



# CHEMISTRY

## BOOKS - MODERN PUBLICATION

### GROUP 16 ELEMENTS

#### Excercise

1. one mole of sulphur contains \_\_\_\_ atoms .

A. 3

B. 4

C. 6

D. 8

**Answer: D**



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2. When  $SO_2$  is passed through a solution of  $H_2S$  in water

A.  $H_2SO_3$  is produced

B.  $H_2SO_3$  is produced

C. sulphur precipitate is produced

D. non of these

**Answer: C**



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**3. Which one of the following contains acetic acid:**

A. oxalic acid

B. formic acid

C. sugar

D.  $Na_2CO_3$

**Answer: C**



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4. Dacron is prepared by

A.  $He$

B.  $O$

C.  $Ne$

D.  $N_2$

**Answer: A**



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5. Tailing of mercury is due to formation of

\_\_\_\_\_.

A. mercuric oxide

B. mercurous oxide

C. mercuric hydroxide

D. mercurous hydroxide

**Answer: B**



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6. Which substances chars when warmed with conc  $H_2SO_4$  ?

A. carbohydrate

B. proteins

C. fats

D. hydro carbons

**Answer: A**



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**7. The more electronegative element is :**

A. 0 and -1

B. -1 and -2

C. -2 and 0

D. -2 and 1

**Answer: B**



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**8.** Draw the structure of sulphuric acid. Draw simple flow diagram of contact process for the manufacturing of sulphuric acid.

A. Nil

B.  $V_2O_5$



C.  $Pt$

D.  $Fe$

**Answer: B**



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9. Why  $Zn$  liberates Hydrogen gas when reacts with  $H_2SO_4$  But silver does not ?

A. Reducing agent

B. Dehydrating agent

C. Sulphonating agent

D. Highly viscous

**Answer: A**



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**10. When a lead storage battery is discharged:**

A.  $SO_2$  is dissolved

B. Lead sulphate is consumed

C. Lead is formed

D. Sulphuric acid is consumed

**Answer: D**



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**11. Sulphuric acid as used**

A. it hydrolyses the acid

B. it decomposes the acid

C. acid forms hydrates with water

D. acid decomposes water

**Answer: C**



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**12.** Structure of  $IF_5$  is

- A. octahedral
- B. trigonal bipyramidal
- C. square planar
- D. tetrahedral

**Answer: B**



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13. Fill in the blanks :The maximum covalency of sulphur is .....

A. 2

B. 4

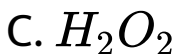
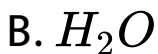
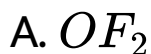
C. 6

D. 8

**Answer: C**



14. Fluorine exhibits only  $-1$  oxidation state, while iodine exhibits oxidation states of  $-1, +1, +3, +5$  and  $+7$ . This is due to :



**Answer: C**



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15. What is the shape of  $XeF_2$  molecule ?

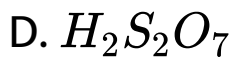
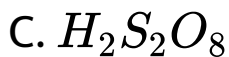
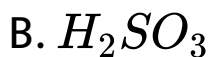
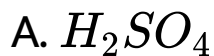
- A. tetrahedral
- B. linear
- C. plane triangular
- D. bent

**Answer: D**



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16. Ethers react with conc.  $H_2SO_4$  to form



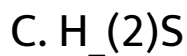
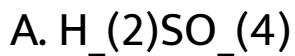
**Answer: D**



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17. Which of the following is an ester



**Answer: B**



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18. Ethers react with conc.  $H_2SO_4$  to form

- A. phosphorus acid
- B. orthophosphoric acid
- C. metaphosphoric acid
- D. phrophosphoric

**Answer: B**



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19. Which of the following is most basic

A. 2,2

B. 4,2

C. 2,4

D. 4,4

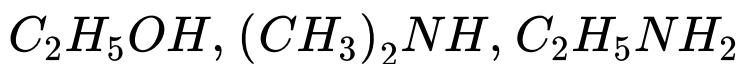
**Answer: C**



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20. Arrange the following

In the increasing order of boiling point

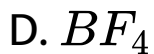
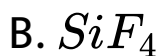


**Answer: B**



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21. Which of the following bonds will be non-polar ?



**Answer: A**



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22. How many types of solutions are formed ?

A. 2

B. 4

C. 3

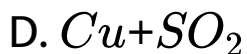
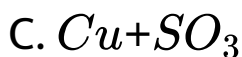
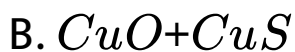
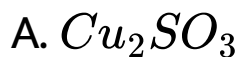
D. 5

**Answer: A**



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23. Heating a mixture of  $Cu_2O$  and  $Cu_2S$  will give

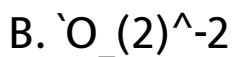


**Answer: D**



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24. Which of the following compounds has the highest boiling point?



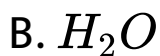
**Answer: A**



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25. Which of the following compound has the smallest bond angle in the molecule ?



**Answer: C**



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26. Which of the following has largest size ?



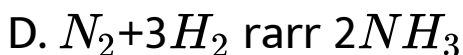
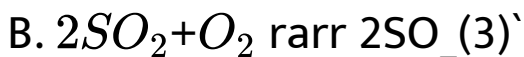
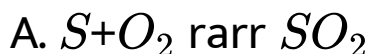
**Answer: D**



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27. Predict the products of electrolysis in each of the following ?

A dilute solution of  $H_2SO_4$  with platinum electrodes.



**Answer: B**



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28.  $H_2S$  is passed through acidified solution of  $CuSO_4$  and black ppt is formed. This is due to:

- A. Oxidation of  $Cu^{2+}$
- B. Reduction of  $Cu^{2+}$
- C. both (a) and (b)
- D. none of these

**Answer: D**





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29.  $H_2SO_4$  has greater affinity for water because

- A. it hydrolysis the acid
- B. decomposes the acid
- C. acid forms hydrate with water
- D. acid decomposes water

**Answer: C**



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30. When formic acid is heated with conc.

$H_2SO_4$  the gas evolved is :

A.  $SO_2$

B.  $NH_3$

C.  $CO_2$

D.  $CO$

**Answer: D**



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31. Hybridization of S. in  $SF_6$  is:

A.  $sp^3d^2$

B.  $sp^3d$

C.  $sp^3$

D.  $sp^2$

**Answer: B**



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32. Which statement is wrong about chloroform:

- A. It is a covalent compound
- B. It is a gas with bad smell
- C. It is a weak base in water
- D. It is strong reducing agent than H<sub>2</sub>O

**Answer: C**



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**33.** When natural rubber is heated with sulphur , it is called

- A. vulcanisation
- B. sulphonation
- C. sulphurization
- D. non of these

**Answer: A**



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34. The number of S-S bonds in sulphur trioxide trimer ( $S_3O_9$ ) is:

A. 3

B. 2

C. 1

D. 0

**Answer: D**



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35. The decreasing order of boiling point is

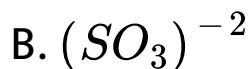


**Answer: B**



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36. Which of the following has S-S bond?



**Answer: B**



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**37.** Which of the following has the maximum catenation property?

A. S

B. Se

C. Te

D. O

**Answer: A**



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**38.** When a lead storage battery is discharged:

A.  $SO_2$  is evolved

B.  $PbSO_4$  is consumed

C. Lead is formed

D.  $H_2SO_4$

**Answer: D**



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**39.** (i) In the titration of  $Fe^{2+}$  ions with  $KMnO_4$  in acidic medium, dil.  $H_2SO_4$  is used but not the dil. HCl. Why ?

(ii) Transition metals and their compounds act as catalyst explain.

A. in lead storage batteries

B. in making fertilizers

C. as a dehydrating agent

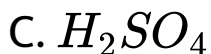
D. in all of these

**Answer: D**



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40. When conc.  $H_2SO_4$ , is added to dry  $KNO_3$ , brown fumes are evolved. These fumes are



**Answer: D**



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41. Which gas turns lead acetate paper black:

A.  $SO_2$

B.  $H_2S$

C.  $H_2SO_4$

D.  $SO_3$

**Answer: B**



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42. Which of the following has the highest value of energy gap?

A.  $O - O$

B.  $S - S$

C.  $Se - Se$

D.  $Te - Te$

**Answer: B**



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43. Number of hydroxyl groups present in pyrosulphuric acid is:

A. 1

B. 2

C. 3

D. 4

**Answer: A**



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44. Oxygen molecule is:

A. Paramagnetic

B. Diamagnetic

C. Ferromagnetic

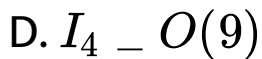
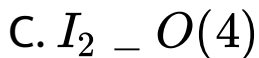
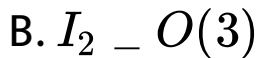
D. Ferrimagnetic

**Answer: A**



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45. Ozone reacts with



**Answer: D**



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46. \_\_\_ is used as catalyst by Ostwald process for manufacture of nitric acid.



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47. \_\_\_ is used as catalyst in the manufacture of  $H_2SO_4$  acid by contact process.

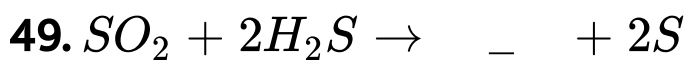


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48. Which is soluble in water :



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50. Oxygen and Ozone are \_\_\_\_.



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51. Why phenol is acidic in nature ?



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52. An instructor has a question bank consisting of 300 easy true/false questions, 200 difficult true/false questions, 500 easy multiple choice questions and 400 difficult multiple choice questions. If a question is selected at random from the question bank, then what is the probability that it will be an easy question, given that it is a multiple choice question?



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53. hydrogen-oxygen cell is a \_\_\_\_\_ cell



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54. Oxygen atom of ether is:



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55. hydrogen-oxygen cell is a \_\_\_\_\_ cell



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56. Electron affinity of noble gases is :



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57. Benzaldoxime exists in how many forms :



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58.  $2NO + O_2 \rightarrow NO_2$  is \_\_\_\_\_ order reaction.



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59.  $Fe_3O_4$  is known as \_\_\_\_\_ .



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60. Shape of  $XeF_6$  molecule is \_\_\_\_\_.



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61. Write all the members of oxygen family.



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**62.** Which the following hydrides of oxygen family shows the lowest boiling point?



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**63.** Name two allotropic forms of sulphur.



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64. Which is soluble in water :



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65. Ammonia is:

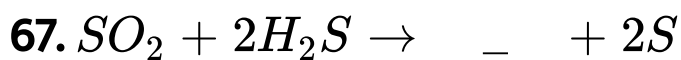


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66. Which of the following statement (s) is/are correct ? When a mixture of NaCl and  $K_2Cr_2O_7$  is gently warmed with conc.  $H_2SO_4$ .



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68. The electronic configuration of halogen is



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69. Oxygen and Ozone are \_\_\_\_.



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70. Write the electronic configuration of cerium.



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71. The metallic character of the elements to group 14:



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72. Ionic hydrides are formed by:



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73. Write the formulae of the monomers of teflon.



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74. What is soap?



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**75.** Give two examples of ionic solids.



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**76.** Give two examples of ionic solids.



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**77.** Bleaching action of  $SO_2$  is due to :



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78. What do you mean by tailing of mercury ?



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79. Write some uses of bromine.



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80. What happens when  $H_2S$  reacts with  $CuSO_4$  in acidic medium ?





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81. Write two uses of  $ClO_3$ .



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82. When ammonia is dissolved in water:



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83. The anhydride of  $HNO_2$ , is





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**84.**  $H_2SO_4$  acid is known as "king of chemicals". Explain.



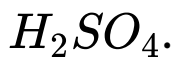
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**85.** Evaporation causes cooling. Explain.



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**86.** Name the method of manufacturing



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**87.** Name two allotropic forms of sulphur.



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**88.** Write some uses of bromine.



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**89.** Arrange the basicity in increasing order of  $TeO_2$ ,  $SO_2$  and  $SeO_2$



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**90.** Which halogen does not form oxyacid ?



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91. Write balanced equation for the reaction of methyl iodide with

$AgOH$ ,  $C_2H_5\bar{O}Na^+$ ,  $CH_3COO\bar{O}Ag^+$  and  $AgNO_2$ .



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92. Write the equation for the reaction between  $CI_2$  and dil. NaOH solution.



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93. What happens when:  $H_2S$  gas is passed through  $CuSO_4$  solution.



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94. Write some uses of sulphur dioxide.



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95. What is Oleum ? Write its formula.



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96. Write various oxidation states of sulphur.



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97. Give one reaction in which  $H_2SO_4$  acts as a dehydrating agent .



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98. Which have high boiling points:





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**99.** Boron differs from the other members of group 13 because it :



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**100.** What is the bond angle in the molecule of ammonia ?



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101. Why  $SO_2$  gas cannot be collected over water?



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102. Write two uses of Helium.



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103. What is the bond angle between two hybrid bonds in  $sp$  hybridisation ?



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**104.** Sulphur in  $SO_2$  is :



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**105.** Explain green house effect.



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**106.**  $BiCl_3$ , is more stable than  $BiCl_5$  Why?



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**107.** Oxygen is gas but sulphur is solid because:



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**108.** What is allotropy ?



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109. What is the action of conc.  $H_2SO_4$  on potassium bromide? Give equation.



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110. What is shape of  $O_3$  molecule ?



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111. Write the structure of  $XeO_2F_2$  molecule .



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**112.** Ozone is tested by



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**113.** What is the action of  $O_3$  on acidified  $FeSO_4$  solution ?



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**114.** Group 16 elements are



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**115.** What happens when phosphorous acid is heated ?



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**116.** What happens when:  $H_2S$  gas is passed through  $CuSO_4$  solution.



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117. What happens when  $H_2S$  gas is passed through ammoniacal solution of  $MnCl_2$



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118. What happens when  $H_2S$  is passed through aqueous solution of  $ZnCl_2$ ? Give equation.



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**119.** An explosion takes place when conc.  $H_2SO_4$  is added to  $KMnO_4$ . Which of the following is formed ?



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**120.** What happens when  $H_2S$  gas is passed through chlorine water ?



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121. What happens when  $SO_2$  gas is passed through  $H_2S$  dissolved in water ?



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122. Describe the preparation of Ozone.



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123. Ozone hole is the



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**124.** Explain the structure of ozone molecule.



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**125.** Explain the structure of  $SO_2$  molecule.



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**126.** Write some uses of sulphur dioxide.



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**127.** Explain that bleaching action of  $CL_2$  is permanent, while that of  $SO_2$  is temporary.



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**128.** Physical properties of :



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**129.** Explain with equation how does ozone react with

Hydrogen peroxide



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**130.** Which oxide of sulphur can act as an oxidising as well as reducing agent?



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**131.** Write the structure of  $XeO_2F_2$  molecule .



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**132.** By adding water to the solution, its:



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**133.** What gas is produced when conc.  $H_2SO_4$  reacts with common salt at room temperature? Write equation.



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**134.** What happens when  $SO_2$  is passed through chlorine water ?



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**135.** What happens when

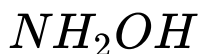
$H_3PO_3$  is heated?



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**136.** What happens when acetone reacts with :



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**137.** How many coulombs of electricity are required for oxidation of 1 mol of  $H_2O$  to  $O_2$ ?



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**138.** Why sulphur is not diatomic like oxygen?





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**139.** Which is not hydrolysed ?



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**140.** Which gas is used to improve the atmosphere of crowded places:



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**141.** Why SI system is called a rational system

Explain.



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**142.**  $SF_6$  is known but  $SCl_6$  is not. Why?



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**143.** Which has zero dipole moment?



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**144.** Account for the following:

Sulphur has a greater tendency for catenation than oxygen.



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**145.** Oxygen is gas but sulphur is solid because:



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**146.** Which acts as a powerful oxidising agent ?



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**147.** How would you account for the following?

The two O–O bond lengths in the ozone molecule are equal.



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**148.** Oxygen is gas but sulphur is solid because:



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**149.** Explain why neon is monoatomic ?



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