



CHEMISTRY

BOOKS - EVERGREEN CHEMISTRY

(ENGLISH)

STUDY OF COMPOUNDS - STUDY OF HYDROGEN CHLORIDE (HCL)

Questions

1. Hydrogen chloride gas cannot be dried over quick lime Give reason.



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2. Choose the correct answer from the options given below:

Hydrogen chloride gas being highly soluble in water is dried by:

A. Anhydrous calcium chloride

B. Phosphorous pentaoxide

C. Quick lime

D. Concentrated sulphuric acid

Answer: D



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3. The following questions are pertaining to the laboratory preparation of hydrogen chloride gas :

Write the equation for its preparation mentioning the condition required.



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4. The following questions are pertaining to the laboratory preparation of hydrogen chloride gas :

Name the drying agent used and justify your choice.



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5. The following questions are pertaining to the laboratory preparation of hydrogen chloride gas :

State a safety precaution you would take during the preparation of hydrochloric acid.



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6. In the laboratory preparation of hydrochloric acid, HCl gas is dissolved in water.

Draw a diagram to show the arrangement used for the absorption of HCl in water.



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7. In the laboratory preparation of hydrochloric acid, HCl gas is dissolved in water. Why is such an arrangement necessary? Give two reasons.



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8. In the laboratory preparation of hydrochloric acid, HCl gas is dissolved in water.

Write the chemical equations for the laboratory preparation of HCl gas when the reactants are:

(A) below $200^{\circ} C$ (B) above $200^{\circ} C$



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9. Hydrogen chloride gas dissolves in toluene (an organic liquid hydrocarbon). But this

solution does not change blue litmus red.

Why?



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10. Fill in the blank from the choices given in brackets:

Potassium sulphite on reacting with hydrochloric acid releases gas. (Cl_2 , SO_2 , H_2S)



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11. Write balance chemical equation for the action of dilute hydrochloric acid on iron (II) sulphide.



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12. State your observation when:

Dilute hydrochloric acid is added to lead nitrate and the mixture is heated.



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13. State your observation when:

Dilute hydrochloric acid is added to copper carbonate.



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14. Write equations for the following:

Dilute hydrochloric acid and sodium thiosulphate.



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15. State your observation when:

Dilute hydrochloric acid is added to MnO_2



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16. State your observation when:

Copper sulphate is treated with dilute hydrochloric acid.



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17. State your observation when:

A few drops of dilute hydrochloric are added to silver nitrate solution followed by the addition of ammonium hydroxide.



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18. State your observation in each of the following cases :

(i) When dilute hydrochloric acid is added to sodium carbonate crystals.





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19. Write balanced equations for the reaction of dilute hydrochloric acid with iron.



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20. Write balanced equations for the reaction of dilute hydrochloric acid with each of the following: sodium hydrogencarbonate.



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21. Write balanced equations for the reaction of dilute hydrochloric acid with each of the following: iron(II) sulphide.



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22. Write balanced equations for the reaction of dilute hydrochloric acid with each of the following: sodium sulphite.



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23. Write balanced equations for the reaction of dilute hydrochloric acid with each of the following: sodium thiosulphate solution.



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24. Aqua regia is a mixture of

A. Dilute hydrochloric acid and concentrated nitric acid

B. Concentrated hydrochloric acid and dilute nitric acid

C. Concentrated hydrochloric acid [1 part) and concentrated nitric acid [3 parts]

D. Concentrated hydrochloric acid [3 parts) and concentrated nitric acid [1 part]

Answer:



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25. By the addition of only one solution how would you distinguish between dilute hydrochloric acid and dilute nitric acid ?



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Questions For Practice

1. Write the reactions between common salt and concentrated sulphuric acid

below $200^{\circ}C$



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2. Write the reaction between aluminium hydroxide and dilute sulphuric acid



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3. Name the acid used for the preparation of hydrogen chloride gas in the laboratory. Why is this particular acid preferred to other acids?



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4. Name the drying agent:

which is used in drying hydrogen chloride gas.



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5. Name the drying agent:

which is used in drying hydrogen chloride gas.



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6. Draw a neat labelled diagram for the preparation of hydrogen chloride gas in the laboratory. Write the equation involved in the reaction.



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7. Calcium oxide and phosphorus pentoxide are good drying agents but they are not employed to dry hydrogen chloride gas. Give reasons for each.





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8. What is the purpose of using a funnel while preparing hydrochloric acid from hydrogen chloride gas?



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9. How does density of hydrogen chloride gas compare with the density of air at the same temperature?



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10. When the stopper of a bottle full of hydrogen chloride gas is opened there are fumes in air? Explain why?



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11. Write the main conclusions drawn from the observations of fountain experiment with hydrogen chloride.



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12. Which one of Na, Cu, Zn, Fe, Mg will not liberate hydrogen gas from hydrochloric acid?



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13. Hydrogen chloride dissolves in water, forming an acidic solution.

Name the experiment which demonstrates that hydrogen chloride is highly soluble in water.



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14. Hydrogen chloride dissolves in water, forming an acidic solution.

Give two distinct tests (apart from using an indicator) you would carry out with this solution to illustrate the typical properties of an acid.



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15. Name the chemical in which gold can be dissolved.



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16. Write the reaction of hydrochloric acid with sodium thiosulphate, and name the products.



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17. A colourless gas X is produced when egg shell is treated with a solution Y. The gas X turns lime water milky. What are X and Y?



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18. A gas X is formed when a substance Y is heated with concentrated sulphuric acid. The gas X turns wet blue litmus paper red and gives dense white fumes with ammonia.

Write balanced chemical equation between Y and conc. H_2SO_4



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19. A gas X is formed when a substance Y is heated with concentrated sulphuric acid. The gas X turns wet blue litmus paper red and gives dense white fumes with ammonia.

Write balanced chemical equation for the reaction between gas X and ammonia.



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20. A gas X is formed when a substance Y is heated with concentrated sulphuric acid. The gas X turns wet blue litmus paper red and gives dense white fumes with ammonia.

Write balanced chemical equation for the reaction between gas X and ammonia.



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21. Write balanced chemical equation and name the main product in each case when

hydrochloric acid reacts with the following:

Ammonia



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22. Write balanced chemical equation and name the main product in each case when hydrochloric acid reacts with the following:

Magnesium



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23. Write balanced chemical equation and name the main product in each case when hydrochloric acid reacts with the following:

Sodium carbonate



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24. Write balanced chemical equation and name the main product in each case when hydrochloric acid reacts with the following:

Silver nitrate solution





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25. Write balance chemical equation for the action of dilute hydrochloric acid on iron (II) sulphide.



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26. Write balanced chemical equations for the following reactions of:

Dilute hydrochloric acid and sodium sulphite.



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27. Write balanced chemical equations for the following reactions of:

The preparation of hydrogen chloride from sodium chloride and sulphuric acid. State whether the sulphuric acid should be concentrated or dilute.



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28. Write balanced chemical equations for the following reactions of:

The reaction of hydrogen chloride with ammonia.



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29. Write equations for the following:

Dilute hydrochloric acid and lead nitrate.



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30. (i) What must be added to sodium chloride to obtain hydrogen chloride?

(ii) Write the equation for the reaction which takes place in (i) above.

(iii) What would you observe when hydrogen chloride mixes with ammonia?



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31. Write a test to distinguish between:
hydrogen chloride and carbon dioxide



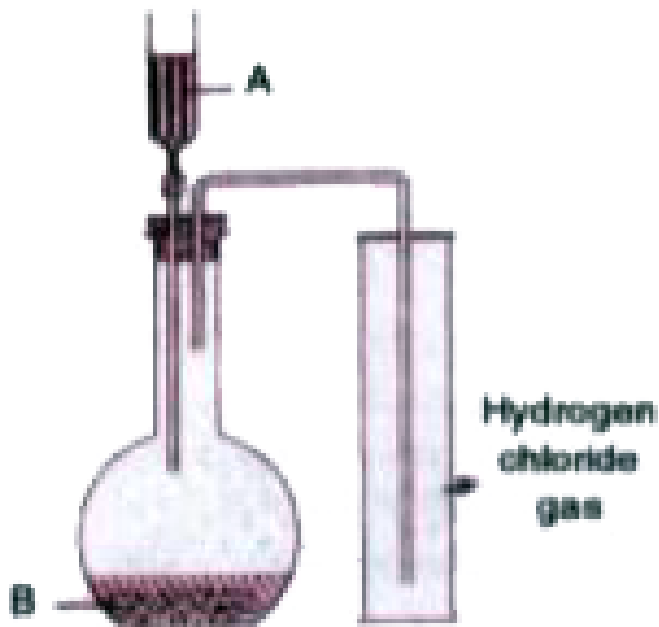
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32. Give a chemical test to distinguish between dilute sulphuric acid and dilute hydrochloric acid.



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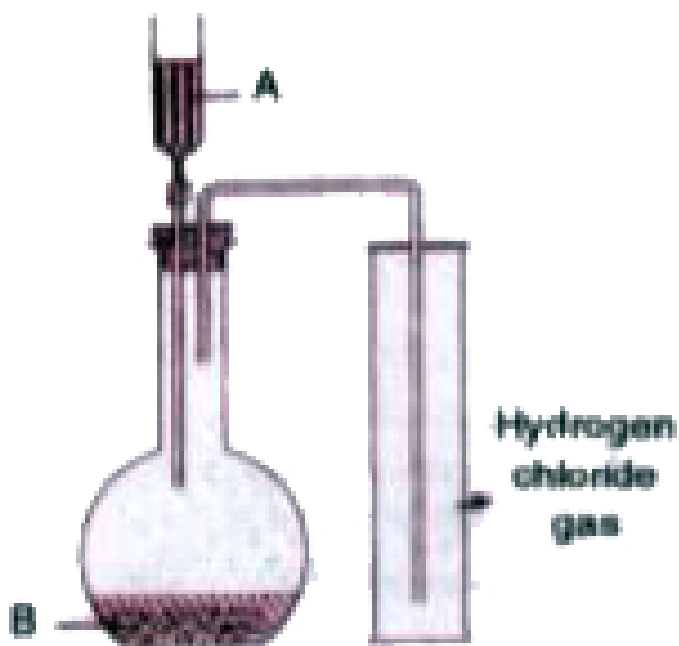
33. The diagram shows an apparatus for the laboratory preparation of hydrogen chloride.



Identify A and B.

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34. The diagram shows an apparatus for the laboratory preparation of hydrogen chloride.

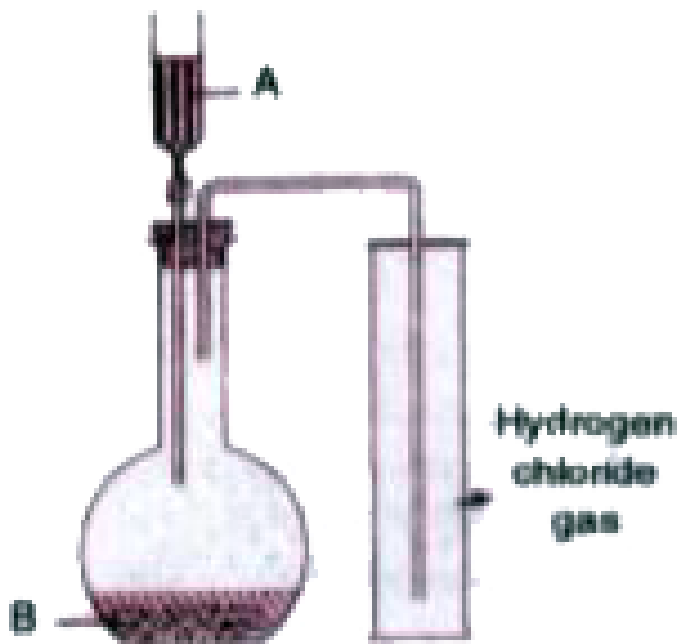


How would you check whether or not the gas jar is filled with hydrogen chloride ?



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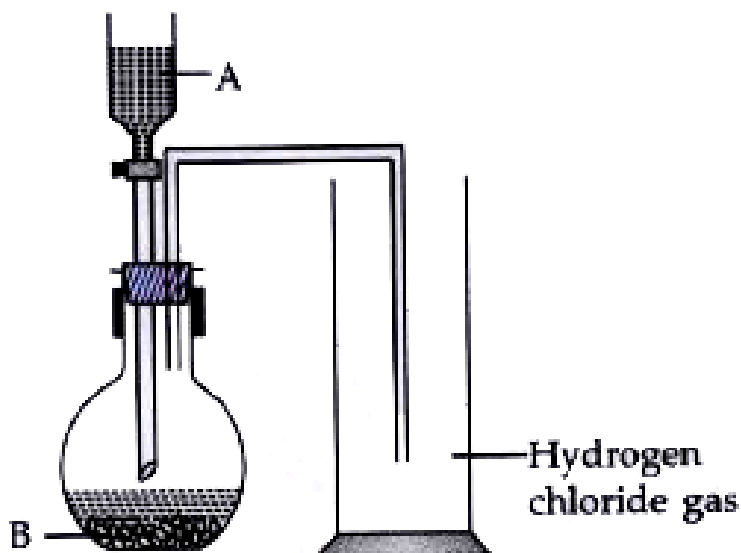
35. The diagram shows an apparatus for the laboratory preparation of hydrogen chloride.



How would you check whether or not the gas jar is filled with hydrogen chloride ?

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36. The diagram shows an apparatus for the laboratory preparation of hydrogen chloride.



What does the method of collection tell you about Hydrogen the density of hydrogen chloride?



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