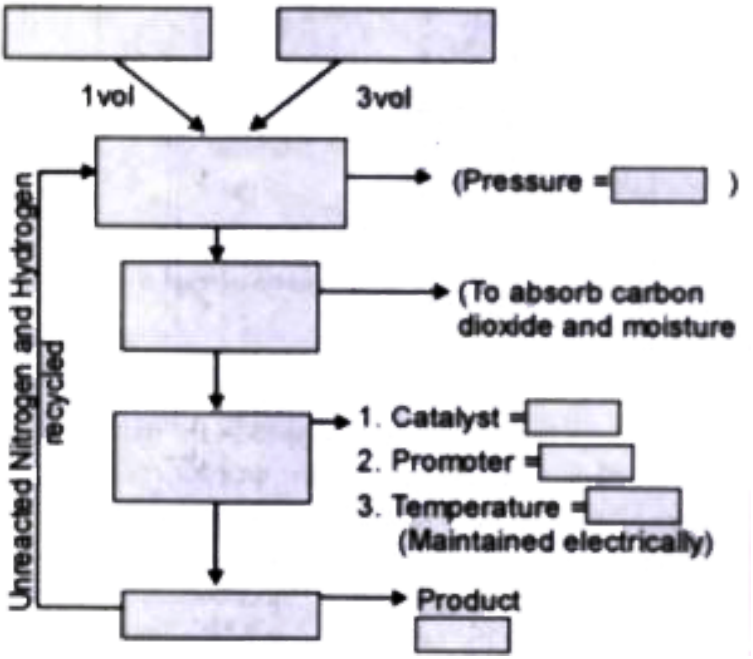
10. Complete the flow chart with reference to Haber's process :



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Worksheet 2 Fill In The Blanks

1. Dry ammonia is ..... because it is a covalent molecule.

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2. Ammonia tums yellow turmeric solution ..... .

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3. Ammonium compounds are used as fertilisers because of the vital element ..... .

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4. ..... is used for reviving a fainted person.

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5. Nessler's reagent has the formula ..... and it imparts brown coloration with ammonia.

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6. ..... was the first organic compound to be synthesised in laboratory.

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7. ..... is used as an analytical reagent to identify metal ions in qualitative analysis.

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8. Ostwalds' process brings about ..... oxidation of ammonia

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9. The colour of precipitate obtained when ammonium hydroxide is added to ferric chloride is .....

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10. Lead hydroxide precipitates are ..... in water.

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Worksheet 2

1. Give the chemical equations for the following:

Combustion of ammonia.

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2. Give the chemical equations for the following:

Catalytic oxidation of ammonia.

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3. Give the chemical equations for the following:

Reaction of ammonia with excess of chlorine.

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4. Give the chemical equations for the following:

Reaction of ammonia with carbon dioxide.

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5. Give the chemical equations for the following:

Reaction of copper sulphate with excess of NH_4OH

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6. What do you observe when ammonium hydroxide is added to the aqueous solution of: $CuSO_4$.

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7. Why is ammonia used as a laundry reagent?

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8. What properties make ammonia a good refrigerant?

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9. What do you observe when ammonia is passed over heated litharge ?

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10. What do you observe when rod dipped in HCl is brought near ammonia ?

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Worksheet 2 Give One Word

1. Colour of ferrous salts.

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2. Which salts form pale blue precipitates.

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3. A solid formed by reaction of two gases.

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4. Residue obtained when ammonia is passed over lead oxide.

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5. Catalyst used in Ostwald's process.

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Additional Questions For Practice

1. How is ammonia gas prepared in laboratory, starting from NH_4Cl ?

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2. Name the substance used for drying ammonia gas.

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3. Why cannot substances such as conc. H_2SO_4, anhydrous calcium chloride and phosphorus pentoxide be used for drying ammonia gas?

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4. By stating experimental conditions, briefly describe Haber's process for the manufacture of ammonia.

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5. Describe an experiment to show the extreme solubility of ammonia gas in water.

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6. Write chemical equation when :

Ammonia gas burns in the atmosphere of oxygen.

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7. Write chemical equation when :

Ammonia gas and oxygen in the form of homogeneous mixture is passed over heated platinum.

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8. Write chemical equation when :

Ammonia gas reacts with excess of chlorine gas.

9. Write chemical equation when :

Ammonia gas reacts with limited amount of chlorine gas.

10. Represent Haber's process by a flowchart.

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11. Describe an experiment to show the reducing nature of ammonia gas.

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12. Describe all what you will observe and write chemical equations, when limited amount of

ammonia gas is passed through following aqueous solutions : $ZnCl_2$

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13. Describe all what you will observe and write chemical equations, when limited amount of ammonia gas is passed through following aqueous solutions : $FeSO_4$.

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14. Describe all what you will observe and write chemical equations, when limited amount of ammonia gas is passed through following aqueous solutions : $FeCl_3$

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15. Describe all what you will observe and write chemical equations, when limited amount of ammonia gas is passed through following aqueous solutions : $Pb(NO_3)_2$

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16. Describe all what you will observe and write chemical equations, when limited amount of ammonia gas is passed through following aqueous solutions : $CuSO_4$.

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17. Why is the heating of catalyst discontinued as soon as the nitrogen and hydrogen start reacting during Haber's process?

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18. State four industrial uses of ammonia gas.

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19. Aqueous solution of ammonia is used for removing grease stains from woollen clothes. Explian why ?

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20. Aqueous solution of ammonia gives a pungent smell. Explian why ?

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21. Aqueous solution of ammonia conducts electricity. Explian why ?

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22. When ammonium hydroxide is added to solution B, a pale blue precipitate is formed. This pale blue precipitate dissolves in excess ammonium hydroxide giving an inky blue solution. What is the cation (positive ion) present in solution B ? What is the probable colour of solution B.

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23. When an ammonium salt is warmed with sodium hydroxide solution, ammonia gas is evolved. State three ways in which you could identify this gas.

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24. Explain catalytic oxidation of ammonia.

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25. Write your observations when ammonia water is added to copper sulphate solution first a little then in excess. Give balanced equations.

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26. What do you observe when ammonium hydroxide is added to the aqueous solution of: $FeSO_4$.

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27. What do you observe when ammonium hydroxide is added to the aqueous solution of: $ZnSO_4$.

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28. What do you observe when ammonium hydroxide is added to the aqueous solution of: $CuSO_4$.

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29. What do you observe when ammonium hydroxide is added to the aqueous solution of: Iron (III) chloride.

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30. What do you observe when ammonium hydroxide is added to the aqueous solution of:Lead nitrate.

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31. What do you observe when ammonium hydroxide is added to the aqueous solution of:

Zinc nitrate.

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32. Give a chemical test to distinguish between the following:

Ammonium chloride and sodium chloride.

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33. Give a chemical test to distinguish between the following:

Ferric salt and ferrous salt.

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34. Give a chemical test to distinguish between the following:

Liquid ammonia and liquor ammonia fortis.

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35. Give a chemical test to distinguish between the following:

Sodium sulphate and ammonium sulphate.

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36. Why ammonium hydroxide is used in qualitative analysis ? Give two equations to justify your answer.

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Questions From Preivous Icse Board Papers

1. Magnesium is burnt in the air and water added to the product. The smell of ammonia gas is detected. Write the equation for the reaction which produces ammonia gas in this situation.

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2. Choose the correct words to complete the following sentence :

Ammonia is ..... (less/more) dense than air, therefore, it is collected by..... (downward/upward) delivery.

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3. Choose the correct words to complete the following sentence :

Ammonia reacts with oxygen in two different ways depending upon the presence or absence of catalyst.

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4. Write the equation for the reaction between ammonia and oxygen in the presence of a catalyst.

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5. Name the catalyst.

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6. What is the importance of the chemical reaction?

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7. Write an equation for the reaction between ammonia and oxygen when no catalyst is used.

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8. What feature of ammonia molecule leads to the formation of ammonium ion when ammonia dissolves in water ?

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9. Name the other ion when ammonia dissolves in water.

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10. Give one test that can be used to detect the presence of ion produced when ammonia dissolves in water.

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11. Write equations for the following reactions :

A mixture of ammonium chloride and slaked lime is heated.

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12. Write equations for the following reactions

:

Aluminium nitride and water.

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13. Name the substance used for drying ammonia.

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14. Write an equation to illustrate the reducing nature of ammonia.

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

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16. What is observed when excess of ammonia is passed through an aqueous solution of lead nitrate ?

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

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18. Give one example of a reaction between two gases which produces a solid compound.

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19. Write a balanced equation for a reaction in which ammonia is oxidised by: a metal oxide.

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20. Write a balanced equation for a reaction in which ammonia is oxidised by: a gas which is not oxygen.

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21. Ammonia can be obtained by adding water to Ammonium chloride.(T/F)

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22. Ammonia can be obtained by adding water to Ammonium nitrite.

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23. Explain how Ammonia can be obtained by adding water to Magnesium nitride.

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24. Ammonia can be obtained by adding water to Magnesium nitrate.

Watch Video Solution

25. Write the equation for the following reaction Aluminium nitride and water.

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26. Name the gas evolved in each case (formula is not acceptable). The gas that can be oxidised to sulphur.

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27. Write a fully balanced equation for the following case : Magnesium nitride is treated with warm water.

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28. Complete the blanksa] to to e] in the passage given , using the following words . [Ammonium ,reddish brown,hydroxyl,nitrogen dioxide ,ammonia ,dirty green alkaline , acidic].In the presence of a catalyst , nitrogen & hydrogen combine to give a] _____ gas. When the same gasispassed through water ,it formsa soln ,which will be b]_____ in nature & will contain the ions c]___& d]___.e]A ___ coloured ppt . of iron [II] hydroxide is formed when the above soln is added to iron [II] sulphate soln.

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29. 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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30. What is observed when

Glass rod dipped in ammonium hydroxide is

brought near to the mouth of the concentrated hydrochloric acid bottle.

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31. The questions below are related to the manufacture of ammonia.

Name the process.

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32. The questions below are related to the manufacture of ammonia.

In what ratio must the reactants be taken?

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33. The questions below are related to the manufacture of ammonia.

Name the catalyst used.

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34. The questions below are related to the manufacture of ammonia.

Give the equation for the manufacture of ammonia.

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35. 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.

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36. 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.

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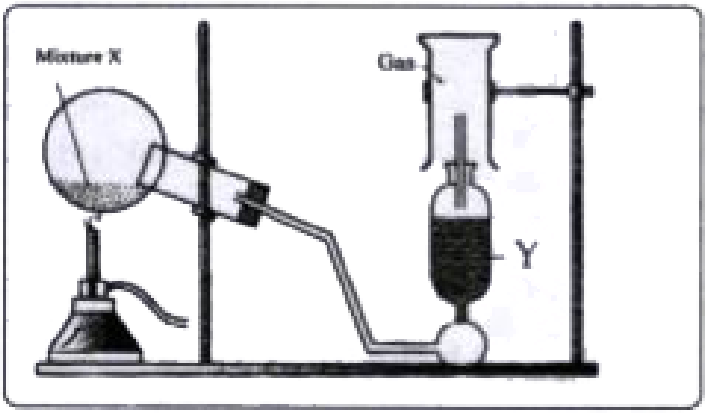
37. The diagram shows an experimental set up for the laboratory preparation of a pungent smelling gas. The gas is alkaline in nature.



Name the gas collected in the jar.

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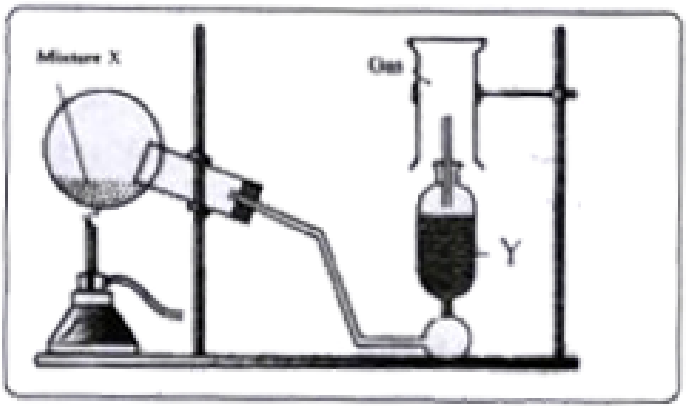
38. The diagram shows an experimental set up for the laboratory preparation of a pungent smelling gas. The gas is alkaline in nature.



Write the balanced equation for the above preparation.

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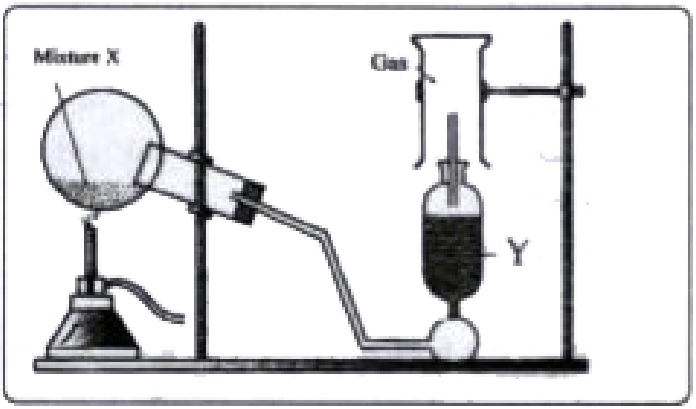
39. The diagram shows an experimental set up for the laboratory preparation of a pungent smelling gas. The gas is alkaline in nature.



How is the gas being collected ?

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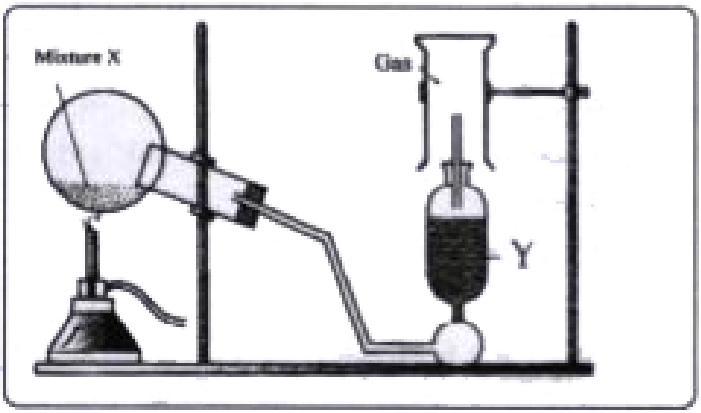
40. The diagram shows an experimental set up for the laboratory preparation of a pungent smelling gas. The gas is alkaline in nature.



Name the drying agent used.

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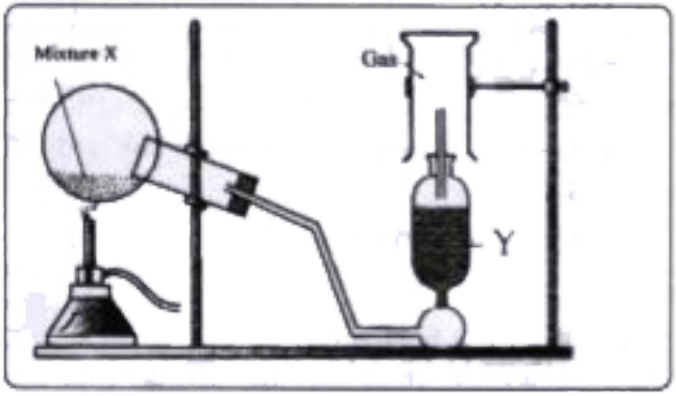
41. The diagram shows an experimental set up for the laboratory preparation of a pungent smelling gas. The gas is alkaline in nature.



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

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42. Write balanced chemical equations for each of the following:

When excess of ammonia is treated with chlorine.

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43. Name the gas in the following: The gas produced when excess ammonia reacts with chlorine.

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44. Some word/words are missing in the following statement. You are required to rewrite the statement in the correct form using the appropriate word/words:

Magnesium nitride reacts with water to liberate ammonia.

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45. Give balanced equation for the following reaction : Ammonia and Oxygen in the presence of a catalyst.

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46. The following questions are based on the preparation of ammonia gas in the laboratory :

Explain why ammonium nitrate is not used in the preparation of ammonia.

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47. The following questions are based on the preparation of ammonia gas in the laboratory :

Name the compound normally used as a drying agent during the process.

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48. The following questions are based on the preparation of ammonia gas in the laboratory :

How is ammonia gas collected?

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49. The following questions are based on the preparation of ammonia gas in the laboratory :

Explain why it is not collected over water.

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

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51. Choose the most appropriate answer from the following options :

Nitrogen gas can be obtained by heating :

A. Ammonium nitrate.

B. Ammonium nitrite.

C. Magnesium nitride.

D. Ammonium chloride.

Answer:

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52. Give balanced equation for the following:

Reduction of hot Copper(II) oxide to copper using ammonia gas.

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53. Copy and complete the following table relating to important industrial process:

Name of the process	Temperature	Catalyst	Equation for the catalyzed reaction
Haber's process			

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54. Identify : An alkaline gas which produces dense white fumes when reacted with HCl gas .

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55. Fill in the blank from the choices given within brackets :

Ammonia gas is collected by ..... (an upward displacement of air, a downward displacement of water, a downward displacement of air)

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56. Write balanced equation for the following:

Action of warm water on magnesium nitride.

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57. State your observation in the following case: When calcium hydroxide is heated with ammonium chloride crystals.

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58. Name the other ion formed when ammonia dissolves in water.

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59. Give one test that can be used to detect the presence of the ion produced.

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60. Select from the list the gas that matches the description given in the following case :

(ammonia, ethane, hydrogen chloride, hydrogen sulphide, ethyne)

This gas is used as a reducing agent in reducing copper oxide to copper.

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61. State one relevant observation for the following:

When ammonia gas is burnt in an atmosphere of excess oxygen.

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62. Identify the acid which matches the following description.

The acid which is prepared by catalytic oxidation of ammonia.

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63. Give balanced chemical equations for each of the following:

Lab preparation of ammonia using an ammonium salt.

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64. Give balanced chemical equations for each of the following:

Reaction of ammonia with excess chlorine.

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65. Give balanced chemical equations for each of the following:

Reaction of ammonia with sulphuric acid.

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66. Write balanced chemical equation for the following: Action of warm water on AIN.

Watch Video Solution

67. Name the gas evolved when the following mixtures are heated :

Calcium hydroxide and Ammonium chloride.

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68. Name the gas evolved when the following mixtures are heated :

Sodium nitrite and Ammonium chloride.

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69. Write balanced chemical equations for each of the following:

When excess of ammonia is treated with chlorine.

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70. Write balanced chemical equations for each of the following:

An equation to illustrate the reducing nature of ammonia.

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71. Write balanced chemical equations for each of the following:

An equation to illustrate the reducing nature of ammonia.

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72. Write a balanced chemical equation for each of the following:

Laboratory preparation of ammonia from ammonium chloride.

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73. State one relevant observation for the following reaction :

Burning of ammonia in air.

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74. Certain blank spaces are left in the following table and these are labelled as A, B and C. Identify each of them.

Lab preparation of	Reactants used	Products formed	Drying agent	Method of collection
NH_3 gas	A	$Mg(OH)_2NH_3$	B	C

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75. Give a balanced chemical equation for the following:

Catalytic oxidation of Ammonia.

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76. Write the balanced chemical equation to prepare ammonia gas in the laboratory by using an alkali.

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77. Why is ammonia gas not collected over water?

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