



CHEMISTRY

BOOKS - EVERGREEN CHEMISTRY (ENGLISH)

STUDY OF COMPOUNDS - SULPHURIC ACID

Questions

1. Write equations for - i] Dil . $H_2SO_4^-$ producing H_2 .ii]

Between $Pb(NO_3)_2$ soln & dil , H_2SO_4 .



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2. Explain how a reagent chosen from ,- ammonium hydroxide , barium chloride , sodium chloride , sodium hydroxide, sulphuric acid and nitric acid enables to distinguish between the two acids mentioned therein.

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3. State the substance /s reacted with dilute or concentrated sulphuric acid to form the following gases:

(i) Hydrogen

(ii) Carbon dioxide .State whether the acid used in each case is dilute or concentrated.

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4. Write the equations for the lab , preparation of [i] Na_2SO_4 using dil , H_2SO_4 . [ii] $PbSO_4$ using dil H_2SO_4 .

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5. State the name of the process by which H_2SO_4 is manufactured . Name the catalyst used.

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6. 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.



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7. Write the equations for the laboratory preparation of the following salts using sulphuric acid:

(i) Copper sulphate from copper

(ii) Lead sulphate from lead nitrate



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8. 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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9. In the Contact process , sulphur trioxide is not converted to sulphuric acid by reacting it with water. A two - step procedure is used Write the equations for the two steps involved.

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10. 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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11. 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 preparations (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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12. Name the process used for the large scale manufacture of sulphuric acid.

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

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14. 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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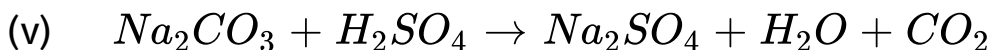
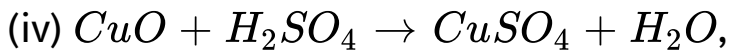
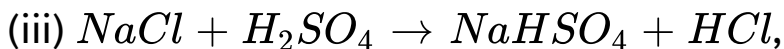
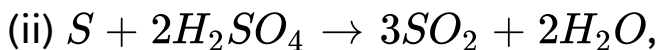
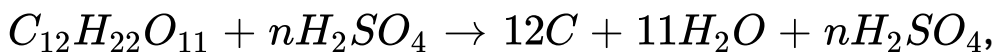
15. Write balanced equation for the following reactions : (i) Lead sulphate from lead nitrate solution and dilute sulphuric acid . (ii) Copper sulphate from copper & conc . Sulphuric acid.

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16. Properties of H_2SO_4 are listed below . Choose the property A,B,C or D which is responsible for the reactions (i) to v] .

A : Acid B : Dehydrating agent C: Non - volatile acid D :
Oxidizing agent

(i)



[some properties may be repeated]



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17. 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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18. From HCl , HNO_3 , H_2SO_4 state which has the highest boiling point & which has the lowest

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19. Dil H_2SO_4 will produce a white ppt when added to a solution of :

- (A) Copper nitrate
- (B) Zinc nitrate
- (C) Lead nitrate
- (D) Sodium nitrate

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20. Identify the following substance : - Liquid E can be dehydrated to produce ethene .

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21. Copy & complete the following table relating to an important industrial process & its final output .

Question 7

(a) Copy and complete the following table relating to the important industrial process. Output refers to the product of the process and not the intermediate steps. [3]

Name of the process	Inputs	Catalyst	Equation for catalysed reaction	Output
	Ammonia + air			Nitric acid

[2]

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22. Making use only of substances given , dil sulphuric acid , Sodium carbonate , Zinc , Sodium sulphite , Lead, Calcium carbonate : Give equation for the reactions by which you could obtain : i] hydrogen

(ii) sulphur dioxide iii] carbon dioxide iv]zinc carbonate `

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

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24. Write the equations for : - dil H_2SO_4 & barium chloride . (ii)] dil . H_2SO_4 & sodium sulphide.

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25. 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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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. Give the equation for . (i) Heat on sulphur with conc . H_2SO_4 .ii]Reaction of - suger with conc .



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28. Give a balanced equation for the conversion of zinc sulphate to zinc carbonate.



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29. 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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30. 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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31. Choose the correct answer from the options given below : When dilute sulphuric acid reacts with iron sulphide, the gas evolved is

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32. Write balanced chemical equation for the following:

Action of dilute Sulphuric acid on Sodium Sulphite.

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

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34. 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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35. Name - The gas produced on reaction of dilute sulphuric acid with a metallic sulphide .



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36. 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

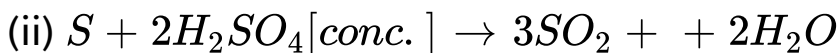
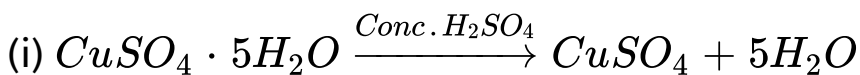
role/s may be repeated.

A : Dilute acid

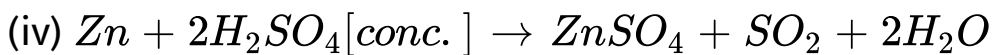
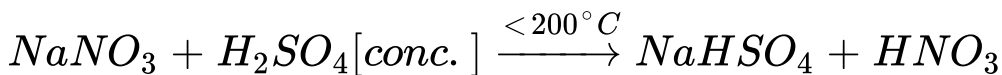
B : Dehydrating agent

C : Non - volatile acid

D : Oxidising agent



(iii)



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37. Give balanced equation for the following reaction :

Zinc sulphide and Dilute sulphuric acid.

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38. 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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39. In the given equation -

$S + 2H_2SO_4 \rightarrow 3SO_2 + 2H_2O$: Identify the role

played by conc. H_2SO_4 i.e.

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



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40. Give balanced equation for the following:

Dehydration of concentrated sulphuric acid with sugar
crystals



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41. 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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42. Write balanced equation for the following:

Action of concentrated sulphuric acid on carbon.

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43. Distinguish between the following pairs or compounds using the test given within brackets :

Dilute sulphuric acid & dilute hydrochloric acid [using barium chloride solution]

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44. 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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45. 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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46. 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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47. Give equations for the action of sulphuric acid on -
a] Potassium hydrogen carbonate . B] Sulphur.





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48. In the the manufacture of sulphuric acid by the Contact process ,give the equations for the conversion of sulphur trioxide to sulphuric acid .



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49. Write balanced chemical equation for : Action of dilute sulphuric acid on sodium sulphite.



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50. State your observations when : I] Barium chloride soln . Is mixed with sodium sulphate soln.

(ii) Concentrated sulphuric acid is added to sugar crystals.



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51. 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 preparations (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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52. Write a balanced chemical equation for the following:

Action of concentrated sulphuric acid on Sulphur.

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



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55. Write balanced chemical equations to show - I]

The oxidizing action of conc . Sulphuric acid on carbon

ii] The behaviour of H_2SO_4 as an acid when it reacts

with magnesium . Iii] The dehydrating property of

conc . Sulphuric acid with sugar . Iiii] The conversion of

SO_3 to sulphuric acid in the Contact process .



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56. Choose the correct answer from the options given

below: The catalyst used in the Contact Process is :



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



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

(i) Ethanol

(ii) Carbon



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59. Write balanced chemical equations for the following reactions : Action of dilute sulphuric acid on

-

(i) Sodium hydroxide.

(ii) Zinc sulphide.

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60. Distinguish between the following pairs or compounds using the test given within brackets :

Dilute sulphuric acid & dilute hydrochloric acid [using barium chloride solution]

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61. Complete the following equation : C+ conc .



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62. Copy & complete the following table which refers to the industrial method for preparation of - ammonia and sulphuric acid



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1. State why sulphuric acid was called - oil of vitriol .



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2. State how would convert i] sulphur ii] chlorine iii]
sulphur dioxide - to sulphuric acid.



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3. State the purpose of the Contact process.



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4. In the Contact process

State how would convert a] sulphur b [iron pyrites to sulphur dioxide in the first step of the Contact process

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5. In the Contact process

State the conditions i.e catalyst promoter , temperature and pressure in the catalytic oxidation of sulphur dioxide to sulphur trioxide in the Contact tower . Give a balanced equation for the same .

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6. In the Contact process

State why the above catalytic oxidation reaction supplies energy .

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7. In the Contact process

Give a reason why - vanadium pentoxide is preferred to platinum during the catalytic oxidation of sulphur dioxide.

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8. In the Contact process

Give a reason why the catalyst mass is heated electrically - only initially .



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9. In the Contact process

state why sulphur trioxide vapours are absorbed in concentrated sulphuric acid and not in water to obtain sulphuric acid .



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10. Why is

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

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11. State the basic steps with reasons , involved in diluting a beaker of conc . H_2SO_4 .

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12. Give reasons why dilute sulphuric acid

(i) behaves as an acid when dilute

(ii) is dibasic in nature.



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13. Convert dil . H_2SO_4 to -

(i) Hydrogen

(ii) Carbon dioxide

(iii) Sulphur dioxide

(iv) Hydrogen sulphide

(v) An acid salt

(vi) A normal salt.



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14. Give equations for formation of two different acids from conc H_2SO_4 . State the property of sulphuric acid involved in the above formation.

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15. Give equations for oxidation with conc H_2SO_4 giving the oxidised products -

(i) Carbon dioxide

(ii) Sulphur dioxide

(iii) Phosphoric acid

(iv) Copper [II] sulphate

(v) Iodine

(vi) Sulphur respectively.

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16. Give a reason why concentrated and not dilute H_2SO_4 - behaves as an oxidising and a dehydrating agent.

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17. Give the equation for the reaction of conc sulphuric acid with -

(i) glucose

(ii) sucrose

(iii) cellulose

(iv) an organic acid containing one carbon atom and two hydrogen atoms

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18. State the observation seen when conc . H_2SO_4 is added to i]]sucrose

(ii) hydrated copper [II] sulphate.

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19. State how addition of I] copper ii] $NaCl$ to - hot conc . H_2SO_4 , serves as a test for the latter.



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20. Give two tests for dilute sulphuric acid with balanced equations.State why i] $BaCl_2$
(ii) $NaCl$ to - hot conc H_2SO_4 serves as a tests.



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21. Give a test to distinguish dilute sulphuric acid from dilute HCl and dilute HNO_3 .



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22. State three different chemical compounds other than acids manufactured industrially from sulphuric acid.



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Unit Test Paper 7 D Sulphuric Acid

1. Select the correct answer from the choice in brackets.

The oxidised product obtained when sulphur reacts with conc. H_2SO_4 . [H_2S / SO_2 / H_2SO_3].

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2. The dehydrated product obtained when cane sugar reacts with conc. H_2SO_4 .

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3. Select the correct answer from the choice in brackets.

The type of salt formed when excess of caustic soda reacts with sulphuric acid. [acid salt/normal salt].



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4. Select the correct answer from the choice in brackets.

The reduced product obtained when hydrogen sulphide reacts with conc. H_2SO_4 . [SO_2 / S / H_2O].



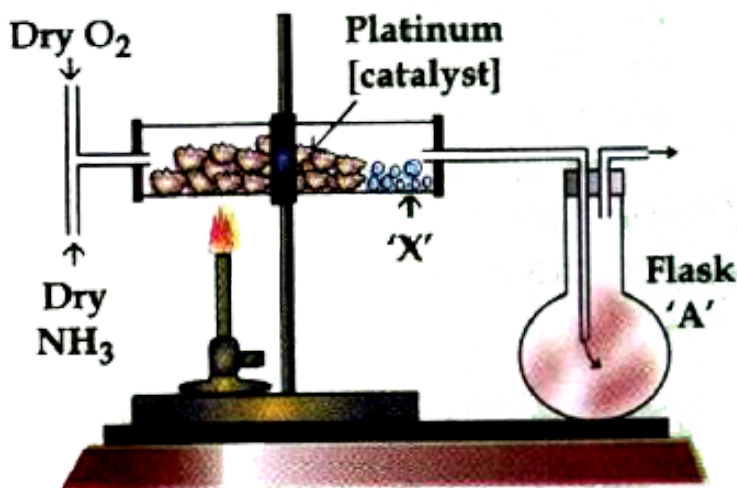
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5. Select the correct answer from the choice in brackets.

The salt which reacts with dil. H_2SO_4 acid to give an insoluble ppt. [$Cu(NO_3)_2$ / $Zn(NO_3)_2$ / $Pb(NO_3)_2$].

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6. Study the figure given alongside & answer the questions that follow:



Give a balanced equation for - the reaction represented.

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7. Give chemical equations for the reaction of sulfuric acid with zinc metal.

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8. Give chemical equations for the reaction of sulfuric acid with sodium metal.

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9. Anhydride of H_2SO_4 is _____ .

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10. Is sulfuric acid an oxyacid?

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11. Give balanced equations for the following reactions using sulphuric acid .

Formation of a black mark on a piece of wood on addition of conc . H_2SO_4 to it .

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12. Give balanced equations for the following reactions using sulphuric acid .

Oxidation of a foul smelling acidic gas , heavier than air and fairly soluble in H_2O by conc . H_2SO_4 .

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13. Give balanced equations for the following reactions using sulphuric acid .

Formation of an acid salt from sulphuric acid and a] and an alkali b] a sodium salt.

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14. Give balanced equations for the following reactions using sulphuric acid .

Formation of a hydrocarbon from an organic compound.

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15. Give balanced equations for the following reactions using sulphuric acid .

Formation of sulphur dioxide using a metal below hydrogen in the activity series.

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16. Match the conversions in column X using sulphuric acid , with the type of chemical property of sulphuric

acid A to E it represents in column 'Y'.



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17. Select the correct substance from the substances A to J which react with sulphuric acid to give the product 1 to 10. [State whether the acid used in each case is dilute or concentrated]. A : Iron B : Sodium carbonate C : Sodium chloride D : Formic acid E : Sodium nitrate F: Sodium sulphite G : Ethyl alcohol H : Sodium sulphide I : Sodium hydroxide [excess] J: Hydrogen sulphide

Product - Sulphur dioxide

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18. Select the correct substance from the substances A to J which react with sulphuric acid to give the product 1 to 10. [State whether the acid used in each case is dilute or concentrated]. A : Iron B : Sodium carbonate C : Sodium chloride D : Formic acid E : Sodium nitrate F : Sodium sulphite G : Ethyl alcohol H : Sodium sulphide I : Sodium hydroxide [excess] J: Hydrogen sulphide

Product - Sulphur

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19. Select the correct substance from the substances A to J which react with sulphuric acid to give the product 1 to 10. [State whether the acid used in each case is dilute or concentrated]. A : Iron B : Sodium carbonate C : Sodium chloride D : Formic acid E : Sodium nitrate F: Sodium sulphite G : Ethyl alcohol H : Sodium sulphide I : Sodium hydroxide [excess] J: Hydrogen sulphide

Product - Hydrogen



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product 1 to 10. [State whether the acid used in each case is dilute or concentrated]. A : Iron B : Sodium carbonate C : Sodium chloride D : Formic acid E : Sodium nitrate F: Sodium sulphite G : Ethyl alcohol H : Sodium sulphide I : Sodium hydroxide [excess] J: Hydrogen sulphide

Product - Hydrochloric acid

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21. Select the correct substance from the substances A to J which react with sulphuric acid to give the product 1 to 10. [State whether the acid used in each case is dilute or concentrated]. A : Iron B : Sodium carbonate

C : Sodium chloride D : Formic acid E : Sodium nitrate

F: Sodium sulphite G : Ethyl alcohol H : Sodium

sulphide I : Sodium hydroxide [excess] J: Hydrogen

sulphide

Product - Sodium sulphate



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22. Select the correct substance from the substances A to J which react with sulphuric acid to give the product

1 to 10. [State whether the acid used in each case is dilute or concentrated]. A : Iron B : Sodium carbonate

C : Sodium chloride D : Formic acid E : Sodium nitrate

F: Sodium sulphite G : Ethyl alcohol H : Sodium

sulphide I : Sodium hydroxide [excess] J: Hydrogen sulphide

Product - Carbon dioxide



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23. Select the correct substance from the substances A to J which react with sulphuric acid to give the product 1 to 10. [State whether the acid used in each case is dilute or concentrated]. A : Iron B : Sodium carbonate C : Sodium chloride D : Formic acid E : Sodium nitrate F: Sodium sulphite G : Ethyl alcohol H : Sodium sulphide I : Sodium hydroxide [excess] J: Hydrogen

sulphide

Product - Carbon monoxide



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24. Select the correct substance from the substances A to J which react with sulphuric acid to give the product 1 to 10. [State whether the acid used in each case is dilute or concentrated]. A : Iron B : Sodium carbonate C : Sodium chloride D : Formic acid E : Sodium nitrate F: Sodium sulphite G : Ethyl alcohol H : Sodium sulphide I : Sodium hydroxide [excess] J: Hydrogen sulphide

Product - Sulphur

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25. Select the correct substance from the substances A to J which react with sulphuric acid to give the product 1 to 10. [State whether the acid used in each case is dilute or concentrated]. A : Iron B : Sodium carbonate C : Sodium chloride D : Formic acid E : Sodium nitrate F : Sodium sulphite G : Ethyl alcohol H : Sodium sulphide I : Sodium hydroxide [excess] J: Hydrogen sulphide

Product - Hydrogen sulphide

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26. Select the correct substance from the substances A to J which react with sulphuric acid to give the product 1 to 10. [State whether the acid used in each case is dilute or concentrated]. A : Iron B : Sodium carbonate C : Sodium chloride D : Formic acid E : Sodium nitrate F: Sodium sulphite G : Ethyl alcohol H : Sodium sulphide I : Sodium hydroxide [excess] J: Hydrogen sulphide

Product - Ethene

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27. Explain why :

Sulphuric acid forms two series of salts?

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28. Give reasons for the following :

Conc . Sulphuric acid is used as a laboratory reagent in the preparation of iodine from hydrogen iodide.

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29. How will the addition of barium chloride soln. help to distinguish between dil. HCl & dil. H_2SO_4

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30. Give reasons for the following :

The gaseous product obtained differs when zinc reacts with dilute and with conc. H_2SO_4 respectively.

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31. Give balanced equations for the following:

Dehydration of ethanol with conc. sulphuric acid to give a hydrocarbon.

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