



# CHEMISTRY

## BOOKS - EVERGREEN CHEMISTRY (ENGLISH)

### SULPHURIC ACID

#### Work Sheet 1

1. Gas released during roasting of sulphide ores.



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2. A substance used to remove excess of chlorine.

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3. Property of sulphur dioxide due to which it is used for refining of sugar.

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4. Sulphur dioxide turns acidified potassium dichromate .....

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5. Zinc sulphide on reacting with hydrochloric acid releases .....gas.



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6. A gas which turns lead acetate paper black.



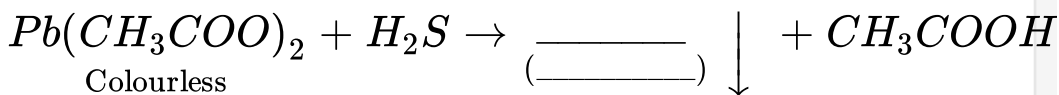
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7. Colour of precipitates obtained when cadmium chloride reacts with hydrogen sulphide.



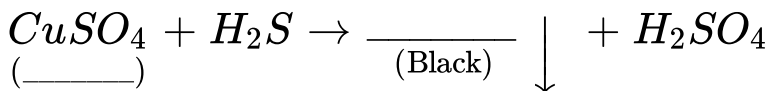
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8. Complete the following reaction. Also give the colour change :



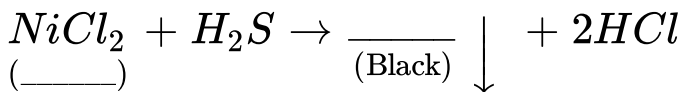
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9. Complete the following reaction. Also give the colour change :



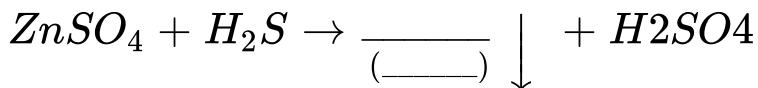
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10. Complete the following reaction. Also give the colour change :



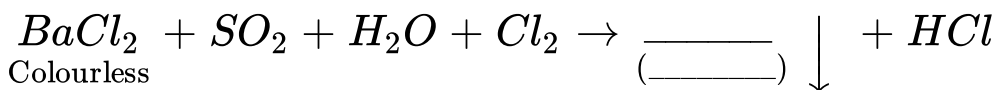
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11. Complete the following reaction. Also give the colour change :



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12. Complete the following reaction. Also give the colour change :



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13. An element 'X' having green colour and with seven molecules of water of crystallisation was heated strongly to leave a solid residue "Y". This Y reacts with conc. nitric acid to form a nitrate 'Z'. This nitrate reacted with hydrochloric acid to form a chloride 'A'. When hydrogen sulphide was passed into its aqueous solution a black compound B was precipitated.

Identify X, Y, Z, A and B and also give the equation involved.

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**14.** Fill in the blanks :

..... gas occurs in many spring water, and is an important reducing agent.

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**15.** Fill in the blanks :

..... gas decolourises potassium permanganate solution



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**16.** Fill in the blanks :

..... gas dissolves in water to form sulphuric acid.



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**17.** Fill in the blanks :

..... gas is also known as sulphuretted hydrogen.



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**18.** Fill in the blanks :

..... acid is also known as oil of vitriol.



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## Work Sheet 2

**1.** An acid which on dehydration will evolve both carbon monoxide as well as carbon dioxide gas



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**2.** When water is added to oleum the acid formed is



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3. A common term used for conc. sulphuric acid



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4. A substance used to absorb arsenic impurity



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5. Promoter used in Contact process



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6. Sugar charcoal is formed by dehydration of

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7. The acid anhydride of sulphuric acid is

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8. Dehydration of ethanol forms a gas

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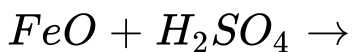
9. Oleum acid is formed when sulphuric acid absorbs.

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10. Full form of TNT is

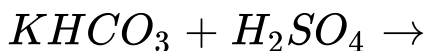
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11. Complete the following reaction ,



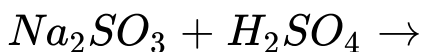
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12. Complete the following reaction ,



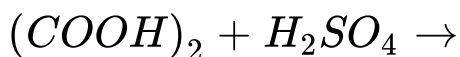
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13. Complete the following reaction ,



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14. Complete the following reaction ,



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15. Complete the following reaction ,



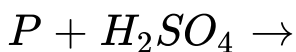
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16. Complete the following reaction ,



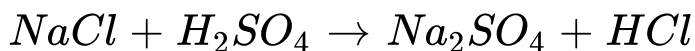
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17. Complete the following reaction ,



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18. Identify the property of sulphuric acid involved in the following reactions :



It behaves as a .....

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19. Identify the property of sulphuric acid involved in the following reactions :



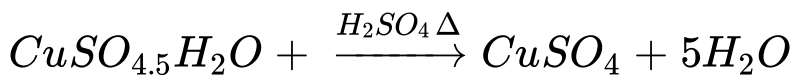
It behave as a .....





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20. Identify the property of sulphuric acid involved in the following reactions :

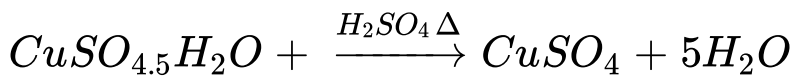


It behaves as a .....



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21. Identify the property of sulphuric acid involved in the following reactions :



It behaves as a.....

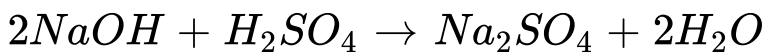


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**22.** Identify the property of sulphuric acid involved in the following reactions :



It behaves as a .....



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**23.** A given oily liquid when added to water showed the following properties :

The reaction occurring was exothermic and the solutions forms a white precipitate, when barium

chloride solution was added.

1. Name the oily liquid .

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24. A given oily liquid when added to water showed the following properties :

The reaction occurring was exothermic and the solutions forms a white precipitate, when barium chloride solution was added.

Give an equation for its reaction with barium chloride solution.

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25. A given oily liquid when added to water showed the following properties :

The reaction occurring was exothermic and the solution forms a white precipitate, when barium chloride solution was added.

When the resulting solution was electrolysed using platinum electrode. Name the product formed at each electrode.



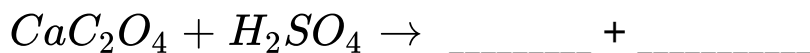
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1. Summary of all chemical equations :



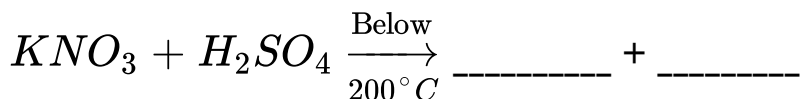
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2. Summary of all chemical equations :



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3. Summary of all chemical equations :



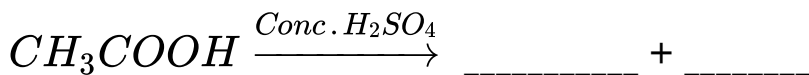
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4. Summary of all chemical equations :



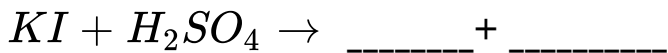
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5. Summary of all chemical equations :



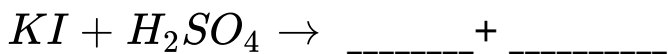
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6. Summary of all chemical equations :



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7. Summary of all chemical equations :



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8. Summary of all chemical equations :



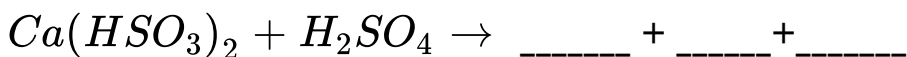
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9. Summary of all chemical equations :



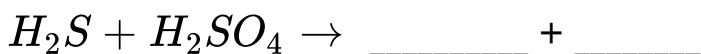
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10. Summary of all chemical equations :



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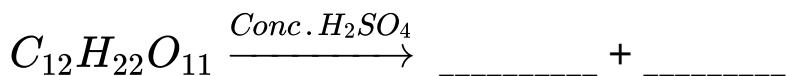
11. Summary of all chemical equations :





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12. Summary of all chemical equations :



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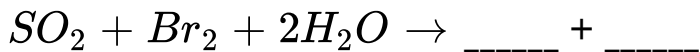
13. Summary of all chemical equations :



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14. Summary of all chemical equations :



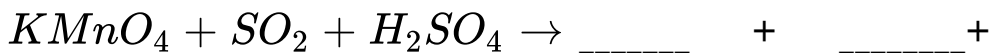
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15. Summary of all chemical equations :



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16. Summary of all chemical equations :

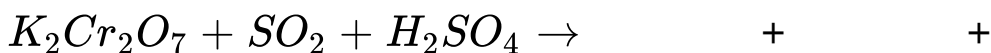


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17. Summary of all chemical equations :



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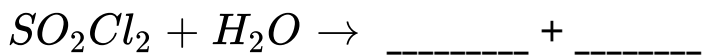
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18. Summary of all chemical equations :



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19. Summary of all chemical equations :



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20. Summary of all chemical equations :



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[Additional Questions For Practice](#)

1. Explain the following :

Why the wooden shelves on which concentrated sulphuric acid bottles are kept stained black ?



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2. Explain the following :

Why concentrated sulphuric acid is always added to water and not the water to concentrated sulphuric acid? Why the mixture gets hot ?



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3. How sulphuric acid is prepared industrially by Contact process ? Support your answer by writing fully balanced chemical equations.



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4. Why sulphur trioxide formed in this process is not absorbed directly in water?



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5. Why vanadium pentoxide is considered as a better catalyst than platinised asbestos ?



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6. Why heating of catalyst is discontinued the moment the oxidation of sulphur dioxide takes place ?



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7. How does sulphuric acid react with the following ? State experimental conditions and write fully balanced chemical equation. (i) Copper oxide (ii) Iron (iii) Hydroxide (iv) Sodium bicarbonate (v) Lead acetate

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8. What will you observe when concentrated sulphuric acid is poured on (i) sugar crystals (ii) copper sulphate crystals ?

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9. Give a chemical test to distinguish between dilute sulphuric acid and conc. sulphuric acid.

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**10.** Name the following:

An ore other than zinc blende which on roasting gives sulphur dioxide.



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**11.** Give one similarity and two differences between bleaching action of sulphur dioxide and chlorine



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**12.** Write the equation for the laboratory preparation of sulphur dioxide from sodium sulphite.





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**13.** How is sulphur dioxide gas collected ?



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**14.** What does the method of collecting tell you about the density of sulphur dioxide ?



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**15.** What do you see when sulphur dioxide is bubbled through an acidified potassium dichromate solution ?



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**16.** Write an equation in each case to show the action of sulphur dioxide as an acid anhydride



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**17.** When chlorine is involved in bleaching, what is the type of chemical reaction that changes the coloured compound to a colourless one ?



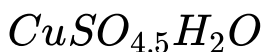
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18. What is the reason for not using chlorine to bleach wool?

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19. Name the products formed when hot and concentrated sulphuric acid reacts with the following:

(a) Sulphur (b) NaOH (c) Sugar (d) Carbon (e)



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**20.** Give reasons for the following:

Sulphuric acid form two types of salts with NaOH.



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**21.** Give reasons for the following:

Brisk effervescence is seen when oil of vitriol is added to sodium carbonate.



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**22.** Give reasons for the following:

Red brown vapours are produced when concentrated

sulphuric acid is added to potassium bromide



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**23.** Give reasons for the following:

A piece of wood becomes black when concentrated sulphuric acid is poured on it.



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**24.** What property of conc.  $H_2SO_4$  is made use of in each of the following cases ? Give an equation for the reaction in each case :

(a) hydrogen sulphide gas is passed through concentrated sulphuric acid.

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25. What property of conc.  $H_2SO_4$  is made use of in each of the following cases ? Give an equation for the reaction in each case :

in the preparation of sulphur dioxide by warming a mixture of conc. sulphuric acid and copper turnings.

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26. What property of conc.  $H_2SO_4$  is made use of in each of the following cases ? Give an equation for the reaction in each case :

as a source of hydrogen by diluting it and adding a strip of magnesium.



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27. What property of conc.  $H_2SO_4$  is made use of in each of the following cases ? Give an equation for the reaction in each case :

in the preparation of CO from HCOOH.



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**28.** What property of conc.  $H_2SO_4$  is made use of in each of the following cases ? Give an equation for the reaction in each case :

in the production of HCl gas when it reacts with a chloride.

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**29.** Why is

(a) concentrated sulphuric acid kept in air tight bottles ?

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30. Why is

$H_2SO_4$  not a drying agent for  $H_2S$  ?



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31. Why is

sulphuric acid used in the preparation of HCl and  $HNO_3$  ? Give equations in both cases.



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

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**33.** Give a chemical test to distinguish between dilute sulphuric acid and conc. sulphuric acid.

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**34.** Sulphuric acid is manufactured by Contact process :

Give two balanced equations to obtain  $SO_2$  by this process

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**35.** Sulphuric acid is manufactured by Contact process

:

Give the conditions for the oxidation of  $SO_2$ .

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**36.** Sulphuric acid is manufactured by Contact process

:

Why  $H_2SO_4$  is not obtained by directly reacting  $SO_3$  with water ?

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**37.** Sulphuric acid is manufactured by Contact process

:

Name the chemical used to dissolve  $SO_3$  and also name the product formed.

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**38.** Sulphuric acid is manufactured by Contact process

:

Give all the main reactions of this process.

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**39.** Give two balanced reactions of each type to show the following properties of sulphuric acid :

Oxidising agent

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**40.** Give two balanced reactions of each type to show the following properties of sulphuric acid :

Non-volatile nature

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**41.** Give two balanced reactions of each type to show the following properties of sulphuric acid :

Acidic nature

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**42.** Give two balanced reactions of each type to show the following properties of sulphuric acid :

Hygroscopic nature.

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## Questions From Previous Icse Board Papers 2005

1. A. Sodium sulphite and dilute sulphuric acid.
- B. Sodium chloride and concentrated sulphuric acid.
- C. Potassium nitrate and concentrated sulphuric acid.
- D. Oleum and water : Which of the above pairs are used in the laboratory preparation/manufacture of :

- A. Nitric acid
- B. Hydrogen chloride
- C. Sulphur dioxide
- D. Sulphuric acid.

**Answer:**



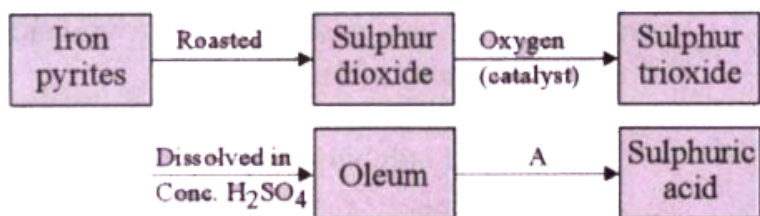
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2. State your observations when conc. sulphuric acid is added to sugar crystals.



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3. (i) The flow chart below shows steps in the Contact process or the manufacture of sulphuric acid :



(ii) Write equations for :



(1) The roasting of iron pyrites.

(2) Formation of sulphur trioxide from sulphur dioxide.(III)

(3) Platinum was the catalyst used in the conversion of sulphur dioxide to sulphur trioxide. What is the common name of the catalyst used nowadays ?

(4) Give the formula of oleum.

(5) Name the substance which is added to change oleum into sulphuric acid.



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Questions From Previous Icse Board Papers 2006

1. Write balanced equations for the following:

(i) Potassium hydrogen carbonate and dilute sulphuric acid.

(ii) Sodium nitrate and conc. sulphuric acid.



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2. The bleaching action of chlorine is permanent, whereas the bleaching action and sulphur dioxide is temporary. In this context :

(i) Give a reason, why chlorine is not used to bleach silk.

(ii) State similarity in the use of sulphur dioxide and

chlorine as bleaching agents.

(iii) Explain the bleaching action of sulphur dioxide with the help of chemical equations. (iv) Why is bleaching by sulphur dioxide only temporary?



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3. A, B, C and D summarize the properties of sulphuric acid depending whether it is dilute or concentrated.

Choose the property (A, B, C or D) depending on which is relevant to each preparation (i) to (iii). A.

Dilute acid (typical acid properties) B. Non-volatile acid C. Oxidising agent

D. Dehydrating agent

- (i) Preparation of hydrogen chloride (ii) Preparation of ethene from ethanol
- (iii) Preparation of copper sulphate from copper oxide.

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4. Name the process used for the large scale manufacture of sulphuric acid.

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5. Which property of sulphuric acid accounts for its use as a dehydrating agent ?



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6. Concentrated sulphuric acid is both an oxidising agent and a non-volatile acid. Write one equation each to illustrate the above mentioned properties of sulphuric acid.



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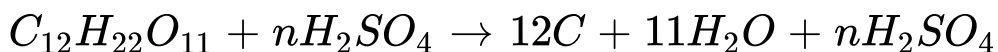
7. Give reason for the following sulphur dioxide is used as an antichlor.



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1. Some properties of sulphuric acid are listed below.

Choose the property A, B, C or D which is responsible for the reactions (i) to (v). Some properties may be repeated :



A. Acid

B. Dehydrating agent

C. Non-volatile acid

D. Oxidising agent

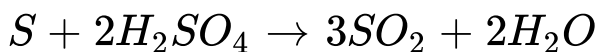
**Answer:**



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2. Some properties of sulphuric acid are listed below.

Choose the property A, B, C or D which is responsible for the reactions (i) to (v). Some properties may be repeated :



A. Acid

B. Dehydrating agent

C. Non-volatile acid

D. Oxidising agent

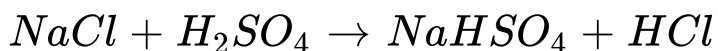
**Answer:**



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**3.** Some properties of sulphuric acid are listed below.

Choose the property A, B, C or D which is responsible for the reaction :



A. Acid

B. Dehydrating agent

C. Non-volatile acid

D. Oxidising agent



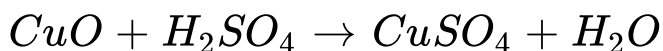
**Answer:**



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**4.** Some properties of sulphuric acid are listed below.

Choose the property A, B, C or D which is responsible for the reaction:



- A. Acid
- B. Dehydrating agent
- C. Non-volatile acid
- D. Oxidising agent

**Answer:**



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5. Some properties of sulphuric acid are listed below.

Choose the property A, B, C or D which is responsible

for the reactions (i) to (v). Some properties may be

repeated :



A. Acid

B. Dehydrating agent

C. Non-volatile acid

D. Oxidising agent

**Answer:**

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6. Name the acid formed when sulphur dioxide dissolves in water

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7. Name the gas released when sodium carbonate is added to a solution of sulphur dioxide.

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8. What are the two necessary conditions for the direct combination of sulphur dioxide and chlorine forming sulphuryl chloride ?

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9. State the property of sulphur dioxide which causes potassium permanganate to change its colour from purple to colourless.

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10.  $\text{HCl}$ ,  $\text{HNO}_3$  and  $\text{H}_2\text{SO}_4$  are the formulae of three compounds .

Which of these compounds has the highest boiling point and which has the lowest ?



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11. Dilute hydrochloric acid and dilute sulphuric acid are both colourless solutions. How will the addition of barium chloride solution to each help to distinguish between the two ?



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## Questions From Previous Icse Board Papers 2008

1. What is the property of concentrated sulphuric acid which allows it to be used in the preparation of hydrogen chloride and nitric acid ?

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2. What property of concentrated sulphuric acid is in the reaction when sugar turns black in its presence ?

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3. Write the equations for the following reactions :

(i) dilute sulphuric acid and barium chloride

(ii) dilute sulphuric acid and sodium sulphide (iii)

sulphur dioxide and water.



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4. Which of the following reactions is used to prepare sulphuryl chloride ?

A. Adding concentrated sulphuric acid to a chloride

B. Passing sulphur dioxide through a solution of chlorine

C. Reacting dry sulphur dioxide and dry chlorine

D. Reacting dilute sulphuric acid with a solution of chlorine

**Answer:**



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**Questions From Previous Icse Board Papers 2009**



1. Name the gas evolved in given case (formula is not acceptable). The gas produced by the action of concentrated sulphuric acid on sodium chloride



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## Questions From Previous Icse Board Papers 2010

1. Name the compound which is responsible for the green coloration when sulphur dioxide is passed through acidified potassium dichromate solution.



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2. State your observation for the following cases :

Moist blue litmus is introduced into a gas jar of sulphur dioxide.



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3. State your observation for the following cases :

Dry red rose petals are placed in the jar of sulphur dioxide.



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4. State your observation for the following cases :

Paper soaked in potassium permanganate solution is introduced into a jar of sulphur dioxide.



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5. Write the equation for each of the following reactions :

Sulphur is heated with concentrated sulphuric acid.



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6. Write the equation for each of the following reactions :

Concentrated sulphuric acid is poured over sugar.



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7. Write the equation for each of the following reactions :

Magnesium sulphate solution is mixed with barium chloride solution.



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8. Solution A is a sodium hydroxide solution Solution B is a weak acid. Solution C is dilute sulphuric acid.

Which solution will

liberate sulphur dioxide from sodium sulphite ?

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9. Solution A is a sodium hydroxide solution Solution B is a weak acid. Solution C is dilute sulphuric acid.

Which solution will

give a white precipitate with zinc sulphate solution ?

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**10.** Solution A is a sodium hydroxide solution Solution B is a weak acid. Solution C is dilute sulphuric acid.

Which solution will

contain solute molecules and ions ?



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## Questions From Previous Icse Board Papers 2011

**1.** Choose from the list of substances, as to what matches the description :

[Acetylene gas, aqua fortis, coke, brass, barium chloride, bronze, platinum).

An aqueous salt solution used for testing sulphate radical.

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2. What would you observe in the following ? Sugar crystals are added to a hard glass test tube containing concentrated sulphuric acid.

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3. Choose the correct answer from the options given below : When dilute sulphuric acid reacts with iron sulphide, the gas evolved is .....

- A. Hydrogen sulphide
- B. Sulphur dioxide
- C. Sulphur trioxide
- D. Vapour of sulphuric acid

**Answer:**

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4. Write balanced chemical equation for the following:

Action of dilute Sulphuric acid on Sodium Sulphite.

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5. With the help of equations, give an outline for the manufacture of sulphuric acid by the contact process.

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6. What property of sulphuric acid is shown by the reaction of concentrated sulphuric acid when heated with

(A) Potassium nitrate

(B) Carbon ?

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1. Name the gas in each of the following:

(i) A gas which turns acidified potassium dichromate clear green.

(ii) The gas produced on reaction of dilute sulphuric acid with a metallic sulphide.

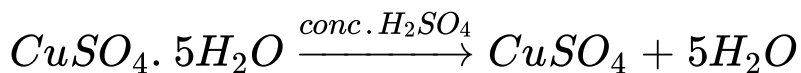


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2. Some properties of sulphuric acid are listed below.

Choose the role played by sulphuric acid as A, B, C, or

D which is responsible for the reaction.



- A. Dilute acid
- B. Dehydrating agent
- C. Non-volatile acid
- D. Oxidising agent

**Answer:**

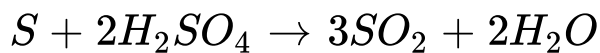


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**3.** Some properties of sulphuric acid are listed below.

Choose the property A, B, C or D which is responsible

for the reactions (i) to (v). Some properties may be repeated :



- A. Dilute acid
- B. Dehydrating agent
- C. Non-volatile acid
- D. Oxidising agent

**Answer:**



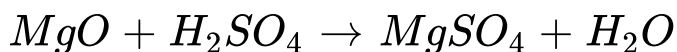
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4. Some properties of sulphuric acid are listed below.

Choose the role played by sulphuric acid as A, B, C, or

D which is responsible for the reactions (i) to (u).

Some role/s may be repeated.



A. Dilute acid

B. Dehydrating agent

C. Non-volatile acid

D. Oxidising agent

**Answer:**

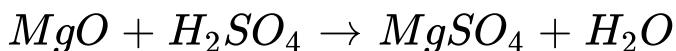


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5. Some properties of sulphuric acid are listed below.

Choose the role played by sulphuric acid as A, B, C, or

D which is responsible for the reactions.



A. Dilute acid

B. Dehydrating agent

C. Non-volatile acid

D. Oxidising agent

**Answer:**

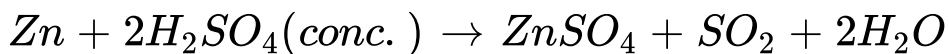


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6. Some properties of sulphuric acid are listed below.

Choose the role played by sulphuric acid as A, B, C, or

D which is responsible for the reactions.



A. Dilute acid

B. Dehydrating agent

C. Non-volatile acid

D. Oxidising agent

**Answer:**



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7. Give balanced equation for the following reaction :

Zinc sulphide and Dilute sulphuric acid.

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8. Identify the anion present in the following compound: Compound X on heating with copper turnings and concentrated sulphuric acid liberates a reddish brown gas.

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1. State one appropriate observation for the following: Concentrated sulphuric acid is added drop wise to a crystal of hydrated copper sulphate.

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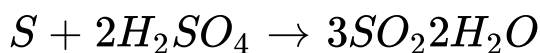
2. Give a chemical test to distinguish between the following pair of compounds:

Carbon dioxide gas and sulphur dioxide gas.

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

In the given equation, identify the role played by concentrated sulphuric acid :



- A. Non-volatile acid
- B. Oxidising agent
- C. Dehydrating agent
- D. None of the above

**Answer:**



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4. Give balanced equation for the following:

Dehydration of concentrated sulphuric acid with sugar crystals



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5. Identify the following substance : A dilute mineral acid which forms a white precipitate of barium sulphate when treated with barium chloride solution.



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1. Write balanced equation for the following:

Action of concentrated sulphuric acid on carbon.



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2. Distinguish between the following pair of compounds using test given within brackets : Sodium nitrate and sodium sulphite (using dilute sulphuric acid)



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3. State the conditions required for the following reaction to take place :

Any two conditions for the conversion of sulphur dioxide to sulphur trioxide.

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4. Give one equation each to show the following properties of sulphuric acid :

(i) Dehydrating property.

(ii) Acidic nature.

(iii) As a non-volatile acid.

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5. Name that gas has a characteristic rotten egg smell.



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6. State one relevant observation for the following:  
When hydrogen sulphide gas is passed through lead acetate solution.



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7. Identify the acid which matches the following description.

(i) The acid which produces sugar charcoal from sugar.

(ii) The acid on mixing with lead nitrate solution produces a white precipitate which is insoluble even on heating.



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8. (i) Give balanced chemical equations for the action of sulphuric acid on each of the following:

(1) Potassium hydrogen carbonate.

(2) Sulphur.' (ii) In the contact process for the manufacture of sulphuric acid give the equations for the conversion of sulphur trioxide to sulphuric acid.



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## Questions From Previous Icse Board Papers 2016

1. Write balanced chemical equation for the following:

Action of dilute Sulphuric acid on Sodium Sulphite.



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2. State your observations when conc. sulphuric acid is added to sugar crystals.

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3. Identify the gas evolved and give the chemical test in each of the following cases :

(i) Dilute hydrochloric acid reacts with sodium sulphite.

(ii) Dilute hydrochloric acid reacts with iron (II) sulphide.

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4. A, B, C and D summarize the properties of sulphuric acid depending on whether it is dilute or concentrated.

A = Typical acid property

B = Non-volatile acid

C = Oxidizing agent

D = Dehydrating agent

Choose the property (A, B, C or D) depending on which is relevant to each of the following:

(i) Preparation of Hydrogen chloride gas.

(ii) Preparation of Copper sulphate from copper oxide.

(iii) Action of conc. Sulphuric acid on Sulphur.



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## Questions From Previous Icse Board Papers 2017

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

Potassium sulphite on reacting with hydro chloric acid releases ..... gas. ( $Cl_2$ ,  $SO_2$ ,  $H_2S$ )



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2. Write a balanced chemical equation for the following:

Action of concentrated sulphuric acid on Sulphur.



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

State one relevant observation for the following reaction : Action of concentrated Sulphuric acid on hydrated copper sulphate.



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4. How will you distinguish between dilute hydrochloric acid and dilute sulphuric acid using lead nitrate solution?



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5. Write balanced chemical equations to show:

(i) The oxidizing action of conc. Sulphuric acid on Carbon.



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6. Write balanced chemical equations to show:

The behaviour of  $H_2SO_4$  as an acid when it reacts with Magnesium



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7. Write balanced chemical equation to show:

The dehydrating property of conc. Sulphuric acid with sugar



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8. Write balanced chemical equations to show how  $SO_3$  is converted to Sulphuric acid in the contact process.



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9. Fill in the blanks by selecting correct word/term given in the brackets.

The metal which does not react with water or dilute  $H_2SO_4$  but reacts with concentrated  $H_2SO_4$  is \_\_\_\_\_ (Al/Cu/Zn/Fe)



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## Questions From Previous Icse Board Papers 2018

1. Choose the correct answer from the options given below: The catalyst used in the Contact Process is :

A. Copper

B. Iron

C. Vanadium pentoxide

D. Manganese dioxide

**Answer:**



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2. Write a balanced chemical equation for the following: Action of concentrated sulphuric acid on carbon.



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3. Name the gas that is produced in the following case: Sulphur is oxidized by concentrated nitric acid.

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4. State why concentrated sulphuric acid is not used for drying ammonia gas

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5. Which property of sulphuric acid is shown by the reaction of concentrated sulphuric acid with :

(i) Ethanol

(ii) Carbon



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