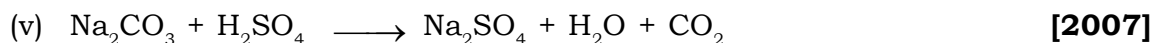
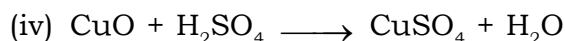
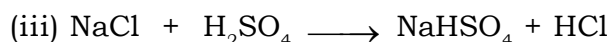
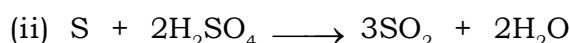
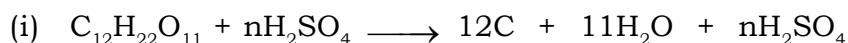


## SULPHURIC ACID Assignment Sheet

1. (a) What is the name of the process by which sulphuric acid is manufactured?  
Name the catalyst used in the process.  
(b) Complete the following sentence choosing the correct word from the brackets :  
Concentrated sulphuric acid is used in the laboratory preparation of nitric acid and hydrochloric acid because it is .....  
(less volatile / stronger) in comparison to these two acids. **[2003]**
  
2. (a) Name the catalyst which helps in the conversion of sulphur dioxide to sulphur trioxide.  
(b) In the Contact Process for the manufacture of sulphuric acid, sulphur trioxide is not converted to sulphuric acid by reacting it with water. Instead a two-step procedure is used. Write the equations for the two steps involved. **[2004]**
  
3. Write balanced equations for the following reactions :  
(a) Potassium hydrogen carbonate and dilute sulphuric acid.  
(b) Sodium nitrate and concentrated sulphuric acid. **[2005]**
  
4. A, B, C and D summarize the properties of sulphuric acid depending on whether it is dilute or concentrated. Choose the property (A, B, C or D) depending on which is relevant to each of the preparations (a) to (c).  
A. Dilute acid (typical acid properties)  
B. Non-volatile acid  
C. Oxidizing agent  
D. Dehydrating agent  
(a) Preparation of hydrogen chloride  
(b) Preparation of ethene from ethanol  
(c) Preparation of copper sulphate from copper oxide. **[2005]**
  
5. (a) Name the process used for the large scale manufacture of sulphuric acid.  
(b) Which property of sulphuric acid accounts for its use as a dehydrating agent?  
(c) Concentrated sulphuric acid is both an oxidizing agent and a non-volatile acid. Write one equation each to illustrate the above mentioned properties of sulphuric acid. **[2006]**
  
6. 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 Oxidizing agent



7. (a) HCl, HNO<sub>3</sub> and H<sub>2</sub>SO<sub>4</sub> are the formulae of three compounds. Which of these compounds has the highest boiling point and which has the lowest?  
 (b) 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? **[2007]**

8. Write the equations for the following reactions :

(a) Dilute sulphuric acid and barium chloride

(b) Dilute sulphuric acid and sodium sulphide **[2008]**

9. (a) What is the property of concentrated sulphuric acid which allows it to be used in the preparation of hydrogen chloride and nitric acid?  
 (b) What property of concentrated sulphuric acid is in action when sugar turns black in its presence? **[2008]**

10. Copy and complete the following table relating to important industrial process. Output refers to the product of the process not the intermediate steps. **[2008]**

Name of process	Inputs	Catalyst	Equation for catalysed reaction	Output
Contact Process	Sulphur dioxide + Oxygen			

11. Name the gas evolved [formula is not acceptable].  
 The gas that can be oxidised to sulphur. **[2009]**

12. Give the equation for:

(i) Heat on sulphur with conc. sulphuric acid.

(ii) Reaction of sugar with conc. sulphuric acid. **[2010]**

13. Give a balanced equation for the conversion of zinc oxide to zinc sulphate. **[2010]**

14. Select the correct answer from A, B, C -

A : Sodium hydroxide solution

B : A weak acid

C : Dilute sulphuric acid.

The solution which liberates sulphur dioxide gas, from sodium sulphite.

**[2010]**

15. (i) With the help of equations, give an outline for the manufacture of sulphuric acid by the Contact process.  
(ii) What property of sulphuric acid is shown by the reaction of concentrated sulphuric acid when heated with –  
(A) potassium nitrate (B) carbon [2011]
16. Name - The gas produced on reaction of dilute sulphuric acid with a metallic sulphide. [2012]
17. 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 v]. Some role/s may be repeated. A: Dilute acid B: Dehydrating agent C: Non-volatile acid D: Oxidising agent
- (i)  $\text{CuSO}_4 \cdot 5\text{H}_2\text{O} \xrightarrow{\text{conc. H}_2\text{SO}_4} \text{CuSO}_4 + 5\text{H}_2\text{O}$   
(ii)  $\text{S} + 2\text{H}_2\text{SO}_4 \xrightarrow{[\text{conc.}]} 3\text{SO}_2 + 2\text{H}_2\text{O}$   
(iii)  $\text{NaNO}_3 + \text{H}_2\text{SO}_4 \xrightarrow{[\text{conc.}], < 200^\circ\text{C}} \text{NaHSO}_4 + \text{HNO}_3$   
(iv)  $\text{MgO} + \text{H}_2\text{SO}_4 \rightarrow \text{MgSO}_4 + \text{H}_2\text{O}$   
(v)  $\text{Zn} + 2\text{H}_2\text{SO}_4 \xrightarrow{[\text{conc.}]} \text{ZnSO}_4 + \text{SO}_2 + 2\text{H}_2\text{O}$  [2012]
18. Give balanced equation for the reaction: Zinc sulphide & dilute sulphuric acid. [2012]
19. Identify the substance underlined : [2013]  
A dilute mineral acid which forms a white precipitate when treated with barium chloride solution.
20. Write balanced equations for the following  
Action of concentrated sulphuric acid on carbon. [2014]
21. Give one equation each to show the following properties of sulphuric acid:  
(i) Dehydrating property.  
(ii) Acidic nature.  
(iii) As a non-volatile acid. [2014]
22. (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. [2015]
23. Write balanced chemical equations for each of the following:  
(i) Action of dilute Sulphuric acid on Sodium sulphite. [2016]
24. State your observations when:  
Concentrated Sulphuric acid is added to sugar crystals. [2016]

25. 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. **[2016]**
26. Write a balanced chemical equation for each of the following :
- (i) Action of concentrated sulphuric acid on Sulphur.  
(ii) The oxidizing action on conc.Sulphuric acid on Carbon.  
(iii) The behavior of H<sub>2</sub>SO<sub>4</sub> as an acid when it reacts with Magnesium.  
(iv) The dehydrating property of conc.Sulphuric acid with sugar. **[2017]**
27. State one relevant observation for each of the following reactions :  
Action of concentrated Sulphuric acid on hydrated copper sulphate. **[2017]**
28. Write balanced chemical equations to show how SO<sub>3</sub> is converted to Sulphuric acid in the Contact process. **[2017]**

