



## CHEMISTRY

### BOOKS - MODERN PUBLICATION

#### p-BLOCK ELEMENTS

#### EXAMPLE

1. 4L of water is added to 2L of 6M HCl solution. What is the molarity of resulting solution .



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2. What volume of 10M HCl and 3M HCl should be mixed to obtain 1L of 6M HCl solution .

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3. why is nitrogen less reactive at room temperature?

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4.  $PH_3$  has lower boiling point than  $NH_3$ . Why?

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5. Unlike Phosphorus, nitrogen shows little tendency for catenation. Why?

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6. Bi (V) is a stronger oxidising agent than Sb (V). Why ?

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7. Why does  $NO_2$  dimerise ?

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8. Why ammonia is a good complexing agent?

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9. Why does ammonia act as a Lewis base?

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10. Write the products of the following reaction (give balanced chemical equations) :  $Mg_3N_2 + H_2O \rightarrow$

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11. Write the products of the following reaction (give balanced chemical equations) :  $I_2 + HNO_3(\text{conc.}) \rightarrow$

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12. Write the products of the following reaction (give balanced chemical equations) :  $Cu + HNO_3(\text{conc.}) \rightarrow$

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13. Write the products of the following reaction (give balanced chemical equations) :  $Li + N_2 \rightarrow$

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14.  $NF_3$  does not have donor properties like ammonia. Explain.

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15. Give one reaction in which ammonia acts as a reducing agent .

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16. Complete the reaction :  $NH_4NO_3(s) \xrightarrow{\text{Heat}}$

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17. How many significant figures are present in 0.0034

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18. Calculate the total number of electrons present in 2.3g of ethane.

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19. Complete the reaction :  $CuO + NH_3 \rightarrow$

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20. A flask P contains 0.5 mole of oxygen gas. Another flask Q contains 0.4 mole of ozone gas. which of the two flasks contain greater number of oxygen atoms.

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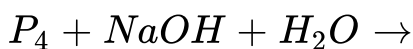
21. In what way it can be proved that  $PH_3$  is basic in nature.

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22. Give the disproportionation reaction of  $H_3PO_3$ .

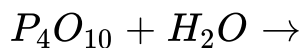
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23. Write balanced equations for the following reaction :



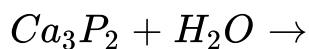
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24. Write balanced equations for the following reaction :



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25. Write balanced equations for the following reaction :



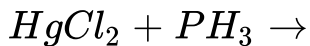
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26. Write balanced equations for the following reaction :



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27. Write balanced equations for the following reaction :



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28. Write balanced equations for the following reaction :



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29. Why does  $PCl_3$  fume in moisture ?

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30. Calculate the volume of 0.015M HCl solution required to prepare 250ml of a  $5.25 \times 10^{-3}$  M HCl solution ?

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31. All the five bonds in  $PCl_5$  are not equivalent justify.

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32. How  $H_3PO_3$  is diprotic acid?

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**33.** How do you account for the reducing behaviour of  $H_3PO_2$  on the basis of its structure ?

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**34.** What happens when white phosphorus is heated with concentrated NaOH solution in an inert atmosphere of  $CO_2$  ?

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**35.** Give the structure and basicity of  $H_3PO_4$ .

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36. What happens when  $PCl_5$  is heated?

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37. What happens when  $H_3PO_3$  is heated?

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38. Draw the structure of phosphinic acid ( $H_3PO_2$ ).

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39. Write a chemical reaction for its use of  $PCl_3$  as reducing agent.





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40. Suggest a quantitative method for estimation of the gas which protects us from U.V. rays of the sun.



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41. Nitrogen oxides emitted from the exhaust system of supersonic jet aeroplanes slowly deplete the concentration of ozone layer in upper atmosphere. Comment.



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42.  $NCl_3$  is readily hydrolysed while  $NF_3$  does not. Explain.



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**43.** An orange solid A on heating gives a colourless gas B. The gas B in dry conditions is Passed Over heated Ca to give a solid C. The solid C further reacts with water to Produce gas D which forms a blue coloured compound E on reaction with copper sulphate solution. Identify A, B,C,D,E and give the sequence of reactions involved .



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**44.** Name three oxoacids of P having oxidation state of P as +5.



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45. Draw the structure of  $P_4O_{10}$  and identify the number of single and double P-O bonds .

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46. Why does nitric oxide become brown when released in air?

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47. Solid  $PCl_5$  is ionic in nature.

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48. Concentrated nitric acid turns yellow on exposure to sunlight. Why?

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49. Why does not nitrogen form pentahalides like phosphorus?

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50. Determine the oxidation number of nitrogen in (i)  $N_2O$   
(ii)  $NO_2$  (iii)  $HNO_3$  (iv)  $NH_3$ .

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51. How is pyrophosphoric acid related to orthophosphoric acid?

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52.  $N_2O$  supports combustion more vigorously than air. Explain.

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53. On being slowly passed through water,  $PH_3$  forms bubbles but  $NH_3$  dissolves. Why?

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54. Write the reaction of thermal decomposition of sodium azide.

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55. Phosphoric acid has high viscosity and high melting point. Why?

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56.  $PCl_5$  exists as  $[PCl_4]^+ [PCl_6]^-$  but  $PBr_5$  exists as  $[PBr_4]^+ [Br]^-$ . Explain.

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57.  $PCl_5$  is known but  $PI_5$  is not known. Why?

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58. Write the structural difference between white P and red P.

P.

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59. What is liquid nitrogen used for ?

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**60.** Why does iron become passive when dipped in conc.  $HNO_3$  ?

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**61.** What is calcium cyanamide ? Why is it used as a fertilizer ?

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**62.** In the ring test of nitrates what chemical compound is formed ?

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63. What is azote ?

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64. What is the basicity of  $H_3PO_2$  acid and why ?

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65. Write down the balanced chemical equation representing action of  $HNO_3$  on sulphur and iodine .

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66. Give example of oxide of nitrogen blue liquid below 258 K





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**67.** Give example of oxide of nitrogen known as laughing gas

.



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**68.** Give example of oxide of nitrogen brown gas.



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**69.** Give example of oxide of nitrogen colourless gas having oxidation state of N equal to 5.



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70. Which oxide of nitrogen is produced by heating lead nitrate ?

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71. How would you prepare a sample of deuterated ammonia,  $ND_3$  ?

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72.  $N_2O$  supports combustion more vigorously than air. Explain.

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73. Name the catalyst and the promoter used in Haber's process for manufacture of ammonia.

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74. Express 961 in roman numbers.

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75. Which is a stronger reducing agent,  $SbH_3$  or  $BiH_3$ , and why?

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76.  $\text{NCl}_3$  is an endothermic compound while  $\text{NF}_3$  is an exothermic compound. explain

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77. Explain the following : The bond angles (O -N-O) are not of the same value in  $\text{NO}_2^-$  and  $\text{NO}_2^+$  .

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78.  $\text{H}_3\text{PO}_2$  is a stronger reducing agent than  $\text{H}_3\text{PO}_3$ . Give reasons..

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79. Bi (V) is a stronger oxidising agent than Sb (V). Why ?

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80. N-N single bond is weaker than P-P single bond.

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81. Why does sulphur in vapour state exhibit paramagnetic character ?

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82. Why is  $H_2S$  less acidic than  $H_2Te$  ?



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83. Express 960 in roman numbers.

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84. Starting from elemental sulphur, how would you prepare:  $SCl_2$

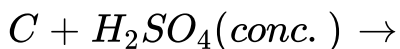
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85. Express 978 in roman numbers.

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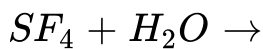


**86.** Write balanced equations for the following reaction :



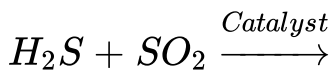
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**87.** Write balanced equations for the following reaction :



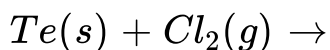
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**88.** Write balanced equations for the following reaction :



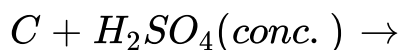
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**89.** Write balanced equations for the following reaction :



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**90.** Write balanced equations for the following reaction :



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**91.** What happens when: Concentrated  $H_2SO_4$  is added to calcium fluoride

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92. What happens when:  $SO_3$  is passed through water?

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93. Write the order of thermal stability of the hydrides of Group 16 elements.

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94. What happens when sulphur dioxide is passed through an aqueous solution of Fe(III) salt?

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95. Express 962 in roman numbers.

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96. Express 963 in roman numbers.

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97.  $SF_6$  is known but  $SCl_6$  is not known. Explain.

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98. Why does  $OF_6$  not exist but  $SF_6$  exists?

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99. Express 964 in roman numbers.



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100. Express 965 in roman numbers.



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101. Fill in the blanks- Ammonal is a mixture of \_\_\_\_\_  
and \_\_\_\_\_.



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102. Why  $SF_6$  is known but  $SH_6$  is not known ?

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103. Express 974 in roman numbers.

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104. Which oxide of sulphur acts as oxidising as well as reducing agent?

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105. Express 975 in roman numbers.

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106. Why is O-O bond length in ozone molecule (127 pm) more than in  $O_2$  (121 pm) ?

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107. Express 976 in roman numbers.

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108. Which hydride has greater bond angle ?  
 $H_2O$ ,  $H_2S$ ,  $H_2Se$  and  $H_2Te$

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109. Express 977 in roman numbers.

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110.  $SF_6$  is kinetically inert substance. Explain.

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111. Why oxide ion is called hard ion ? Explain.

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**112.** Fill in the blanks- Nitrolim was first synthesized by two scientists named \_\_\_\_\_ and \_\_\_\_\_.

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**113.** Express 979 in roman numbers.

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**114.** Express 980 in roman numbers.

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**115.** Express 981 in roman numbers.

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**116.** Express 982 in roman numbers.

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**117.** Express 983 in roman numbers.

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**118.** Express 984 in roman numbers.

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**119.** Express 985 in roman numbers.



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**120.** Express 986 in roman numbers.



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**121.** Express 987 in roman numbers.



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**122.** Express 988 in roman numbers.



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**123.** Express 989 in roman numbers.

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**124.** Express 990 in roman numbers

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**125.** Express 991 in roman numbers.

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**126.** Write balanced equations for the following: Chlorine gas is passed into a solution of  $\text{NaI}$  in water.

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**127.** Express 992 in roman numbers.

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**128.** Write balanced equations for the following :  $\text{NaClO}_3$  is treated with  $\text{SO}_2$ .

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**129.** Complete the reaction : barium chloride is treated with aluminium sulphate.

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**130.** Write the balanced chemical equation for the reaction of  $Cl_2$  with hot and concentrated NaOH. Is this reaction a disproportionation reaction? Justify.

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**131.** Express 993 in roman numbers.

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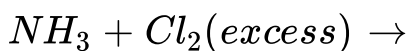
**132.** Explain why in spite of nearly the same electronegativity, nitrogen forms hydrogen bonding while chlorine does not.

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**133.** Express 995 in roman numbers.

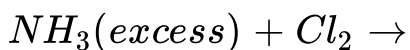
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**134.** Complete the following reaction :



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135. Complete the following reaction :



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136. Complete the following reaction :  $F_2(g) + H_2O(l) \rightarrow$

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137. Complete the following reaction :  $K_2CO_3 + HCl \rightarrow$

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**138.** State whether the statement is true or false- Alanko is a metal.

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**139.** Fill in the blanks- Ammonal is used as \_\_\_\_\_.

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**140.** Answer the following question in one word- Name that alloy which is used for making electrical devices?

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**141.** With what neutral molecule is  $ClO^-$  isoelectronic? Is that molecule a Lewis base?

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**142.** Explain- An alloy which is made of 20% of zinc and 80% of copper metal is used to make electrical devices.

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**143.** Complete the following chemical reaction equation :



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144. Complete the following chemical reaction equation :



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145.  $IF_7$  exists but  $BrF_7$  does not exist. Why?

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146. Complete the following reaction :  $NaOH + HCl \rightarrow$

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147. Fill in the blanks- Nitrolim is used as a \_\_\_\_\_.



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148. Give the formula of the noble gas species which is isostructural with  $IBr_2^-$ .

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149. Complete the following reaction :



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150. Give the formula of the noble gas species which is isostructural with  $BrO_3^-$ .

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151. Noble gases have low boiling points. Explain.

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152. Why are the elements of Group 18 known as noble gases

?

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153. Discuss the hydrolysis of  $XeF_3$ . Does the hydrolysis of  $XeF_6$  lead to a redox reaction ?

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154. Out of noble gas, only xenon is known to form chemical compound. Explain.

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155. Complete the following reaction :  $XeF_4 + SbF_5 \rightarrow$

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156. Complete the following reaction :  $XeF_4 + O_2F_2 \xrightarrow{143K}$

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157. Complete the following reaction :  $XeF_2 + H_2O \rightarrow$

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158. Complete the following reaction :  $XeF_4 + H_2O \rightarrow$

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159. Complete the following reaction :  $XeF_6 + H_2O \rightarrow$

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160. Why is helium used in diving apparatus?

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161. How are Xenon fluorides  $XeF_2$ ,  $XeF_4$  and  $XeF_6$  prepared ?

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162. Which of the following does not exist?  $XeOF_4$ ,  $NeF_2$ ,  $XeF_2$ ,  $XeF_6$ .

A.  $XeOF_4$

B.  $NeF_2$

C.  $XeF_2$

D.  $XeF_6$

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163. Why has it been difficult to study the chemistry of radon?

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164. Which compound of xenon has distorted octahedral shape ?

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165. Draw the molecular structure of the following :  $XeOF_4$

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166. Draw the molecular structure of the following :  $XeF_6$

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167. Draw the molecular structure of the following :  $XeF_2$

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168. Draw the molecular structure of the following :  $XeF_4$

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169. Draw the structure of  $XeOF_2$

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170. Draw the molecular structure of the following :  $XeO_3$

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171. What inspired N. Bartlett, for carrying out the reaction between Xe and  $PtF_6$ ?

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172. Express 1071 in roman numbers.

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173. Why chlorine water loses its yellow colour on standing ?

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**174.** Express 1073 in roman numbers.

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**175.** Express 1074 in roman numbers.

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**176.** Express 1075 in roman numbers.

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**177.** Indicate whether the following statement is TRUE or FALSE. Justify your answer in not more than three lines :  
*BrF<sub>3</sub>* has trigonal planar geometry.

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**178.** Express 1076 in roman numbers.

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**179.** Express 1077 in roman numbers.

 [Watch Video Solution](#)

**180.** Express 1078 in roman numbers.

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**181.** Express 1079 in roman numbers.

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**182.** Express 1080 in roman numbers.

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**183.** Bleaching of flowers by chlorine is permanent while that by sulphur dioxide is temporary. Explain.

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**184.** Write balanced equations for the following :  
Phosphorus is treated with concentrated nitric acid.

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**185.** Write balanced equations for the following :  
Manufacture of phosphoric acid from phosphorus.

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**186.** Express 1081 in roman numbers.

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187. What is the hybridisation of xenon in  $XeF_2$  and  $XeF_4$  ?

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188. Express 1082 in roman numbers.

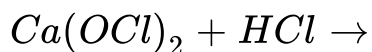
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189. Complete the following reaction :  $XeF_6 + H_2O \rightarrow$

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190. Complete the following equation :

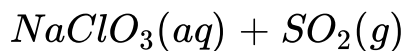


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191. Complete the following equation :  $XeF_4 + H_2O \rightarrow$

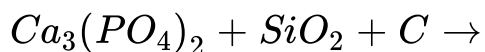
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192. Complete the following equation :



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**193.** Complete the following equation :



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**194.** Express 1083 in roman numbers.

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**195.** Express 1084 in roman numbers.

 [Watch Video Solution](#)

**196.** Express 1085 in roman numbers.

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**197.** Express 1086 in roman numbers.

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**206.** Express 1095 in roman numbers.

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**207.** Express 1096 in roman numbers.



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**208.** Express 1097 in roman numbers.



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**209.** Express 1098 in roman numbers.



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**210.** Express 1099 in roman numbers.



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**211.** Express 1100 in roman numbers.

 [Watch Video Solution](#)

**212.** Express 1101 in roman numbers.

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**213.** Express 1102 in roman numbers.

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**214.** Express 1103 in roman numbers.

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215. What happens when  $PCl_5$  is heated?

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216. Write a balanced equation for the hydrolytic reaction of  $PCL_5$  in heavy water.

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217. Give the structure and basicity of  $H_3PO_4$ .

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218. What happens when  $H_3PO_3$  is heated?

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219. List the important sources of sulphur.

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220. Write the order of thermal stability of the hydrides of Group 16 elements.

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221. Why is water liquid while  $H_2S$  a gas ?

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222. Give the name of functional group present in 1,2-dihydroxy benzene

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223. Complete the following reaction :  $C_2H_4 + O_2 \rightarrow$

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224. Complete the following reaction :  $4Al + 3O_2 \rightarrow$

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225. Why does  $O_3$  act as a powerful oxidising agent ?

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226. How is  $O_3$  estimated quantitatively?

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227. What happens when sulphur dioxide is passed through an aqueous solution of Fe(III) salt?

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**228.** Comment on nature of two S-O bond formed in  $SO_2$  molecule. Are the two S-O bonds in this molecule equal ?

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**229.** How is the presence of  $SO_2$  detected ?

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**230.** Mention three areas in which  $H_2SO_4$  plays an important role.

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**231.** Write the conditions for maximum yield of  $H_2SO_4$  by contact process.

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**232.** Why is  $K_{a2} \ll k_{a1}$  for  $H_2SO_4$  in water?

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**233.** Considering the parameters such as bond dissociation enthalpy, electron gain enthalpy and hydration enthalpy, compare the oxidising power of  $F_2$  and  $Cl_2$ .

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**234.** Give two examples to show the anomalous behaviour of fluorine.

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**235.** Give the reason for bleaching action of  $Cl_2$ .

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**236.** Name two poisonous gases which can be prepared from chlorine gas.

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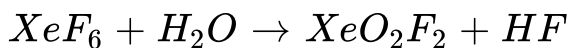
237. Why ICl is more reactive than  $I_2$  ?

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238. Why is helium used in diving apparatus?

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239. Balance the following equation:



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**240.** Discuss the general characteristics of Group 15 elements with reference to their electronic configuration, oxidation state, atomic size, ionisation enthalpy and electronegativity.

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**241.** Why does the reactivity of nitrogen differ from phosphorus?

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**242.** Complete the following statement- Dutch metal is made up of-

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**243.** Why does  $NH_3$  form hydrogen bond but  $PH_3$  does not?

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**244.** How is nitrogen prepared in the laboratory? Write the chemical equations

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**245.** How is ammonia manufactured industrially?

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**246.** Illustrate how copper metal can give different products on reaction with  $HNO_3$ .

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**247.** Give the resonating structures of  $NO_2$  and  $N_2O_5$ .

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**248.** The HNH angle value is higher than HPH, HAsH and HSbH angles. Why?

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**249.** Why does  $R_3P = O$  exist but  $R_3N = O$  does not? (R= alkyl group)

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**250.** Explain why  $NH_3$  is basic but  $BiH_3$  is only feebly basic.

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**251.** Nitrogen exists as diatomic molecule and phosphorous acts as tetra atomic molecule. Explain.

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**252.** Write main differences between the properties of white phosphorus and red phosphorus.

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**253.** Why does nitrogen show catenation properties less than phosphorus ?

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**254.** Give the disproportionation reaction of  $H_3PO_3$ .

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255. Can  $PCl_5$  act as an oxidising as well as a reducing agent? Justify.

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256. Justify the placement of O, S, Se, Te and Po in the same group of the periodic table in terms of electronic configuration, oxidation state and hydride formation.

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257. Why is dioxygen gas but sulphur a solid?

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**258.** Knowing the electron gain enthalpy values for  $O \rightarrow O^-$  and  $O \rightarrow O^{2-}$  as  $-141$  and  $702 \text{ kJ mol}^{-1}$  respectively, how can you account for the formation of a large number of oxides having  $O^{2-}$  species and not  $O^-$

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**259.** Which aerosols deplete ozone?

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**260.** Explain the manufacture of sulphuric acid by contact process.

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**261.** How is  $SO_2$  an air pollutant?

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**262.** Why are halogens strong oxidising agents?

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**263.** Explain why fluorine forms only one oxoacid, HOF.

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**264.** Explain why inspite of nearly the same electronegativity, nitrogen forms hydrogen bonding while chlorine does not.

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265. Write two uses of  $ClO_2$ .

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266. Why are halogens coloured ?

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267. Write the reactions of  $F_2$  and  $Cl_2$  with water.

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268. How can you prepare  $Cl_2$  from HCl and HCl from  $Cl_2$ ?

Write reactions only.

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269. What inspired N. Bartlett for carrying out reaction between Xe and  $PtF_6$ ? Write the reaction also.

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270. What is the oxidation state of phosphorus in the following:  $H_3PO_3$

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271. What are the oxidation states of phosphorus in the following:  $PCl_3$

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272. What is the oxidation state of phosphorus in the following :  $Ca_3P_2$

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273. What are the oxidation states of phosphorus in the following:  $Na_3PO_4$

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274. What is the oxidation state of phosphorous in  $POF_3$ ?

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275. Write balanced equations for the following: NaCl is heated with sulphuric acid in the presence of  $MnO_2$ .

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276. Write balanced equations for the following: Chlorine gas is passed into a solution of NaI in water.

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277. How are Xenon fluorides  $XeF_2$ ,  $XeF_4$  and  $XeF_6$  prepared ?

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278. With what neutral molecule is  $ClO^-$  isoelectronic? Is that molecule a Lewis base?

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279. How are  $XeO_3$  and  $XeOF_4$  prepared?

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**280.** Arrange the following in the order of property indicated for each set:  $F_2, Cl_2, Br_2, I_2$  - increasing bond dissociation enthalpy.

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**281.** Arrange the following in the order of property indicated for each set:  $HF, HCl, HBr, HI$  - increasing acid strength.

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**282.** Arrange the following in the order of property indicated for each set:  $NH_3, PH_3, AsH_3, SbH_3, BiH_3$  - increasing

base strength.



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283. Which of the following does not exist?  $XeOF_4$ ,  $NeF_2$ ,  
 $XeF_2$ ,  $XeF_6$ .



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**284.** Give the formula and describe the structure of a noble gas species which is isostructural with:  $ICl_4^-$

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**285.** Give the formula of the noble gas species which is isostructural with  $IBr_2^-$ .

 [Watch Video Solution](#)

**286.** Give the formula of the noble gas species which is isostructural with  $BrO_3^-$ .

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**287.** Why do noble gases have large atomic size

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**288.** List the uses of neon and argon gases.

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**289.** Complete the following statement- Bronze is made up of-

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**290.** Write a balanced chemical equation for the reaction showing catalytic oxidation of  $NH_3$  by atmospheric oxygen.

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**291.** Write the structure of pyrophosphoric acid.

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**292.** On being slowly passed through water,  $PH_3$  forms bubbles but  $NH_3$  dissolves. Why?

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293. All the five bonds in  $PCl_5$  are not equivalent justify.

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294. Why is nitric oxide paramagnetic in gaseous state but the solid obtained on cooling it is diamagnetic?

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295. Why  $ClF_3$  exists, but  $FCl_3$  does not exist ?

 [Watch Video Solution](#)

296. Out of  $H_2O$  and  $H_2S$ , which one has higher bond angle and why?

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297.  $SF_6$  is known but  $SCl_6$  is not known. Explain.

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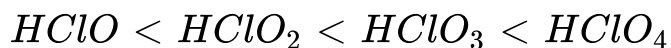
298. On reaction with  $Cl_2$  phosphorus forms two types of halides 'A' and B'. Halide A is yellowish-white powder but halide 'B' is colourless Oily liquid. Identify A and B and write the formulas of their hydrolysis products.

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**299.** In the ring test of  $NO_3^-$  ion,  $Fe^{2+}$  ion reduces Nitrate ion to nitric oxide, which combines with  $Fe^{2+}$  (aq) ion to form brown complex. Write the reactions involved in the formation of brown ring.

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**300.** Explain why the stability of oxoacids of chlorine increases in the order given below:

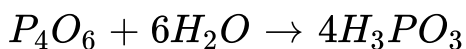


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**301.** Explain why ozone is thermodynamically less stable than oxygen.

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**302.**  $P_4O_6$  reacts with water according to equation:



Calculate the volume of 0.1 M NaOH solution required to neutralise the acid formed by dissolving 1.1 g of  $P_4O_6$  in  $H_2O$ .

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**303.** White phosphorus reacts with chlorine and the product hydrolyses in the presence of water. Calculate the mass of HCl obtained by the hydrolysis of the product formed by the reaction of 62 g of white phosphorus with chlorine in the presence of water.

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**304.** Name three oxoacids of nitrogen.

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**305.** Nitric acid forms an oxide of nitrogen on reaction with  $P_4O_{10}$ . Write the reaction involved. Also write the

resonating structures of the oxide of nitrogen formed.

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**306.** Explain the difference in the structures of white and red phosphorus.

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**307.** Give an example to show the effect of concentration of nitric acid on the formation of oxidation product.

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**308.**  $PCl_5$  reacts with finely divided silver on heating and a white silver salt is obtained, which dissolves on adding excess aqueous  $NH_3$  solution. Write the reactions involved to explain what happens.

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**309.** Phosphorus forms a number of oxoacids. Out of these oxoacids phosphinic acid has strong reducing property. Write its structure and also write a reaction showing its reducing behaviour .

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**310.** Answer the following question in one word- Name one alloy which is made up of copper and zinc?

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**311.** Elemental phosphorus does not exist as  $P_2$  like  $N_2$ . Why ?

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**312.** Explain the following :  $H_3PO_2$  and  $H_3PO_3$  act as good reducing agent while  $H_3PO_4$  does not.

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**313.** Which of the following oxides of nitrogen is called laughing gas ?

 [Watch Video Solution](#)

**314.** What is the action of heat on Pyrophosphoric acid.

 [Watch Video Solution](#)

**315.** What is the action of heat on orthophosphoric acid.

 [Watch Video Solution](#)

**316.** What is the action of heat on Phosphonic acid.

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**317.** What structures does  $PCl_5$  adopt in the solid state and vapour state ?

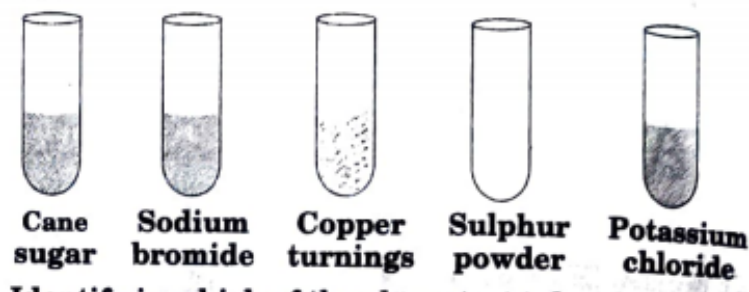
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**318.** A translucent white waxy solid (A) on heating in an inert atmosphere is converted to its allotropic form (B). Allotrope (A) on reaction with very dilute aqueous KOH liberates a highly poisonous gas (C) having rotten fish smell. With

excess of chlorine forms (D) which hydrolyses to compound (E). Identify compounds (A) to (E).

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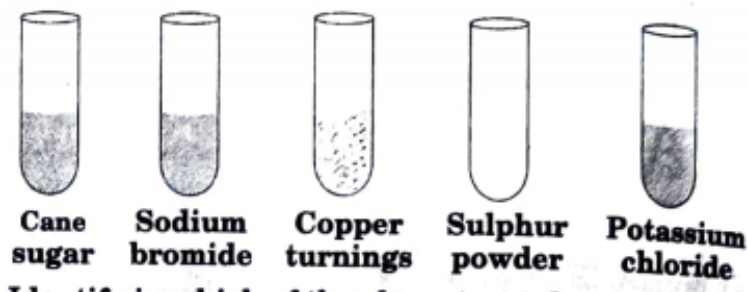
**319.** Concentrated sulphuric acid is added followed by heating to each of the following test tubes labelled (i) to (v).



Identify in which of the above test tube the following change will be observed. Support your answer with the help of a chemical equation. Formation of black substance.

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320. Concentrated sulphuric acid is added followed by heating to each of the following test tubes labelled (i) to (v).



Identify in which of the above test tube the following change will be observed. Support your answer with the help of a chemical equation. Evolution of brown gas.

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321. Answer the following question in one word- Name one alloy which is used in making idols?

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**322.** Express 1068 in roman numbers.

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**323.** Express 1069 in roman numbers.

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**324.** Express 1105 in roman numbers.

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**325.** Express 1106 in roman numbers.





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**326.** Express 1107 in roman numbers.



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**327.** Express 1108 in roman numbers.



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**328.** Nitrogen exists as diatomic molecule and phosphorous acts as tetra atomic molecule. Explain.



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**329.** Though nitrogen exhibits + 5 oxidation state, it does not form penta-halide. Given reason.

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**330.** Why is  $N_2$  less reactive at room temperature ?

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**331.** Phosphine has lower boiling point than ammonia. Give reason .

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**332.** Unlike Phosphorus, nitrogen shows little tendency for catenation. Why?

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**333.** Bi (V) is a stronger oxidising agent than Sb (V). Why ?

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**334.** Why does  $NO_2$  dimerise ?

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**335.** Why ammonia is a good complexing agent?

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336. Why does ammonia act as a Lewis base ?

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337. Write the products of the following reaction (give balanced chemical equations) :  $Mg_3N_2 + H_2O \rightarrow$

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338. Write the products of the following reaction (give balanced chemical equations) :  $I_2 + HNO_3(\text{conc.}) \rightarrow$

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**339.** Write the products of the following reaction (give balanced chemical equations) :  $Cu + HNO_3(\text{conc.}) \rightarrow$

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**340.** Write the products of the following reaction (give balanced chemical equations) :  $Li + N_2 \rightarrow$

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**341.**  $NF_3$  does not have donor properties like ammonia. Explain.

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**342.** Give one reaction in which ammonia acts as a reducing agent .

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**343.** Complete the reaction :  $NH_4NO_3(s) \xrightarrow{\text{Heat}}$

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**344.** Complete the reaction :  $N_2O + NaNH_2 \rightarrow$

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**345.** Complete the reaction :  $Cu^{2+}(aq) + NH_3(aq.) \rightarrow$

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346. Complete the reaction :  $CuO + NH_3 \rightarrow$

 [Watch Video Solution](#)

347. What is the covalence of nitrogen in  $N_2O_5$  ?

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348. In what way it can be proved that  $PH_3$  is basic in nature.

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**349.** Give the disproportionation reaction of  $H_3PO_3$ .

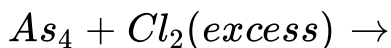
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**350.** Write balanced equations for the following reaction :



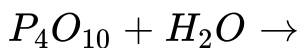
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**351.** Write balanced equations for the following reaction :



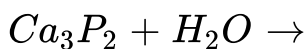
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**352.** Write balanced equations for the following reaction :



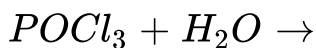
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**353.** Write balanced equations for the following reaction :



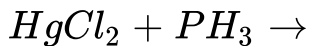
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**354.** Write balanced equations for the following reaction :



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**355.** Write balanced equations for the following reaction :



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**356.** Write balanced equations for the following reaction :



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**357.** Why does  $PCl_3$  fume in moisture ?

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**358.** Calculate the volume of 0.1 M NaOH solution required to neutralize the solution produced by dissolving 1.1 g of  $P_4O_6$  in water.

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**359.** All the five bonds in  $PCl_5$  are not equivalent justify.

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**360.**  $H_3PO_3$  is diprotic acid. Explain.

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**361.** How do you account for the reducing behaviour of  $H_3PO_2$  on the basis of its structure ?

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**362.** What happens when white phosphorus is heated with concentrated NaOH solution in an inert atmosphere of  $CO_2$  ?

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**363.** What is the basicity of  $H_3PO_4$  ?

 [Watch Video Solution](#)

**364.** What happens when  $PCl_5$  is heated?

 [Watch Video Solution](#)

**365.** What happens when  $H_3PO_3$  is heated? Write the reactions involved .

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**366.** Draw the structure of phosphinic acid ( $H_3PO_2$ ).

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**367.** Write a chemical reaction for its use of  $\text{PCl}_3$  as reducing agent.

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**368.** Suggest a quantitative method for estimation of the gas which protects us from U.V. rays of the sun.

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**369.** Nitrogen oxides emitted from the exhaust system of supersonic jet aeroplanes slowly deplete the concentration of ozone layer in upper atmosphere. Comment.

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**370.**  $NCl_3$  is readily hydrolysed while  $NF_3$  does not. Explain.

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**371.** An orange solid A on heating gives a colourless gas B. The gas B in dry conditions is Passed Over heated Ca to give a solid C. The solid C further reacts with water to Produce gas D which forms a blue coloured compound E on reaction with copper sulphate solution. Identify A, B,C,D,E and give the sequence of reactions involved .

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**372.** Name three oxoacids of P having oxidation state of P as +5.

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**373.** Draw the structure of  $P_4O_{10}$  and identify the number of single and double P-O bonds .

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**374.** Why does nitric oxide become brown when released in air?

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375. Solid  $PCl_5$  is ionic in nature.

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376. Concentrated nitric acid turns yellow on exposure to sunlight. Why?

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377. Why does not nitrogen form pentahalides like phosphorus?

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**378.** Determine the oxidation number of nitrogen in (i)  $N_2O$   
(ii)  $NO_2$  (iii)  $HNO_3$  (iv)  $NH_3$  .

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**379.** How is pyrophosphoric acid related to orthophosphoric acid?

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**380.**  $N_2O$  supports combustion more vigorously than air.  
Explain.

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**381.** On being slowly passed through water,  $PH_3$  forms bubbles but  $NH_3$  dissolves. Why?

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**382.** Write the reaction of thermal decomposition of sodium azide.

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**383.** Phosphoric acid has high viscosity and high melting point. Why ?

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**384.**  $PCl_5$  exists as  $[PCl_4]^+ [PCl_6]^-$  but  $PBr_5$  exists as  $[PBr_4]^+ [Br]^-$ . Explain.

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**385.**  $PCl_5$  is known but  $PI_5$  is not known. Why?

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**386.** Write the structural difference between white P and red P.

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**387.** What is liquid nitrogen used for ?



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**388.** Why does iron become passive when dipped in conc.

$HNO_3$  ?



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**389.** What is calcium cyanamide ? Why is it used as a fertilizer ?



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**390.** In the ring test of nitrates what chemical compound is formed ?

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**391.** What is azote ?

 [Watch Video Solution](#)

**392.** What is the basicity of  $H_3PO_2$  acid and why ?

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**393.** Write down the balanced chemical equation representing action of  $HNO_3$  on sulphur and iodine .

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**394.** Give example of oxide of nitrogen blue liquid below 258

K



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**395.** Give example of oxide of nitrogen known as laughing gas .



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**396.** Give example of oxide of nitrogen brown gas.



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**397.** Give example of oxide of nitrogen colourless gas having oxidation state of N equal to 5.

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**398.** Give example of oxide of nitrogen prepared by heating lead nitrate.

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**399.** How would you prepare a sample of deuterated ammonia,  $ND_3$  ?

 [Watch Video Solution](#)

**400.**  $N_2O$  supports combustion more vigorously than air.  
Explain.

 [Watch Video Solution](#)

**401.** Name the promoter used in Haber's process.

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**402.** Which one of  $PCl_4^+$  and  $PCl_4^-$  is not likely to exist and why?

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403. Which is a stronger reducing agent,  $SbH_3$  or  $BiH_3$ , and why?

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404. How would you account for the following :  $NF_3$  is an exothermic compound but  $NCl_3$  is not .

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405. The bond angles (O-N-O) are not of the same value in  $NO_2^-$  and  $NO_2^+$ .

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**406.**  $H_3PO_2$  is a stronger reducing agent than  $H_3PO_3$ . Give reasons..

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**407.** Bi (V) is a stronger oxidising agent than Sb (V). Why ?

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**408.** N-N single bond is weaker than P-P single bond.

 [Watch Video Solution](#)

**409.** Why does sulphur in vapour state exhibit paramagnetic character ?

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**410.** Why is  $H_2S$  less acidic than  $H_2Te$  ?

 [Watch Video Solution](#)

**411.** Starting from elemental sulphur, how would you prepare:  $H_2SO_4$

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412. Starting from elemental sulphur, how would you prepare:  $SCl_2$

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413. Out of the given alloys, which one is formed by the combination of Cu and Sn?

A. Brass

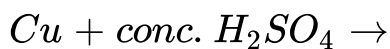
B. Bronze

C. Artificial gold

D. German silver

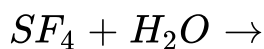
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**414.** Write balanced equations for the following reaction :



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**415.** Write balanced equations for the following reaction :



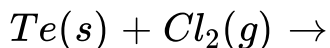
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**416.** Write balanced equations for the following reaction :



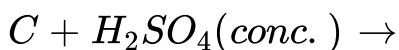
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**417.** Write balanced equations for the following reaction :



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**418.** Write balanced equations for the following reaction :



 [Watch Video Solution](#)

**419.** What happens when: Concentrated  $H_2SO_4$  is added to calcium fluoride

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420. What happens when:  $SO_3$  is passed through water?

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421. Write the order of thermal stability of the hydrides of Group 16 elements.

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422. What happens when sulphur dioxide is passed through an aqueous solution of Fe(III) salt?

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423. Why is  $K_{a2} \ll k_{a1}$  for  $H_2SO_4$  in water?

 [Watch Video Solution](#)

424.  $SF_4$  is easily hydrolysed whereas  $SF_6$  is not easily hydrolysed. Why?

 [Watch Video Solution](#)

425.  $SF_6$  is known but  $SCl_6$  is not known. Explain.

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426. Why does  $OF_6$  not exist but  $SF_6$  exists?

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427.  $SOCl_2$  can act as a weak Lewis acid as well as a weak Lewis base. Explain.

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428. Sulphur disappears when boiled with an aqueous alkaline solution of sodium sulphite. Assign reason

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429. Boiling point of HCl is lower than HF . Explain why?

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430. Why  $SF_6$  is known but  $SH_6$  is not known ?

 [Watch Video Solution](#)

431.  $SO_3$  has zero dipole moment. Why ?

 [Watch Video Solution](#)

432. Which oxide of sulphur acts as oxidising as well as reducing agent?

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**433.** Why ozone is used for purifying air in crowded places such as cinema halls, underground railway stations, tunnels etc. ?

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**434.** Why is O-O bond length in ozone molecule (127 pm) more than in  $O_2$  (121 pm) ?

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**435.** Sulphur hexafluoride is used as a gaseous electrical insulator. Explain.

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436. Which hydride has greater bond angle ?

$H_2O$ ,  $H_2S$ ,  $H_2Se$  and  $H_2Te$

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437. Why  $SF_6$  is not easily hydrolysed though thermodynamically it should be ?

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438.  $SF_6$  is kinetically inert substance. Explain.

 [Watch Video Solution](#)

**439.** Why oxide ion is called hard ion ? Explain.

 [Watch Video Solution](#)

**440.** Out of the given alloys, which one is formed by the combination of Cu and Zn?

A. Brass

B. Bell metal

C. Bronze

D. All of the above

 [Watch Video Solution](#)

441. Explain why ozone is thermodynamically less stable than oxygen.

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442. Out of the given alloys, which one is formed by the combination of Cu and Al?

A. Brass

B. Artificial gold

C. Bronze

D. Gun metal

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**443.** When  $SO_3$  is bubbled through a solution of  $H_2SO_4$ , a compound X is formed which further reacts with water to give  $H_2SO_4$ . Explain the reaction.

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**444.** Which of the two  $NH_3$  and  $PH_3$  is more boiling point and why?

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**445.** Halogens have maximum negative electron gain enthalpy in the respective periods of the periodic table. Why ?



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**446.** Fluorine exhibits only - 1 oxidation state whereas other halogens exhibit positive oxidation states such as +1, +3, +5, +7.



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**447.** Calculate the oxidation state of the halogen in the following:  $Cl_2O$



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**448.** Calculate the oxidation state of the halogen in the following:  $ClO_2$

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**449.** Calculate the oxidation state of the halogen in the following:  $KBrO_3$

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**450.** Out of the given alloys, which one is formed by the combination of Cu, Sn and Zn?

A. Brass

B. Bronze



C. Bell metal

D. Gun metal



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**451.** Out of the given alloys, which one is formed by the combination of Cu and Ni?

A. Constantan

B. Brass

C. Bronze

D. Nichrome



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**452.** Out of the given alloys, which one is formed from Cu, Sn and P?

- A. Brass
- B. Bronze
- C. Coin metal
- D. Gun metal

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**453.** Write balanced equations for the following: NaCl is heated with sulphuric acid in the presence of  $MnO_2$ .



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**454.** Out of the given alloys, which one is made from Cu, Fe and Ni?

A. Brass

B. Bronze

C. Nichrome

D. Monel metal



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455. Write balanced equations for the following :  $SiO_2$  is treated with HF.

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456. Write balanced equations for the following :  $NaClO_3$  is treated with  $SO_2$ .

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457. Write balanced equations for the following : Iodine is treated with conc.  $HNO_3$ .

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**458.** Express 1767 in roman numbers.

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**459.** Express 1768 in roman numbers.

 [Watch Video Solution](#)

**460.** Explain why inspite of nearly same electronegativity, oxygen forms hydrogen bonding while chlorine does not.

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**461.** Express 210 in roman numbers.





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**462.** Express 1771 in roman numbers.



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**463.** Express 1772 in roman numbers.



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**464.** Express 1773 in roman numbers.



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465. Complete the following reaction :  $K_2CO_3 + HCl \rightarrow$

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466. Write two uses of  $ClO_2$ .

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467. Express 1775 in roman numbers.

 [Watch Video Solution](#)

468. Write the reactions of  $F_2$  and  $Cl_2$  with water.

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**469.** Express 1776 in roman numbers.

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**470.** Express 1777 in roman numbers.

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**471.** Express 1778 in roman numbers.

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**472.** Express 1780 in roman numbers.





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473.  $IF_7$  exists but  $BrF_7$  does not exist. Why?



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474. Molten  $ICl_3$  has high electrical conductivity. Why?



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475. Explain the following :

Iodine forms  $I_3^-$  but  $F_2$  does not form  $F_3^-$  ion. Why?



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476. Give the formula of the noble gas species which is isostructural with  $IBr_2^-$ .

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477. Give the formula of the noble gas species which is isostructural with  $ICl_4^-$ .

 [Watch Video Solution](#)

478. Give the formula of the noble gas species which is isostructural with  $BrO_3^-$ .

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**479.** Noble gases have low boiling points. Explain.

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**480.** Why are the elements of Group 18 known as noble gases ?

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**481.** Express 1785 in roman numbers.

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**482.** Express 1786 in roman numbers.

 [Watch Video Solution](#)

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483. Express 1787 in roman numbers.

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484. Express 1788 in roman numbers.

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485. Complete the following reaction :  $XeF_2 + H_2O \rightarrow$

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486. Complete the following reaction :  $XeF_4 + H_2O \rightarrow$



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487. Complete the following reaction :  $XeF_6 + H_2O \rightarrow$



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488. (i) Discuss the anomalous behaviour of nitrogen.

(ii) Give the preparation and structure of  $XeF_4$ .

(iii) Write short note on 'Liquation'.

(iv) Why is Helium used in diving apparatus ?



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489. How are Xenon fluorides  $XeF_2$ ,  $XeF_4$  and  $XeF_6$  prepared ?

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490. Which of the following does not exist?  $XeOF_4$ ,  $NeF_2$ ,  $XeF_2$ ,  $XeF_6$ .

A.  $XeOF_4$

B.  $NeF_2$

C.  $XeF_2$

D.  $XeF_6$

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**491.** Why has it been difficult to study the chemistry of radon?

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**492.** Which compound of xenon has distorted octahedral shape ?

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**493.** Draw the molecular structure of the following :  $XeOF_4$

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494. Draw the molecular structure of the following :  $XeF_6$

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495. Draw the molecular structure of the following :  $XeF_2$

 [Watch Video Solution](#)

496. Draw the molecular structure of the following :  $XeF_4$

 [Watch Video Solution](#)

497. Draw the structure of  $XeOF_2$

 [Watch Video Solution](#)



498. Draw the molecular structure of the following :  $XeO_3$

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499. Express 1800 in roman numbers.

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500. Express 1806 in roman numbers.

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501. Why does chlorine water lose its yellow colour on standing ?

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502. Express 1805 in roman numbers.

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503.  $ICI_7$  does not exist while  $IF_7$  exist. Why ?

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504. Indicate whether the following statement is TRUE or FALSE. Justify your answer in not more than three lines :

$BrF_3$  has trigonal planar geometry.

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**505.** Indicate whether the following statement is TRUE or FALSE. Justify your answer in not more than three lines :  
*BrF<sub>3</sub>* has trigonal planar geometry.

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**506.** Express 1807 in roman numbers.

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**507.** Express 1808 in roman numbers.

 [Watch Video Solution](#)

**508.** Express 1867 in roman numbers.

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**509.** Arrange the following in the decreasing order of property mentioned :  $H_2O$ ,  $H_2S$ ,  $H_2Se$ ,  $H_2Te$  : Boiling point

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**510.** Express 1810 in roman numbers.

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**511.** Express 1811 in roman numbers.



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**512.** Express 1812 in roman numbers.



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**513.** Write balanced equations for the following :  
Manufacture of phosphoric acid from phosphorus.



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**514.** Why do noble gases form compounds with fluorine and oxygen ?



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**515.** Express 1813 in roman numbers.



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**516.** Which reaction prompted N. Bartlett to prepare first noble gas compound? Which was the compound ?



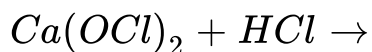
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**517.** Complete the following reaction :  $XeF_6 + H_2O \rightarrow$



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518. Complete the following equation :

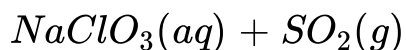


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519. Complete the following equation :  $\text{XeF}_4 + \text{H}_2\text{O} \rightarrow$

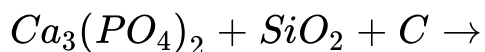
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520. Complete the following equation :



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521. Complete the following equation :



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522. What happens when chlorine gas is passed through a hot concentrated solution of NaOH ?

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523. Write chemical equations for the following process :  
Orthophosphorous acid is heated.

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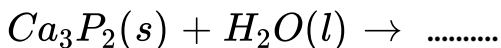


524. Write chemical equations for the following process :

$PtF_6$  and xenon are mixed together.

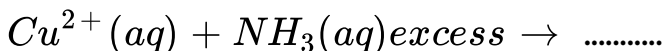
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525. Complete the following chemical equation :



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526. Complete the following chemical equation :



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**527.** Out of the given alloys, which one is made of Al and Mg?

A. Bronze

B. Brass

C. Coin metal

D. Magnalium



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**528.** Potash alum is-



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**529.** Iodide ions can be oxidised by oxygen in acidic medium.

Give chemical equation to support this.

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**530.** Fluorine atom is more electronegative than iodine atom, yet HF is weaker acid than HI. Justify.

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**531.** Uses of potash alum are-

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**532.** What are the two uses of potassium aluminium sulphate?

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**533.** Write names of two interhalogen compounds having  $sp^3d^2$  hybridisation .

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**534.** Name the halogen which forms only one oxoacid and write the formula of the oxoacid ?

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535. Why are pentahalides more covalent than trihalides ?

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536. Why is  $\text{BiH}_3$  the strongest reducing agent amongst all the hydrides of Group 15 elements ?

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537. Why is  $\text{N}_2$  less reactive at room temperature ?

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**538.** Mention the conditions required to maximise the yield of ammonia.

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**539.** How does ammonia react with a solution of  $\text{Cu}^{(2+)}$ ?

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**540.** What is the covalence of nitrogen in  $\text{N}_2\text{O}_5$  ?

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**541.** Bond angle in  $(PH_4)^+$  is higher than that in  $PH_3$ .

Why?

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**542.** What happens when white phosphorus is heated with concentrated NaOH solution in an inert atmosphere of  $CO_2$ ?

?

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**543.** What happens when  $PCl_5$  is heated?

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**544.** Write a balanced equation for the hydrolytic reaction of  $PCL_5$  in heavy water.

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**545.** What is the basicity of  $H_3PO_4$  ?

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**546.** What happens when  $H_3PO_3$  is heated?

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**547.** List the important sources of sulphur.





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**548.** Write the order of thermal stability of the hydrides of Group 16 elements.

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**549.** Why is  $H_2O$  a liquid and  $H_2S$  a gas?

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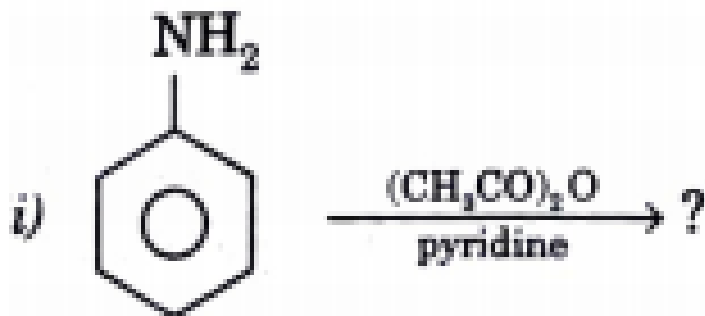
**550.** Write the oxidation number of central atom of following compound :  $[Ni(dmg)_2]$

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551. Complete the following reaction :  $C_2H_4 + O_2 \rightarrow$

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552. Complete the following reaction :



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553. Why does  $O_3$  act as a powerful oxidising agent ?

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554. How is  $O_3$  estimated quantitatively?



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555. What happens when sulphur dioxide is passed through an aqueous solution of Fe(III) salt?



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556. Comment on nature of two S-O bond formed in  $SO_2$  molecule. Are the two S-O bonds in this molecule equal ?



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557. How is the presence of  $SO_2$  detected ?

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558. Mention three areas in which  $H_2SO_4$  plays an important role.

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559. Write the conditions for maximum yield of  $H_2SO_4$  by contact process.

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560. Why is  $K_{a_2} \ll k_{a_1}$  for  $H_2SO_4$  in water?



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**561.** Considering the parameters such as bond dissociation enthalpy, electron gain enthalpy and hydration enthalpy, compare the oxidising power of  $F_2$  and  $Cl_2$ .



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**562.** Give two examples to show the anomalous behaviour of fluorine.



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**563.** Sea is the greatest source of some halogens . Comment.

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**564.** Give the reason for bleaching action of  $Cl_2$ .

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**565.** Name two poisonous gases which can be prepared from chlorine gas.

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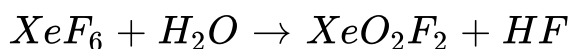
**566.** Why  $ICl$  is more reactive than  $I_2$  ?

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567. Why is helium used in diving apparatus?

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568. Balance the following equation:



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569. Discuss the general characteristics of Group 15 elements with reference to their electronic configuration, oxidation state, atomic size, ionisation enthalpy and electronegativity.

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570. Why does the reactivity of nitrogen differ from phosphorus?

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571. Discuss the general characteristics of Group 15 elements with reference to their electronic configuration, oxidation state, atomic size, ionisation enthalpy and electronegativity.

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572. Why does  $NH_3$  form hydrogen bond but  $PH_3$  does not?

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**573.** How is nitrogen prepared in the laboratory? Write the chemical equations

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**574.** How is ammonia manufactured industrially?

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**575.** Illustrate how copper metal can give different products on reaction with  $HNO_3$ .

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576. Give the resonating structures of  $NO_2$  and  $N_2O_5$ .

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577. The HNH angle value is higher than HPH, HAsH and HSbH angles. Why?

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578. Why does  $R_3P = O$  exist but  $R_3N = O$  does not? (R = alkyl group)

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579. Explain why  $NH_3$  is basic but  $BiH_3$  is only feebly basic.



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**580.** Nitrogen exists as diatomic molecule and phosphorus as  $P_4$ . Why ?



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**581.** Write main differences between the properties of white phosphorus and red phosphorus.



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**582.** Why does nitrogen show catenation properties less than phosphorus ?



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**583.** Give the disproportionation reaction of  $H_3PO_3$ .

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**584.** Can  $PCl_5$  act as an oxidising as well as a reducing agent? Justify.

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**585.** Justify the placement of O, S, Se, Te and Po in the same group of the periodic table in terms of electronic configuration, oxidation state and hydride formation.

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586. Why is dioxygen gas but sulphur a solid?

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587. Knowing the electron gain enthalpy values for  $O \rightarrow O^-$  and  $O \rightarrow O^{2-}$  as  $-141$  and  $702 \text{ kJ mol}^{-1}$  respectively, how can you account for the formation of a large number of oxides having  $O^{2-}$  species and not  $O^-$

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588. Which aerosols deplete ozone?

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**589.** Explain the manufacture of sulphuric acid by contact process.

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**590.** How is  $SO_2$  an air pollutant?

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**591.** Why are halogens strong oxidising agents?

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**592.** Explain why fluorine forms only one oxoacid, HOF.

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**593.** Explain why inspite of nearly same electronegativity, oxygen forms hydrogen bonding while chlorine does not.

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**594.** Write two uses of  $ClO_2$ .

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**595.** Why are halogens coloured ?

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596. Write the reactions of  $F_2$  and  $Cl_2$  with water.

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597. How can you prepare  $Cl_2$  from HCl and HCl from  $Cl_2$ ?

Write reactions only.

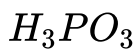
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598. What inspired N. Bartlett for carrying out reaction between Xe and  $PtF_6$ ? Write the reaction also.

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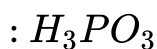


**599.** What are the oxidation states of phosphorus following :



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**600.** What are the oxidation states of phosphorus following



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**601.** What is the oxidation state of phosphorus in the following :  $Ca_3P_2$



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**602.** What are the oxidation states of phosphorus in the following:  $Na_3PO_4$

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**603.** What is the oxidation state of phosphorous in  $POF_3$ ?

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**604.** Write balanced equations for the following: NaCl is heated with sulphuric acid in the presence of  $MnO_2$ .

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605. Write balanced equations for the following: Chlorine gas is passed into a solution of NaI in water.

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606. How are Xenon fluorides  $XeF_2$ ,  $XeF_4$  and  $XeF_6$  prepared ?

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607. With what neutral molecule is  $ClO^-$  isoelectronic? Is that molecule a Lewis base?

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608. How are  $XeO_3$  and  $XeOF_4$  prepared?

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609. Arrange the following in the order of property indicated for each set:  $F_2, Cl_2, Br_2, I_2$  - increasing bond dissociation enthalpy.

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610. Arrange the following in the order of property indicated for each set:  $HF, HCl, HBr, HI$  - increasing acid strength.

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**611.** Arrange the following in the order of property indicated for each set:  $NH_3$ ,  $PH_3$ ,  $AsH_3$ ,  $SbH_3$ ,  $BiH_3$  - increasing base strength.

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**612.** Which of the following does not exist?  $XeOF_4$ ,  $NeF_2$ ,  $XeF_2$ ,  $XeF_6$ .





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**613.** Give the formula and describe the structure of a noble gas species which is isostructural with:  $ICl_4^-$



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**614.** Give the formula of the noble gas species which is isostructural with  $IBr_2^-$ .



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**615.** Give the formula and describe the structure of a noble gas species which is isostructural with:  $BrO_3^-$



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**616.** Why do noble gases have large atomic size

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**617.** List the uses of neon and argon gases.

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**618.** Write method of preparation of  $H_2SO_4$  acid by Contact process.

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**619.** Write a balanced chemical equation for the reaction showing catalytic oxidation of  $NH_3$  by atmospheric oxygen.

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**620.** Write the structure of pyrophosphoric acid.

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**621.** On being slowly passed through water,  $PH_3$  forms bubbles but  $NH_3$  dissolves. Why?

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**622.** All the five bonds in  $PCl_5$  are not equivalent. Justify.

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**623.** Why is nitric oxide paramagnetic in gaseous state but the solid obtained on cooling it is diamagnetic?

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**624.** Out of  $H_2O$  and  $H_2S$ , which one has higher bond angle and why?

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625.  $SF_6$  is known but  $SCl_6$  is not known. Explain.

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626. On reaction with  $Cl_2$  phosphorus forms two types of halides 'A' and B'. Halide A is yellowish-white powder but halide 'B' is colourless Oily liquid. Identify A and B and write the formulas of their hydrolysis products.

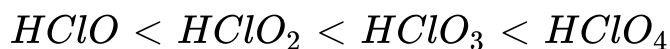
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627. In the ring test of  $NO_3^-$  ion,  $Fe^{2+}$  ion reduces Nitrate ion to nitric oxide, which combines with  $Fe^{2+}$  (aq) ion to

form brown complex. Write the reactions involved in the formation of brown ring.

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**628.** Explain why the stability of oxoacids of chlorine increases in the order given below:

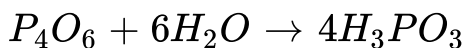


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**629.** Explain why ozone is thermodynamically less stable than oxygen.

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**630.**  $P_4O_6$  reacts with water according to equation:



Calculate the volume of 0.1 M NaOH solution required to neutralise the acid formed by dissolving 1.1 g of  $P_4O_6$  in  $H_2O$ .

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**631.** White phosphorus reacts with chlorine and the product hydrolyses in the presence of water. Calculate the mass of HCl obtained by the hydrolysis of the product formed by the reaction of 62 g of white phosphorus with chlorine in the presence of water.

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**632.** Name three oxoacids of nitrogen. Write the disproportionation reaction of that oxoacid of nitrogen in which nitrogen is in +3 oxidation state .

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**633.** Nitric acid forms an oxide of nitrogen on reaction with  $P_4O_{10}$ . Write the reaction involved. Also write the resonating structures of the oxide of nitrogen formed.

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**634.** Explain the difference in the structures of white and red phosphorus.



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**635.**  $PCl_5$  reacts with finely divided silver on heating and a white silver salt is obtained, which dissolves on adding excess aqueous  $NH_3$  solution. Write the reactions involved to explain what happens.



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**636.** Phosphorus forms a number of oxoacids. Out of these oxoacids phosphinic acid has strong reducing property. Write its structure and also write a reaction showing its reducing behaviour .



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**637.** Why is  $SO_2$  a better reducing agent in alkaline medium than in acidic medium ?

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**638.** Elemental phosphorus does not exist as  $P_2$  like  $N_2$ . Why ?

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**639.** Explain the following :  $H_3PO_2$  and  $H_3PO_3$  act as good reducing agent while  $H_3PO_4$  does not.

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**640.** Express 1823 in roman numbers.

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**641.** Express 1825 in roman numbers.

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**642.** Express 1826 in roman numbers.

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**643.** Express 1827 in roman numbers.

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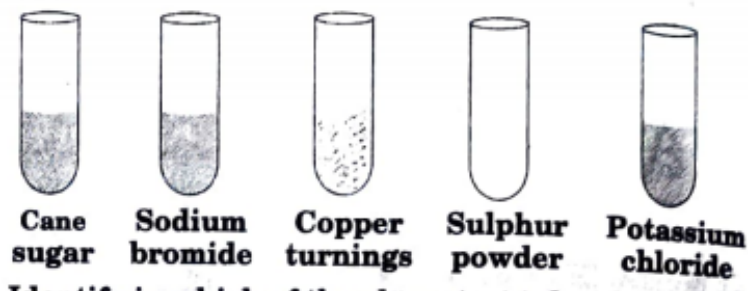
**644.** What structures does  $PCl_5$  adopt in the solid state and vapour state ?

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**645.** A translucent white waxy solid (A) on heating in an inert atmosphere is converted to its allotropic form (B). Allotrope (A) on reaction with very dilute aqueous KOH liberates a highly poisonous gas (C) having rotten fish smell. With excess of chlorine forms (D) which hydrolyses to compound (E). Identify compounds (A) to (E).

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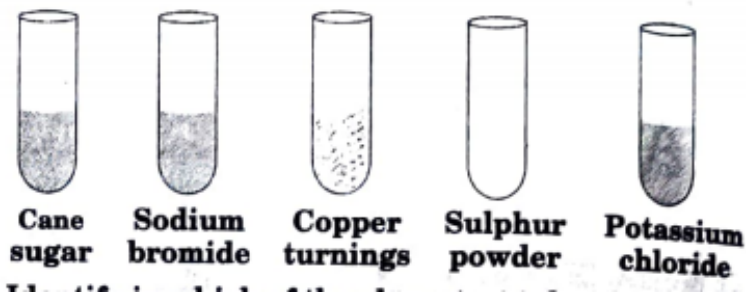
**646.** Concentrated sulphuric acid is added followed by heating to each of the following test tubes labelled (i) to (v).



Identify in which of the above test tube the following change will be observed. Support your answer with the help of a chemical equation. Formation of black substance.

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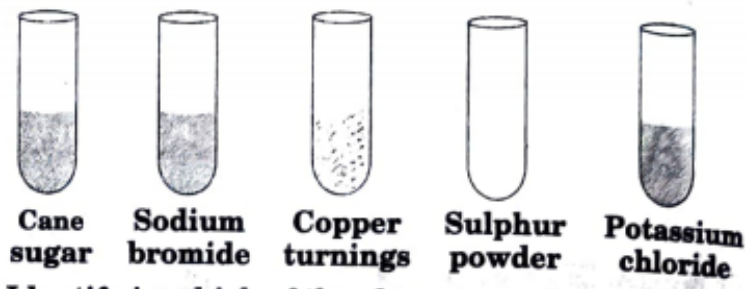
**647.** Concentrated sulphuric acid is added followed by heating to each of the following test tubes labelled (i) to (v).



Identify in which of the above test tube the following change will be observed. Support your answer with the help of a chemical equation. Evolution of brown gas.

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**648.** Concentrated sulphuric acid is added followed by heating to each of the following test tubes labelled (i) to (v).



Identify in which of the above test tube the following

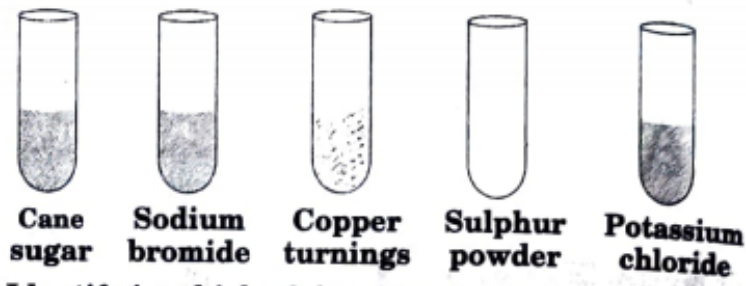
change will be observed. Support your answer with the help of a chemical equation. Evolution of colourless gas.

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649. Express 1828 in roman numbers.

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650. Concentrated sulphuric acid is added followed by heating to each of the following test tubes labelled (i) to (v).



Identify in which of the above test tube the following

change will be observed. Support your answer with the help of a chemical equation. Disappearance of yellow powder along with evolution of colourless gas.

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**651.** When a mixture of ammonium chloride and potassium dichromate are heated, a stable colourless gas (A) was evolved which did not support combustion but magnesium continued to burn in it. The gas (A) reacted with calcium carbide in an electric furnace forming a solid (B). The compound (B) was slowly hydrolysed by water forming an insoluble substance (C) and the solution of substance (D) which turned Nessler's reagent brown. Identify (A) to (E) and give the reactions involved.

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**652.** When conc.  $H_2SO_4$  was added to an unknown salt present in a test tube, a brown gas (A) was evolved. The gas intensified when copper turnings were also added into this test tube. On cooling the gas A changed into a colourless gas (B). Identify the gases (A) and (B).



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**653.** When conc.  $H_2SO_4$  was added to an unknown salt present in a test tube, a brown gas (A) was evolved. The gas intensified when copper turnings were also added into this test tube. On cooling the gas A changed into a colourless gas (B). Write the equations for the reactions involved.



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654. Express 1830 in roman numbers.

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## EXERCISE

1. Which of the two  $NH_3$  and  $PH_3$  is more basic and why ?

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2. How many significant figures are present in  $4.01 \times 10^2$

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3. Which of these is not a tree?

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4. Which of the two  $NH_3$  and  $PH_3$  is soluble in water and why?

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5. Arrange  $H_2O$ ,  $NH_3$  and  $CH_4$  in the decreasing order of bond angle.

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6. The cost of table salt ( $\text{NaCl}$ ) is Rs 2 per Kg. Calculate the cost per mole.

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7. Give an example of compounds in which the oxidation state of nitrogen : -3 .

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8. Give an example of compounds in which the oxidation state of nitrogen : 0.

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9. Give an example of compounds in which the oxidation state of nitrogen : +5.

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10. What does the abbreviation T.N .T. stand for ?

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11. What is laughing gas ? How is it prepared ?

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12. Which plants mostly help in nitrogen fixing ?



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13. Write the formula of the compound formed during ring test of nitrate . Give its name.

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14. Name the oxide of nitrogen Which is blue solid ?

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15. Name three oxoacids of nitrogen.

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16. Which oxide of nitrogen is produced by heating lead nitrate ?

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17. Give one example each of oxyacid of P having the oxidation state +4 .

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18. What is the chemical formula of laughing gas ? How is it prepared ?

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19. Among the hydrides of group 15, predict the hydride having most basic character.

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20. Among the hydrides of group 15, predict the hydride having highest thermal stability.

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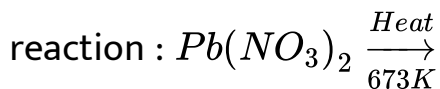
21. Among the hydrides of group 15, predict the hydride having lowest boiling point .

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22. Among the hydrides of group 15, predict the hydride having strongest reducing agent.

 [Watch Video Solution](#)

23. Name the oxide of nitrogen obtained in the following

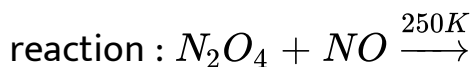


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24. Complete the reaction :  $NH_4NO_3(s) \xrightarrow{Heat}$

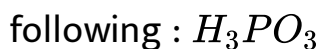
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25. Name the oxide of nitrogen obtained in the following



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26. What is the oxidation state of phosphorus in the



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27. What are the oxidation states of phosphorus in the



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28. What is the oxidation state of phosphorus in the following :  $Ca_3P_2$

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29. What are the oxidation states of phosphorus in the following:  $Na_3PO_4$

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30. What is the oxidation state of phosphorous in  $POF_3$ ?

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**31.** Which of the following has maximum P-OH bonds ? (i) Orthophosphoric acid (ii) Pyrophorous acid (iii) Pyrophosphoric acid

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**32.** Name the oxoacid of P which exists as polymeric.

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**33.** Name the oxoacid of P which has basicity two.

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**34.** Express 966 in roman numbers.

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**35.** Express 967 in roman numbers.

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**36.** Answer the following question- Is alanko a mixture?

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**37.** Express 968 in roman numbers.

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**38.** Express 969 in roman numbers.

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**39.** Among the hydrides of the members of oxygen family, which has maximum thermal stability .

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**40.** Fill in the blanks- Alanko is used for making\_\_\_\_\_.

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**41.** What is the oxidation state of S in the Peroxy monosulphuric acid?

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**42.** What is the oxidation state of S in the following oxyacids of sulphur ? Thiosulphuric acid ?

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**43.** What is the oxidation state of S in the following oxyacids of sulphur ? Dithionic acid ?

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44. Express 970 in roman numbers.

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45. Why sulphuric acid is oily and viscous liquid ?

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

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47. What is the oxidation state of S in  $H_2S_2O_7$  and  $SO_3$  ?



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48. Express 972 in roman numbers.

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49. What is the formula of peroxodisulphuric acid ? What is its basicity ?

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50. Express 973 in roman numbers.

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51. What is the structure of  $SCl_2$  ?

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52. Give an example of oxide of chlorine having +6 oxidation state of Cl .

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53. Complete the following reaction :  $CaO + H_2O \rightarrow$

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54. Complete the following reaction : when iron is treated with copper sulphate solution.



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55. Fill in the blanks- In ammonal, \_\_\_\_\_ is used as fuel and \_\_\_\_\_ is used as oxidizer.



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56. Among hydrides of halogens predict the hydride having lowest boiling point.



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57. Among hydrides of halogens predict the hydride having highest boiling point.





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58. Among hydrides of halogens predict the hydride having most acidic.

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59. Complete the following reaction :  $Fe_2O_3 + Al \rightarrow$

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60. Which type of hybridisation occurs in  $BrF_3$  .

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61. Which type of hybridisation occurs in  $BrF_5$  .

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62. Answer the following question- What is ammonal?

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63. Give two examples of pseudohalides.

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64. Complete the following reaction : when lead oxide is treated with carbon

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65. Complete the following reaction :  $HCl(dil) + Fe \rightarrow$

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66. State whether the statement is true or false- Ammonal is a fertilizer.

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67. Which among the following pairs is stronger acid ?

HF or HCl .

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68. Answer the following question in one word- Name an alloy which is used for making utensils and parts of machines?

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69. Which among the following pairs is stronger acid ?

$HClO_3$  or  $HClO_4$  .

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70. Answer the following question in one word- Juice of grapes is made up of -

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71. Complete the following reaction :  $H_2S + O_2 \rightarrow$

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72. Complete the following reaction :  $K + H_2O \rightarrow$

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73. Name the noble gas which is most abundant in atmosphere.

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74. Name the noble gas which is radioactive.

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75. Name the noble gas which has least boiling Point .

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76. Which was the first noble gas compound synthesised?

Who prepared it ?

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77. Draw the structure of  $XeF_2$ , and what is the state of hybridisation of Xe in it ?

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78. What is the state of hybridisation of Xe in :  $XeOF_4$

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79. What is the state of hybridisation of Xe in :  $XeO_3$

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80. What is the state of hybridisation of Xe in  $XeF_4$ .

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**81.** What is the difference of water molecules in plaster of paris and gypsum ?

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**82.** The odour of acetic acid resembles that of :

A. rose

B. burning plastic

C. vinegar

D. kerosene



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83. Plaster of paris is hardens by .....

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84. Which of the following is evolved when  $\text{Na}_2\text{CO}_3$  is heated ?

A.  $\text{CO}_2$

B. CO

C.  $\text{O}_2$

D. no gas evolved

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85. If pH of the solution is 13 then what does it indicate?

- A. weakly acidic
- B. weakly basic
- C. strongly acidic
- D. strongly basic

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86. Why conc.  $H_2SO_4$  is viscous and has high boiling point ?

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**87.** True or False: In group 16, the volatility of hydrides first increases from  $H_2O$  to  $H_2S$  and then decreases from  $H_2S$  to  $H_2Te$ .

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**88.** True or False: Both pyrophosphoric acid and hypophosphoric acid have P-O-P linkages.

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**89.** A solution turns red litmus blue, its pH is likely to be :

A. 0

B. 3

C. 7

D. 12

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90. True or False: In  $SF_4$ , S involves  $sp^3d$  hybridisation.

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91. True or False: Nitrogen cannot form compounds of the type  $R_3N = O$  while phosphorus can form compounds of the type  $R_3P = O$ .

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92. Complete the following statement- Composition of brass is-

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93. True or False: Concentrated  $H_2SO_4$  can be used to prepare HBr from NaBr.

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94. "A" is a soluble acidic oxide. compared to pH of pure water what will be the pH of solution A ?

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95. "B" is a soluble basic oxide. compared to pH of pure water what will be the pH of solution B ?

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96. An aqueous solution has a pH value of 7 . is this solution is acidic, basic or neutral .

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97. Explain why blue vitriol changes to white upon heating.

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98. Which of the following gives CO<sub>2</sub> on heating ?

A. slaked lime

B. quick lime

C. limestone

D. brine solution



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99. Give the name of following functional group ROR"



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100. Name the functional group present in methoxy methane

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101. In brown ring test for nitrates,  $Fe^{2+}$  ion reduces  $NO_3^-$  ion to ..... Which reacts with  $Fe^{2+}$  ion to form a brown ring complex having the molecular formula .....

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102.  $PCl_5$  in solid state exists as ionic compound having cation ..... and anion .....

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**103.** The strongest reducing agent among all the halide ions is .....

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**104.** In  $ClF_3$  and  $SF_4$ , Cl involves..... hybridisation and S involves..... hybridisation.

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**105.** Give the name of functional group present in propanol.

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106. Give the name of functional group present in aniline.

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107. In  $XeF_4$ , xenon involves..... hybridisation and its shape is .....

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108. Oleum is formed when..... is passed through conc.  $H_2SO_4$ .

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109. The two neutral oxides of nitrogen are..... and .....



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110. Give two examples of ketone.



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111. Among group 15 hydrides, ..... is most stable.



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112.  $P_4O_6$  and  $P_4O_{10}$  dissolve in water to give ..... and .....



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**113.** Calcium cyanamide is used as fertilizer under the name .....

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**114.** The number of unpaired electron in aluminium is .....

A. 0

B. 1

C. 2

D. 3

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**115.** Write balanced equations for the following : Phosphorus is treated with concentrated nitric acid.

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**116.** Laughing gas is obtained on heating a mixture of  $NH_4Cl$  and ..... but nitrogen gas is obtained when a mixture of  $NH_4Cl$  and ..... is heated.

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**117.** Draw lewis structure of flourine ion (F<sup>-</sup>)

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118. Orthophosphorous acid on heating gives ..... and .....

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119. Draw lewis structure of  $\text{Ca}^{2+}$

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120. The formula of epsom salt is..... and that of baryte is .....

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121. Choose the correct alternative: Reducing power of hydrides of group 16 increases/decreases from  $\text{H}_2\text{O}$  to

$H_2Te$ .



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122.  $SF_6$  molecule has ..... geometry.



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123. Nitrogen gas is obtained by heating ammonium nitrite/ammonium nitrate.



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124. What is the composition of grapes?



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125. In  $H_2S_2O_8$ , the oxidation state of S is +6/+7.

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126. The number of electrons present in M shell of aluminium is .....

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127. The ion that is isoelectronic with CO is .....

A.  $CN^-$

B.  $O_2^-$



C.  $N_2 +$

D.  $N_2 -$

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**128.** During electrolysis of molten  $ICl_3$ , both  $I_2$  and  $Cl_2$  are liberated at anode /cathode.

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**129.**  $HClO_4$  is less/more acidic than  $HClO_3$ .

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130. What are the uses of grape juice?

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131. When  $Cl_2$  gas is passed through hot milk of lime, bleaching powder /calcium chlorate is formed.

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132. HI is stronger /weaker acid than HCl.

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133. Bleaching action of  $SO_2$  is permanent/ temporary.

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134. Dipole moment of  $SO_3$  is higher /lower than that of  $SO_2$

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135.  $BrO_4^-$  is stronger /weaker oxidizing agent than  $ClO_4^-$ .

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136. The halogen which normally does not form oxoacid is fluorine / chlorine.

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137. In  $BrF_3$ , Br involves  $sp^3/sp^3d$  hybridisation.

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138. The most abundant noble gas in atmosphere is argon / helium.

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139. The square pyramidal shape is of  $XeOF_4/XeO_2F_2$ .

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**140.** Why white phosphorus is more reactive than red phosphorus?

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**141.** Express 1109 in roman numbers.

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**142.** Express 1110 in roman numbers.

 [Watch Video Solution](#)

**143.** Express 1111 in roman numbers.

 [Watch Video Solution](#)

**144.** Express 1112 in roman numbers.

 [Watch Video Solution](#)

**145.** Express 1113 in roman numbers.

 [Watch Video Solution](#)

**146.** Express 1114 in roman numbers.

 [Watch Video Solution](#)

**147.** Express 1115 in roman numbers.

 [Watch Video Solution](#)

**148.** Express 1116 in roman numbers.

 [Watch Video Solution](#)

**149.** Express 1117 in roman numbers.

 [Watch Video Solution](#)

**150.** Express 1118 in roman numbers.

 [Watch Video Solution](#)

**151.** Express 1119 in roman numbers.

 [Watch Video Solution](#)

**152.** Express 1120 in roman numbers.

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**153.** Express 1121 in roman numbers.

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**154.** Express 1122 in roman numbers.





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155. Give the structure and basicity of  $H_3PO_3$  (Phosphorus acid)



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156. Give the disproportionation reaction of  $H_3PO_3$ .



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157. What is the covalence of nitrogen in  $N_2O_5$  ?



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**158.** Draw the structure of  $H_3PO_2$  and explain why it is monobasic.

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**159.** Give a reason for chemical inertness of noble gases.

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**160.** Answer the following question in one word- Name one alloy which is made up of tin metal and copper metal?

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**161.** Give the structure and basicity of  $H_3PO_4$ .

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**162.** Bi (V) is a stronger oxidising agent than Sb (V). Why ?

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**163.** Why does nitrogen show catenation properties less than phosphorus ?

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**164.** Explain the following :

Fluorine does not show positive oxidation state.

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**165.** Which is a stronger reducing agent,  $SbH_3$  or  $BiH_3$  , and why ?

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**166.** Name two poisonous gases which can be prepared from chlorine gas.

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167. How aerosols are depleting ozone layer?

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168. What is the basicity of  $H_3PO_2$  acid and why ?

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169. Why does ammonia act as a lewis base?

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170. Why does  $NO_2$  dimerise ?

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171. Out of white phosphorus and red Phosphorus, which one is More reactive and why?

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172. On heating  $Pb(NO_3)_2$  a brown gas is evolved which undergoes dimerization on cooling. Identify the gas.

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173. Which of the following compounds contains S=O and S=S bonds ?

A. Sulphuric acid

B. Thiosulphuric acid

C. Sulphurous acid

D. Thiosulphurous acid.

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**174.** Composition of bordo mix?

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**175.** Which of the following halogen shows only negative oxidation state ?

A. Chlorine

B. Bromine

C. Fluorine

D. Iodine



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176. The hybridisation state of S in  $SO_2$  is

A.  $sp$

B.  $sp^2$

C.  $sp^3$

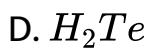
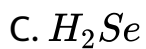
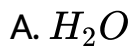
D.  $sp^3d$





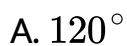
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177. Which of the following is the strongest acid?



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178. P-P-P bond angle in white phosphorus is :



B.  $60^\circ$

C.  $90^\circ$

D.  $109^\circ 28'$

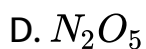
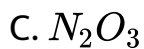
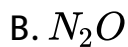
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**179.** Answer the following question in one word- Name an alloy which is used for making artificial jewellery?

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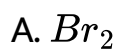
**180.** Which of the following oxides of nitrogen is called laughing

gas ?



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**181.** Among the following which is the strongest oxidising agents:  $Br_2$ ,  $I_2$ ,  $F_2$ ,  $Cl_2$ .



C.  $Cl_2$

D.  $F_2$



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**182.** Which of the following does not exist?  $XeOF_4$ ,  $NeF_2$ ,  
 $XeF_2$ ,  $XeF_6$ .

A.  $XeOF_4$

B.  $NeF_2$

C.  $XeF_2$

D.  $XeF_6$



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**183.** What is the basicity of  $H_3PO_2$  acid and why ?

A. 1

B. 2

C. 3

D. 4



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**184.** Which of the following element has maximum electron gain enthalpy(negative)?  $F, Cl, Br, I$ .

A. F

B. Cl

C. Br

D. I



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**185.** The basicity of phosphorus acid is :

A. Two

B. Three

C. One

D. Zero



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**186.** Describe the trends in the elements of group 16 in order of increasing atomic number: Atomic radii .



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**187.** Describe the trends in the elements of group 16 in order of increasing atomic number: Ionisation energy.



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**188.** Describe the trends in the elements of group 16 in order of increasing atomic number: Oxidation state.

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**189.** Describe the trends in the elements of group 16 in order of increasing atomic number: Ionisation energy.

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**190.** Hydroleum has the following composition-

A. Cu, Sn, Mg

B. Zn, Cu, Mn, Fe



C. Al, Mg, Cu, Mn

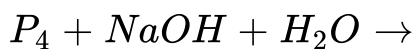
D. Zn, Ni, Fe

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**191.** Describe the manufacture of  $H_2SO_4$  by contact process?

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**192.** Complete the following chemical reaction equation :



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193. Complete the following reaction :  $XeF_2 + H_2O \rightarrow$

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194. In the structure of  $HNO_3$  molecule, N-O bond (121 pm) is shorter than N-OH bond (140 pm). why?

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195. Explain the following situation :  $XeF_2$  has a linear structure and not bent angular structure.

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196. Which of the following noble gases form maximum compounds :

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197. Out of white phosphorus and red Phosphorus, which one is More reactive and why?

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198. Draw the Structural formulae of molecules of the following compound :  $BrF_3$

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**199.** Draw the Structural formulae of molecules of the following compound :  $XeF_4$

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**200.** Answer the question in one word- Name one alloy which is made up aluminium and copper metals?

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**201.**  $SF_6$  is kinetically inert substance. Explain.

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202. All the five bonds in  $PCl_5$  are not equivalent justify.

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203. How would you account for the following : Sulphur has a great tendency for catenation than oxygen.

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204. Why ammonia is a stronger base than phosphine?

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205. Why  $SF_6$  is known but  $OF_6$  is not known

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206. Why is phosphorus solid and reactive, but nitrogen is a gas and inert?

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207. Why  $SF_6$  is known but  $SH_6$  is not known ?

 [Watch Video Solution](#)

208. Answer the question in one word- Name that alloy which is made up of zinc, tin, copper?

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**209.** Answer the following question in one word- Name one alloy which is used to make bells?

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**210.** Nitrogen forms number of oxides in different oxidation states. Write the names of any four oxides of nitrogen.

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**211.** Boiling point of  $H_2O$  (373 K) is very much higher than that of  $H_2S$  (213 K). Give reason.

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**212.** You have seen number of artificial ornaments in the market. Can you tell with which alloy these ornaments are made up of?

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**213.** Answer the following question with one word- Name one alloy which is made up of copper, tin and phosphorus?

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**214.** In which ratio conc. hydrochloric acid and conc: nitric acid to form aqua regia ?

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215. Discuss the shape of  $P_4O_6$ .

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216. why does nitrogen not form  $NCl_5$ .

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217. Discuss the shape of  $SF_4$ ?

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218. Halogens are highly reactive. Explain.





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219. Complete the reaction :  $XeF_2 + PF_5 \rightarrow ?$



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220. Compare the acidic strength of  $HClO_4$ ,  $HClO_3$ ,  $HClO_2$ ,  $HClO$ . Give reasons.



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221. What happens when  $PCl_5$  is heated . Write the reactions involved.



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222. What happens when  $H_3PO_3$  is heated?

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223. Answer the following question in one word- Name that alloy which is used in making coins and idols?

 [Watch Video Solution](#)

224. How is nitric acid manufactured by Ostwald process?

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225. How will you prepare the following ? Give chemical equation also. Chlorine from HCl.

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226. How will you prepare the following ? Give chemical equation also. Phosphoric acid from  $PCl_5$ .

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227. How will you prepare the following ? Give chemical equation also. Bleaching powder from  $Cl_2$ .

 [Watch Video Solution](#)

**228.** Write the balanced chemical equation for the reaction of  $CI_2$  with hot and concentrated NaOH. Is this reaction a disproportionation reaction? Justify.

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**229.**  $OF_2$  should be called oxygen difluoride and not fluorine oxide. Explain.

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**230.**  $PCl_5$  is known but  $PI_5$  is not known. Why?

 [Watch Video Solution](#)

**231.** Answer the following question in one word- Name one alloy that is used to make guns and pistols?

 [Watch Video Solution](#)

**232.** Answer the following question in one word- Bella of school and temples are made up of a special alloy. What is the name of that alloy?

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**233.** Express 1123 in roman numbers.

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234. Express 1124 in roman numbers.

 [Watch Video Solution](#)

235. Why does ammonia act as a lewis base?

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236. Bond angle in  $NH_4^+$  is more than that in  $NH_3$ .

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237. Arrange the following in the order of property indicated against set : HF, HCl, HBr, HI. increasing bond dissociation

enthalpy.



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**238.** Arrange the following in the order of property indicated against set :  $H_2O, H_2S, H_2Se, H_2Te$  increasing acidic character.



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**239.** Account for the following:  $PCl_5$  is more covalent than  $PCl_3$ .



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**240.** Express 1160 in roman numbers.

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**241.** Express 1125 in roman numbers.

 [Watch Video Solution](#)

**242.** Bi (V) is a stronger oxidising agent than Sb (V). Why ?

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**243.** Answer the following question in one word- Coins we use are made up of an special alloy. Can you tell the name of

that alloy?

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**244.** Answer the following statement in one word- Various idols and parts of machines are made up of a special alloy.

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**245.** Draw the molecular structure of the following :  $XeF_4$

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**246.** Draw the structures of the following compound :  $N_2O_5$

 [Watch Video Solution](#)

**247.** Write the structural difference between white P and red P.

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**248.** Explain: Electron gain enthalpy of chlorine is more negative than fluorine.

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**249.** Given reason:  $H_3PO_4$  is triprotic acid but  $H_3PO_3$  is diprotic acid. Why?

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250. Give two methods of preparation of dioxygen in laboratory and give its uses ?

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251. What happens when  $PCl_5$  is heated?

 [Watch Video Solution](#)

252. Complete the following reaction :  $4Al + 3O_2 \rightarrow$

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253. Why is  $H_2S$  less acidic than  $H_2Te$  ?

 [Watch Video Solution](#)

254. Describe chemistry of manufacture of nitric acid by Ostwald's process.

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255. Why sulphuric acid is oily and viscous liquid ?

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256. Molecular nitrogen  $N_2$  is not particularly reactive.

Explain

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257. Nichrome has the following composition-

A. Cr, Zn, Mn

B. Al, Mg, Cu

C. Ni, Zn, Al, Cu

D. Ni, Fe, Cr, Mn

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258. Name any five oxoacids of phosphorus and write their formulas .

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259. Why does  $PCl_3$  fume in moisture ?

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260. Explain the following:  $NO_2$  dimerises to  $N_2O_4$ .

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261. Express 1126 in roman numbers.



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**262.** Express 1127 in roman numbers.

 [Watch Video Solution](#)

**263.** Express 1128 in roman numbers.

 [Watch Video Solution](#)

**264.** Express 1129 in roman numbers.

 [Watch Video Solution](#)



**265.** Express 1134 in roman numbers.

 [Watch Video Solution](#)

**266.** Express 1135 in roman numbers.

 [Watch Video Solution](#)

**267.** Answer the following question in one word- Fish plates used in railway lines are made up of a special alloy. Can you tell the name of that alloy?

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**268.** Explain the manufacture of sulphuric acid by contact process.

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**269.** Express 1130 in roman numbers.

 [Watch Video Solution](#)

**270.** Express 1131 in roman numbers.

 [Watch Video Solution](#)

**271.** Express 1132 in roman numbers.

 [Watch Video Solution](#)

272. Draw the structure of  $XeF_4$ . What is the state of hybridisation of Xe in it?

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273. Express 1133 in roman numbers.

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274. Answer the following question in one word- Which food nutrient is the instant source of energy?

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275. Explain the following term- Bordeaux mixture?

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276. Express 1136 in roman numbers.

 [Watch Video Solution](#)

277. Express 1137 in roman numbers.

 [Watch Video Solution](#)

278. What is tailing of mercury ?



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279. All the five bonds in  $PCl_5$  are not equivalent justify.

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280.  $H_3PO_2$  is monoprotic acid. Explain.

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281. Halogens have maximum negative electron gain enthalpy in the respective periods of the periodic table. Why ?

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**282.** How will ozone oxidise the following : Copper sulphide to copper sulphate

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**283.** How will ozone oxidise the following : Potassium manganate to potassium per manganate.

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**284.** Answer the following statement in one word- In aviation engineering, a special alloy is used to make the structures of aeroplanes and aircrafts.

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285. Answer the following question in on word- Name one alloy which is made up of nickel and copper metals?

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286. Which are the two food sources that contain carbohydrate in them?

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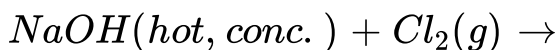
287. Why is  $H_3PO_3$  diprotic in nature ? Draw structure.

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288. Why is  $HNO_2$  not stable.

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289. Complete the following reaction :

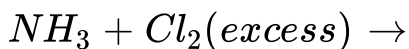


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290. Explain- Composition of ammonal.

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291. Complete the following reaction :







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**292.** Answer the following question in one word- A mixture of solution of copper sulphate and quick lime is used in the vineyards to kill fungus and moulds. What is the name of that mixture ?



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**293.** When HCl reacts with finely powdered iron, it forms ferrous chloride and not ferric chloride. Why?



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294. What are interhalogen compounds ? Give example.

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295. What are the interhalogen compounds ? Why are these more reactive than halogens ?

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296. Draw structure of  $HClO_4$ .

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**297.** Why noble gases have very high values of ionisation enthalpies?

 [Watch Video Solution](#)

**298.** Why are halogens strong oxidising agents?

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**299.** Answer the following question- What are leukocytes?

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**300.** Give the preparation, hybridisation and structure of  $XeF_4$  (XenonTetrafluoride)

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**301.** Why is helium used in diving apparatus?

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**302.** Give the structure and basicity of  $H_3PO_4$ .

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**303.** Why conc. sulphuric acid is always diluted by adding sulphuric acid to water with constant stirring and not water to the acid ?

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**304.** Fill in the blanks- \_\_\_\_\_ is an important food nutrient which provide instant energy to various organs of the body.

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**305.** Name the Scientist who prepared the first compound of noble gases.

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**306.** Answer the question with brief explanation- Plants perform which process to make their food?

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**307.** Define the following term- Ammonal?

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**308.** Why does concentrated sulphuric acid has high boiling point?

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**309.** Fluorine exhibits only - 1 oxidation state whereas other halogens exhibit positive oxidation states such as +1, +3, +5, +7.

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**310.** Molecular nitrogen  $N_2$  is not particularly reactive. Explain

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**311.** How does  $O_3$  react with PbS. Give chemical reaction.

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**312.** Why noble gases are inert or inactive ?

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**313.** what is the contact process for the manufacture of sulphuric acid.

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**314.** Define the following term- Brass?

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**315.** Define the following term- Bronze?







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**316.** What happens when ammonia reacts with Na.



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**317.** What happens when ammonia reacts with  $CO_2$ .



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**318.** Account for the following :  $NH_3$  is a stronger base than  $PH_3$ .



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**319.** How would you account for the following : Sulphur has a great tendency for catenation than oxygen.

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**320.** Account for the following : Bond energy of  $F_2$  is less than  $Cl_2$ .

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**321.**  $NOCl_3$  is an endothermic compound while  $NF_3$  is an exothermic compound. explain

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**322.** How would you account for the following :  $XeF_2$  is a linear molecule without a bend.

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**323.** How would you account for the following : The electron gain enthalpy with negative sign for fluorine is less than that for chlorine, still fluorine is a stronger oxidising agent than chlorine.

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**324.** Why  $H_2S$  is more Acidic than  $H_2O$  ?

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325. Express 1178 in roman numbers.

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326. How would you account for the following :  $NF_3$  is an exothermic compound but  $NCl_3$  is not .

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327. How would you account for the following : The acidic strength of compounds increases in the order :  $PH_3 < H_2S$

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**328.** Express 1181 in roman numbers.

 [Watch Video Solution](#)

**329.** Draw the molecular structure of the following :  $XeOF_4$

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**330.** Draw the structure of  $H_3PO_3$ .

 [Watch Video Solution](#)

**331.** How are interhalogen compound formed? What general compositions can be assigned to them?

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332. Why does  $R_3P = O$  exist but  $R_3N = O$  does not? (R= alkyl group)

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333. Give reasons for the following :  $PbCl_4$  is more covalent than  $PbCl_2$  .

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334. Why nitrogen is less reactive?

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**335.** Why is dioxygen gas but sulphur a solid?

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**336.** Why does  $O_3$  act as a powerful oxidising agent ?

 [Watch Video Solution](#)

**337.** Why is  $BiH_3$  the strongest reducing agent amongst all the hydrides of Group 15 elements ?

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**338.** Though nitrogen exhibits + 5 oxidation state, it does not form penta-halide. Given reason.

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**339.** Why electron affinity of fluorine is less than that of chlorine ?

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**340.** The two O-O bond lengths in ozone molecule are identical explain ?

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341. Write balanced equations for the following reaction :



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342. Complete the following reaction :  $XeF_4 + O_2F_2 \xrightarrow{143K}$

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343. Draw the molecular structure of the following :  $XeF_2$

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344. Draw structure of  $BrF_3$ .





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**345.** Why does  $R_3P = O$  exist but  $R_3N = O$  does not? (R= alkyl group)



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**346.** Give reasons for the following: Oxygen has less electron gain enthalpy with negative sign than sulphur .



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**347.**  $H_3PO_2$  is a stronger reducing agent than  $H_3PO_3$ . Give reasons..



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**348.** Write balanced equations for the following reaction :



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**349.** Complete the following equation :  $CaF_2 + H_2SO_4 \rightarrow$

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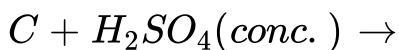
**350.** Draw the molecular structure of the following :  $XeF_4$

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351. Draw the structures of the following :  $HClO_4$

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352. Write balanced equations for the following reaction :



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353. Complete the following reaction :  $XeF_2 + H_2O \rightarrow$

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354. Draw the molecular structure of the following :  $XeO_3$

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355. Draw the structure of the following molecule :  $H_2SO_4$

 [Watch Video Solution](#)

356. Draw the structures of the following:  $(HPO_3)_3$

 [Watch Video Solution](#)

357. Draw the molecular structure of the following :  $XeF_4$

 [Watch Video Solution](#)

**358.**  $H_3PO_2$  is a stronger reducing agent than  $H_3PO_3$ . Give reasons..

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**359.** How would you account for the following : Sulphur has a great tendency for catenation than oxygen.

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**360.** Which of the following has lowest reducing character

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**361.** Complete the following chemical reaction equation :



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**362.** Complete the following reaction :  $XeF_6 + H_2O \rightarrow$

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**363.** Answer the following question- What is bordo mix is composed of?

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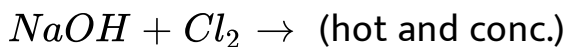
364. Give the shape of  $ClF_3$ .

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365. Draw the structure of  $XeF_2$ ,  $XeF_4$  and  $XeF_6$ .

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366. Complete the following chemical equation :



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367. Complete the following reaction :  $XeF_4 + O_2F_2 \xrightarrow{143K}$



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368. Draw the structures of the following molecule :  $H_3PO_2$

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369. Draw the structure of  $H_2S_2O_7$ .

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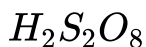
370. Composition of lithopone?

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371. Draw the molecular structure of the following :  $XeF_6$

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372. Draw the molecular structures of following compound :



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373. Which out of  $NH_3$  and  $NF_3$  have higher dipole moment and why?

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374. All the five bonds in  $PCl_5$  are not equivalent justify.

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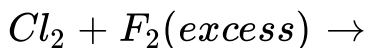
375. Why does sulphur in vapour state exhibit paramagnetic character ?

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376. Complete the following reaction :  $XeF_4 + SbF_5 \rightarrow$

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**377.** Complete the following chemical equation :



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**378.** Explain the following : Nitrogen is much less reactive than phosphorus.

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**379.** Express 1153 in roman numbers.

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**380.** The bond angles (O-N-O) are not of the same value in  $NO_2^-$  and  $NO_2^+$ .

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**381.** How is nitric acid manufactured by Ostwald process?

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**382.** What is the oxidation number of Cl in compound  $HClO_4$ ?

 [Watch Video Solution](#)

**383.** Complete the following equation :  $XeF_4 + H_2O \rightarrow$

 [Watch Video Solution](#)

**384.** Write down the preparation of ozone from oxygen.

 [Watch Video Solution](#)

**385.** What structures does  $PCl_5$  adopt in the solid state and vapour state ?

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**386.** What happens, when sulphur is treated with conc.  $HNO_3$  ?

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**387.** How is  $SO_2$  an air pollutant?

 [Watch Video Solution](#)

**388.** Explain the following fact : Halogens are coloured.

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**389.** Why does  $NH_3$  form hydrogen bond but  $PH_3$  does not?

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**390.** Why does  $O_3$  act as a powerful oxidising agent ?

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**391.** Why is  $NH_3$  more basic than  $PH_3$  ?

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**392.** Draw the structure of  $XeF_2$ ,  $XeF_4$  and  $XeF_6$ .



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**393.** Explain the manufacture of sulphuric acid by contact process.

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**394.** Name the process for manufacture of nitric acid.

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**395.** Why does the reactivity of nitrogen differ from phosphorus?

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396. Write the chemical equations when: Zinc reacts with  
cone.  $HNO_3$

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397. Write the chemical equations when Zinc reacts with  
dilute  $HNO_3$ .

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398. Write formula of phosphine.

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399. Why does ammonia act as a Lewis base?

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400. All the five bonds in  $PCl_5$  are not equivalent justify.

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401. Why is water liquid while  $H_2S$  a gas ?

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402. Complete the following statement- Bordeaux mixture is composed of-

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**403.** Explain the following statement- Bordo mix is a fungicide.

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**404.** Complete the following statement- Lithopone is a white pigment.

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**405.** Complete the following statement- Nichrome is made up of-

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406. Complete the following statement- Solder is made up of-

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407. Complete the following statement- Composition of manganese steel is-

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408.  $PH_3$  has lower boiling point than  $NH_3$ . Why?

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409. Draw structure of  $BrF_3$ .

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410. Complete the following statement- Chromium steel is made up of-

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411. Express 1138 in roman numbers.

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412. Express 1139 in roman numbers.



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**413.** Express 1140 in roman numbers.

 [Watch Video Solution](#)

**414.** Express 1141 in roman numbers.

 [Watch Video Solution](#)

**415.** Express 1150 in roman numbers.

 [Watch Video Solution](#)

**416.** Express 1151 in roman numbers.

 [Watch Video Solution](#)

**417.** Compounds of nitrogen, phosphorus and sulphur such as ammonia, phosphoric acid and sulphuric acid are used in fertilizer industry. Write the chemical equation for the preparation of phosphoric acid ( $H_3PO_4$ ) from orthophosphorus acid ( $H_3PO_3$ )

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**418.** Express 1152 in roman numbers.

 [Watch Video Solution](#)



**419.** Describe the manufacture of  $H_2SO_4$  by contact process?

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**420.** What are amphoteric oxides? give two examples of amphoteric oxides?

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**421.** Express 1154 in roman numbers.

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**422.** Express 1155 in roman numbers.

 [Watch Video Solution](#)

**423.** Express 1156 in roman numbers.

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**424.** Which form of sulphur shows paramagnetic behaviour and why ?

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**425.** Unlike HCl, why HBr cannot be prepared by the action of concentrated sulphuric acid on sodium bromide? Explain.



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**426.** Write the reaction of white P with NaOH solution .



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**427.** What are allotropic forms of sulphur ?



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**428.** Express 1157 in roman numbers.



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**429.** Express 1158 in roman numbers.

 [Watch Video Solution](#)

**430.** Express 1159 in roman numbers.

 [Watch Video Solution](#)

**431.** Describ chemistry of manufacture of ammonia by Haber's process and discuss conditions for good yield of ammonia.

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**432.** Write any two uses of inert gases.

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**433.** Draw the structure of  $PCl_3$ .

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**434.** The first ionisation enthalpy of nitrogen is higher than that of oxygen but the second ionisation enthalpy is higher in oxygen than that of nitrogen. Explain

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**435.** Give the preparation and properties of sulphur dioxide (  $SO_2$  ).

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**436.** Give reasons for the following :  $SF_6$  is not readily hydrolysed.

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**437.** How would you account for the following : The electron gain enthalpy with negative sign for fluorine is less than that for chlorine, still fluorine is a stronger oxidising agent than chlorine.





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**438.** Express 1161 in roman numbers.



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**439.** Express 1162 in roman numbers.



[Watch Video Solution](#)

**440.** Express 1163 in roman numbers.



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**441.** Nitrogen exists as diatomic molecule and phosphorous acts as tetra atomic molecule. Explain.

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**442.** Express 1164 in roman numbers

 [Watch Video Solution](#)

**443.** Express 1170 in roman numbers.

 [Watch Video Solution](#)

**444.** Express 1165 in roman numbers.



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**445.** Give reasons for the following: Elements of group 16 are more electronegative than those of group 15.

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**446.** Express 1166 in roman numbers.

 [Watch Video Solution](#)

**447.** Express 1167 in roman numbers.

 [Watch Video Solution](#)

**448.** Give reasons for the following: Moist chlorine is powerful bleaching agent.

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**449.** Express 1168 in roman numbers.

 [Watch Video Solution](#)

**450.** Express 1169 in roman numbers.

 [Watch Video Solution](#)

**451.** What are noble gas elements ? Why are they so called?



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**452.** Account for the following: Acidic character increases from HF to HI.

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**453.** Express 1171 in roman numbers.

 [Watch Video Solution](#)

**454.** Express 1172 in roman numbers.

 [Watch Video Solution](#)

**455.** Express 1173 in roman numbers.

 [Watch Video Solution](#)

**456.** Express 1174 in roman numbers.

 [Watch Video Solution](#)

**457.** Express 1175 in roman numbers.

 [Watch Video Solution](#)

**458.** Express 1176 in roman numbers.

 [Watch Video Solution](#)

**459.** Express 1177 in roman numbers.

 [Watch Video Solution](#)

**460.** Which noble gas is used in filling balloons for meteorological observations ?

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**461.** Express 1179 in roman numbers.

 [Watch Video Solution](#)

**462.** Express 1180 in roman numbers.

 [Watch Video Solution](#)

463.  $SF_6$  is known but  $SCl_6$  is not known. Explain.

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464. Give the shape of  $IF_7$ .

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465. Why nitric acid acts as an oxidising agent ? How it oxidises: Carbon to carbonic acid.

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**466.** Why nitric acid acts as an oxidizing agent? How it oxidises: Sulphur to sulphuric acid.

 [Watch Video Solution](#)

**467.** Give the structure of  $XeOF_4$  and state of hybridization of Xe in it.

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**468.** Give the structure and basicity of  $H_3PO_4$ .

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469.  $SO_3$  has zero dipole moment. Why?

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470. Give the shape of  $ClF_3$ .

 [Watch Video Solution](#)

471. Why nitric acid acts as an oxidizing agent? How it oxidizes: Phosphorus to phosphoric acid

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472. Why nitric acid acts as an oxidising agent? How it oxidises: Hydrogen Sulphide to sulphur.

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473. Express 1182 in roman numbers.

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474. Give the structure and basicity of  $H_3PO_2$ .

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475. Why  $SF_6$  is known but  $SH_6$  is not known ?

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476. Give the shape of  $IF_5$ .

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477. Why nitric acid acts as an oxidising agent? How it oxidises: Sulphur to sulphuric acid.

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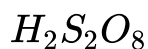
478. Why nitric acid acts as an oxidising agent? How it oxidises: Ferrous Sulphate to Ferric sulphate acid.

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479. Give the structure of  $XeO_2F_2$  and state of hybridization of Xe in it.

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480. Draw the molecular structures of following compound :



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481. Draw the molecular structure of the following :  $XeF_4$

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**482.** Explain with reason : The negative electron gain enthalpy of oxygen is less than that of sulphur.

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**483.** Explain with reason : the reducing power of phosphine is higher than that of ammonia.

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**484.** Explain with reason : The majority of known noble gas compounds are those of xenon.

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485. Draw the structure of  $H_3PO_3$ .

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486. Write the structure of the following compound :



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487. Why electron affinity of fluorine is less than that of chlorine ?

 [Watch Video Solution](#)

**488.** Explain with reason : Red phosphorus is more stable than white phosphorus.

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**489.** Fluorine exhibits only - 1 oxidation state whereas other halogens exhibit positive oxidation states such as +1, +3, +5, +7.

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**490.** What are the interhalogen compounds ? Why are these more reactive than halogens ?

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**491.** Describe chemistry of manufacture of nitric acid by Ostwald's process.

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**492.**  $NH_3$  acts as a Lewis base. Comment.

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**493.** Why does  $PCl_3$  fume in moisture ?

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**494.** Account for the following: Fluorine shows only -1 oxidation state.

 [Watch Video Solution](#)

**495.** Suggest any two fluorides of xenon.

 [Watch Video Solution](#)

**496.** Write a method to prepare any one of the xenon fluorides.

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497. Why is water liquid while  $H_2S$  a gas ?

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498. Noble gases have low boiling points. Explain.

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499. Explain the following:  $NO_2$  dimerises to  $N_2O_4$ .

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500. What are interhalogen compounds ? Give example.

 [Watch Video Solution](#)

**501.** Give two examples of interhalogen compounds.

 [Watch Video Solution](#)

**502.** Explain the manufacture of sulphuric acid by contact process.

 [Watch Video Solution](#)

**503.** Arrange the following oxoacids in decreasing order of acidic strength:  $\text{HClO}$ ,  $\text{HClO}_2$ ,  $\text{HClO}_3$ ,  $\text{HClO}_4$ .

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504. How is  $XeF_4$  prepared ?

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505. Draw the structures of  $XeF_2$ ,  $XeF_4$ ,  $XeOF_4$  and mention the type of hybridization of Xe in each case.

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506. Describe chemistry of manufacture of ammonia by Haber's process and discuss conditions for good yield of ammonia.

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**507.** Give the electronic configurations and oxidation states of group 17 elements.

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**508.** What is the use of ozone layer?

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**509.** Solid  $PCl_5$  is ionic in nature.

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**510.** Explain why fluorine forms only one oxoacid, HOF.

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511. Draw the structure of  $BrF_5$ .

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512. Draw the structure of  $XeF_4$ . What is the state of hybridisation of Xe in it?

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513. Considering the parameters such as bond dissociation enthalpy, electron gain enthalpy and hydration enthalpy, compare the oxidising power of  $F_2$  and  $Cl_2$ .

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**514.** Write the conditions for maximum yield of  $H_2SO_4$  by contact process.

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**515.** Arrange the following in the increasing order of property mentioned:  $H_3PO_3$ ,  $H_3PO_4$ ,  $H_3PO_2$  (Reducing character)

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**516.** Arrange the following in the order of property indicated for each set:  $NH_3$ ,  $PH_3$ ,  $AsH_3$ ,  $SbH_3$ ,  $BiH_3$  - increasing

base strength.



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517. Draw the structures of the following:  $(HPO_3)_3$



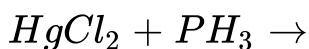
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518. Draw the Structural formulae of molecules of the following compound :  $BrF_3$



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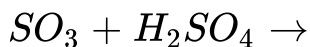
519. Complete the following chemical equation :





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520. Complete the following chemical equation :



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521. Complete the following reaction :  $XeF_4 + H_2O \rightarrow$



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522. What happens when chlorine gas is passed through a

hot concentrated solution of NaOH ?



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523. What happens when sulphur dioxide is passed through an aqueous solution of Fe(III) salt?



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524. Answer the following : What is the basicity of  $H_3PO_3$  and why?



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525. Answer the following : Why does fluorine not play the role of a central atom in interhalogen compounds ?



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526. Noble gases have low boiling points. Explain.

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527. Draw the structures of the following compound :  $N_2O_5$

 [Watch Video Solution](#)

528. Draw the molecular structure of the following :  $XeOF_4$

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529. How would you account for the following : Sulphur has a great tendency for catenation than oxygen.

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530. Why ICl is more reactive than  $I_2$  ?

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531. How would you account for the following : The electron gain enthalpy with negative sign for fluorine is less than that for chlorine, still fluorine is a stronger oxidising agent than chlorine.

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532. Draw the structures of the following molecule :  $H_3PO_2$





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**533.** Draw the structure of following interhalogen compound.



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**534.** Explain the following : Nitrogen is much less reactive than phosphorus.



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**535.** Which of the following hydrogen halide is liquid at room temperature ?



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536. How would you account for the following : Sulphur has a great tendency for catenation than oxygen.



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537. Draw the structures of the following compound :  $N_2O_5$



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538. Draw the structures of the following :  $HClO_4$



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539. Why  $H_2S$  is more Acidic than  $H_2O$  ?



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540. Explain the following :

Fluorine does not show positive oxidation state.



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541. Out of noble gas, only xenon is known to form chemical compound. Explain.



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**542.** What are the interhalogen compounds ? Why are these more reactive than halogens ?

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**543.** why is nitrogen less reactive at room temperature?

 [Watch Video Solution](#)

**544.** Express 1209 in roman numbers.

 [Watch Video Solution](#)

**545.** Express 1197 in roman numbers.

 [Watch Video Solution](#)

**546.** Express 1220 in roman numbers.

 [Watch Video Solution](#)

**547.** What happens when white phosphorus is heated with concentrated NaOH solution in an inert atmosphere of  $CO_2$  ?

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**548.** Which of the following noble gases has highest boiling point :







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**549.** How would you account for the following : The electron gain enthalpy with negative sign for fluorine is less than that for chlorine, still fluorine is a stronger oxidising agent than chlorine.



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**550.** What happens when  $H_3PO_3$  is heated?



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**551.** Complete the equation:  $PbS + O_3 \rightarrow$



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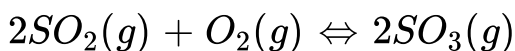
**552.** For the reaction  $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$ , what is the effect of the temperature and pressure to get more yield of ammonia ?

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**553.** Express 1218 in roman numbers.

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**554.** What is the effect of increasing pressure on the equilibrium ?



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**555.** Answer the following question: The small ozone layer on top of the stratosphere is crucial for human survival. Why?

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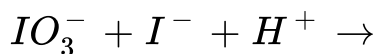
**556.** Which one of the following is mainly responsible for depletion of ozone layer ?

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557. "Photosynthesis protects us from harmful ultraviolet radiation of sun". Comment on the statement.

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558. Complete the following reaction:



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559. Express 1183 in roman numbers.

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560. Complete the following reaction:  $NaClO_3 + I_2 \rightarrow$

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561. Complete the following reaction :  $XeF_6 + H_2O \rightarrow$

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562. Express 1184 in roman numbers.

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563. Complete the reactions :  $PCl_3 + H_2O \rightarrow$

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564. Complete the following reaction:  $SbCl_3 + H_2O \rightarrow$

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565. Express 1185 in roman numbers.

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566. Express 1186 in roman numbers

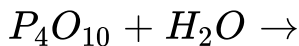
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567. Express 1187 in roman numbers.



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568. Write balanced equations for the following reaction :



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569. Express 1188 in roman numbers.



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570. Complete the following reaction:  $H_3PO_3 \xrightarrow{\text{Heat}}$



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571. Complete the following reaction :  $XeF_6 + H_2O \rightarrow$

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572. Express 1189 in roman numbers.

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573. Complete the following reaction:  $HNO_3 + P_4O_{10} \rightarrow$

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574. Complete the following reaction:  $Zn + dil. HNO_3$

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575. Complete the following reaction:



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576. Complete the following reaction:  $HgCl_2 + PH_3 \rightarrow$

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577. Complete the following reaction:  $P_4 + SO_2Cl_2 \rightarrow$

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**578.** Express 1190 in roman numbers.



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**579.** Express 1191 in roman numbers.



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**580.** Express 1192 in roman numbers.



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**581.** Express 1013 in roman numbers.



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**582.** Express 1195 in roman numbers.

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**583.** Express 1196 in roman numbers.

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**584.** Express 1198 in roman numbers.

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**585.** Which hydride has greater bond angle ?

$H_2O$ ,  $H_2S$ ,  $H_2Se$  and  $H_2Te$

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**586.** Arrange the following in the order of property indicated

for each set:  $F_2$ ,  $Cl_2$ ,  $Br_2$ ,  $I_2$  - increasing bond dissociation

enthalpy.

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**587.** Arrange the following in the order of property indicated

for each set:  $NH_3$ ,  $PH_3$ ,  $AsH_3$ ,  $SbH_3$ ,  $BiH_3$  - increasing

base strength.

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**588.** Among the hydrides of group 15, predict the hydride having highest thermal stability.

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**589.** Express 1200 in roman numbers.

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**590.** Arrange the following oxoacids in decreasing order of acidic strength:  $\text{HClO}$ ,  $\text{HClO}_2$ ,  $\text{HClO}_3$ ,  $\text{HClO}_4$  .

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**591.** Arrange  $\text{HClO}$ ,  $\text{HBrO}$  and  $\text{HIO}$  in order to decreasing acidic strength giving reasons.

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**592.** Arrange the following in increasing order of property mentioned : Oxidation state of P :

$\text{H}_2\text{PO}_2$ ,  $\text{H}_3\text{PO}_3$ ,  $\text{H}_4\text{P}_2\text{O}_7$ ,  $\text{H}_4\text{P}_2\text{O}_6$

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**593.** Arrange the following in increasing order of property mentioned : Boiling point : He, Ne, Ar, Kr

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**594.** Arrange the following in increasing order of property

mentioned : Oxidation state of S :

$H_2S_2O_8$ ,  $H_2SO_3$ ,  $H_2S_2O_3$

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**595.** Define the following term- Artificial gold?

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**596.** Dehydration of formic acid with sulphuric acid gives

A. CO

B. C

C. CO and  $CO_2$

D.  $C_2H_4O_4$ .



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**597.** The brown gas formed when  $HNO_3$  is reduced by metals is

A.  $N_2O$

B.  $N_2O_3$

C.  $NO_2$

D. NO.



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598. Which hydride has greater bond angle ?

$H_2O$ ,  $H_2S$ ,  $H_2Se$  and  $H_2Te$

A.  $NH_3$

B.  $PH_3$

C.  $AsH_3$

D.  $BiH_3$ .

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599. Express 1201 in roman numbers.

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**600.** Express 1202 in roman numbers.

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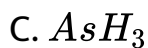
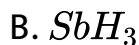
**601.** Express 1203 in roman numbers.

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**602.** Define the following term- Coin metal?

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**603.** Among the hydrides of group 15, predict the hydride having strongest reducing agent.



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**604.** The geometry of  $XeOF_2$  is :

A. Pyramidal

B. T-shaped

C. Octahedral

D. Tetrahedral.

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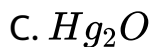
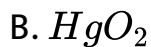
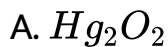
**605.** Define the following term- Gun metal?

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**606.** Define the following term- Bell metal?

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607. Mercury reacts with Ozone to give

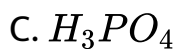
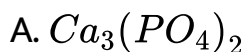


D. none of these



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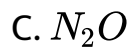
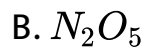
608. Calcium phosphide gets hydrolysed and gives





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609. Which of the following is a coloured gas ?



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610. Define the following term- Constantin?

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611.  $XeF_4$  reacts with water at  $-80^\circ C$  to give



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612. Define the following term- Monel metal?



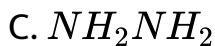
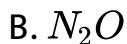
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613. Define the following term- German silver?



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614. Which compound of nitrogen is formed when  $CaCN_2$  reacts with hot water ?







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**615.** Define the following term- Dutch metal?



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**616.** Define the following term- Durelumin?



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**617.** Define the following term- Hydroleum?



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**618.** Define the following term- Nichrome?

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**619.** Define the following term- Solder?

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**620.** Define the following term- Alanko?

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**621.** Define the following term- Chromium steel?

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622. Define the following term- Lithopone?

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623. The number of  $\sigma$  -bonds in  $P_4O_{10}$  is

- A. 6
- B. 16
- C. 20
- D. 7

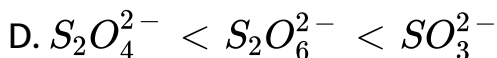
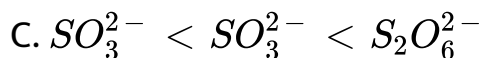
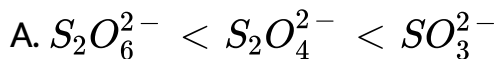
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624. Which of the following is not true ?

- A. Among halide ions, iodide ion is the most Powerful reducing agent.
- B. Fluorine is the only halogen which does Not show a variable oxidation state
- C. HOCl is stronger acid than HOBr
- D. HF is a stronger acid than HCl.

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625. The oxidation state of sulphur in anion  $SO_3^{2-}$ ,  $S_2O_4^{2-}$  and  $S_2O_6^{2-}$  follows the order -



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**626.** Define the following term- Bordo mix?

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**627.** Define the following term- Transpiration?

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628. Among the following which is the strongest oxidising agents:  $Br_2$ ,  $I_2$ ,  $F_2$ ,  $Cl_2$ .

A.  $Br_2$

B.  $I_2$

C.  $Cl_2$

D.  $F_2$

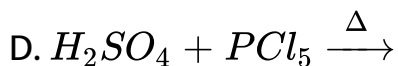
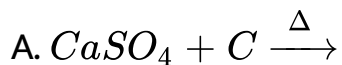
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629. Answer the following question in one word- Which vitamin required to maintain a good eyesight?



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**630.** Sulphur trioxide can be obtained by which of the following reaction?



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**631.** Which of the following statements is not valid for oxoacids of phosphorus?

A. Orthophosphoric acid is used in the manufacture of triple superphosphate.

B. Hypophosphorous acid is a diprotic acid.

C. All oxoacids contain tetrahedral four coordinated Phosphorus.

D. All oxoacids contain at least one  $P = O$  unit and one  $P-OH$  group.



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**632.** When  $Cl_2$  gas reacts with hot and concentrated sodium hydroxide solution, the oxidation number of chlorine changes from



A. zero to +1 and zero to - 5

B. zero to - 1 and zero to + 5

C. zero to - 1 and zero to + 3

D. zero to +1 and zero to -3

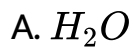
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**633.** Complete the following statement- Functions of vitamin

A are-

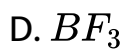
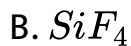
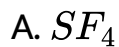
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**634.** Which one of the molecule contains no  $\pi$ -bond?



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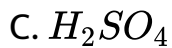
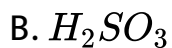
635. Which of the following is a polar molecule?





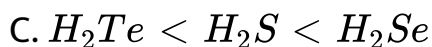
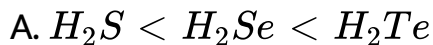
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636. Strongest acid is



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**637.** The correct order of increasing basicity in aqueous solution is



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**638.** How do you account for the reducing behaviour of  $H_3PO_2$  on the basis of its structure ?

A. High oxidation state of phosphorus

- B. Presence of two -OH groups and one P-H bond
- C. Presence of one -OH group and two P-H bonds
- D. High electron gain enthalpy of phosphorus

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**639.** Which of the statements given below is incorrect?

- A. ONF is isoelectronic with  $O_2N^-$
- B.  $OF_2$  is an oxide of fluorine
- C.  $Cl_2O_7$  is an anhydride of perchloric acid
- D.  $O_3$  molecule is bent .



**640.** The correct order of thermal stability of hydrogen halides

(HX) is:  $HI > HBr > HCl > HF$ ,  
 $HF > HCl > HBr > HI$ ,  $HCl < HF < HBr < HI$ ,  
 $HI > HCl > HF > HBr$ .

- A. The bond energy of HF molecules is greater than in other hydrogen halides.
- B. The effect of nuclear shielding is much reduced in fluorine which polarises the HF molecule.
- C. The electronegativity of fluorine is much higher than for other elements in the group .

D. There is strong hydrogen bonding between HF molecules.



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**641.** Nitrogen dioxide and sulphur dioxide have some properties in common. Which property is shown by one of these compounds, but not by the other?

- A. Is soluble in water.
- B. Is used as a food preservative.
- C. Forms 'acid-rain.
- D. Is a reducing agent.



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**642.** Which is the correct statement for the given acids?

- A. Phosphinic acid is a monoprotic acid while phosphonic acid is a diprotic acid.
- B. Phosphinic acid is a diprotic acid while phosphonic acid is a monoprotic acid.
- C. Both are diprotic acids.
- D. both are triprotic acids.



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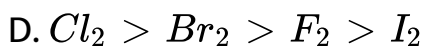
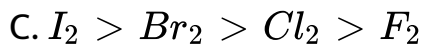
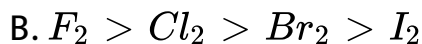
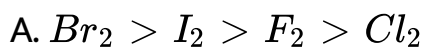


**643.** Match the compounds given in column I with the shape given in column II and mark the correct option.

Column I	Column II
(A) $\text{XeF}_6$	(i) Distorted octahedral
(B) $\text{XeO}_3$	(ii) Square planar
(C) $\text{XeOF}_4$	(iii) Pyramidal
(D) $\text{XeF}_4$	(iv) Square pyramidal

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**644.** Which one of the following order is correct for the bond dissociation enthalpy of halogen molecules?

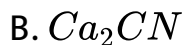
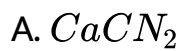




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645. The product obtained as a result of a reaction of nitrogen

with  $CaC_2$  is

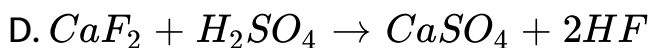
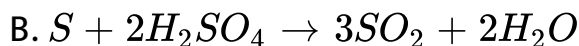


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646. When silver is heated with conc.  $HNO_3$  it produces

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647. Hot concentrated sulphuric acid is a moderately strong oxidizing agent. Which of the following reactions does not show oxidizing behaviour?



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648. Among the following, which one is a wrong statement?

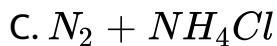
- A.  $PH_5$  and  $BiCl_5$  do not exist.
- B.  $p\pi - d\pi$  bonds are present in  $SO_2$ .
- C.  $SeF_4$  and  $CH_4$  have same shape.
- D.  $I_3^+$  has bent geometry.



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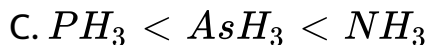
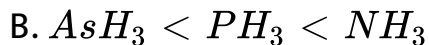
649. Chlorine reacts with excess of ammonia to form

- A.  $NH_4Cl$
- B.  $N_2 + HCl$



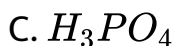
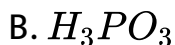
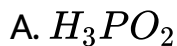
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650. Which of the following is the correct order of increasing enthalpy of vaporisation ?



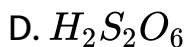
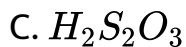
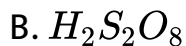
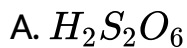
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**651.** The maximum number of P-H bonds are contained in which of the following molecules?



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**652.** Which of the following has O-O- linkage?



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**653.** When  $Br_2$  is treated with aqueous solutions of NaF, NaCl and NaI separately

A.  $F_2$ ,  $Cl_2$  and  $I_2$  are liberated

B. only  $F_2$  and  $Cl_2$  are liberated

C. only  $I_2$  is liberated

D. only  $Cl_2$  is liberated



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654. The basicity of pyrophosphorous acid is

A. 2

B. 4

C. 1

D. 5



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**655.** The oxidation state of phosphorus in cyclotrimetaphosphoric acid is

A. +3

B. +5

C. -3

D. +2

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**656.** Express 1204 in roman numbers.

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657. Express 1205 in roman numbers.

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658. The oxo acid of Sulphur which contain a lonepair of electrons on sulphur is

- A. sulphurous acid
- B. sulphuric acid
- C. peroxodisulphuric acid
- D. pyrosulphuric acid

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659. Which one of the following is used for the production of  $UF_6$  in the enrichment of  $U^{235}$  ?

A.  $ClF_3$

B. KF

C.  $KHF_2$

D. HF

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660. Express 1206 in roman numbers.

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661. Express 1207 in roman numbers.

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662. Express 1208 in roman numbers.

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663. Give the disproportionation reaction of  $H_3PO_3$ .

A.  $HClO_2$  and  $HClO_4$

B.  $HCl$  and  $Cl_2O$

C.  $HCl$  and  $HClO_3$

D.  $HClO_3$  and  $Cl_2O$



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**664.** Express 1210 in roman numbers.



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**665.** Express 1211 in roman numbers.



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**666.** Express 1212 in roman numbers.



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**667.** Express 1213 in roman numbers.

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**668.** Express 1214 in roman numbers.

 [Watch Video Solution](#)

**669.** Express 1215 in roman numbers.

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**670.** Express 1216 in roman numbers.

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671. Express 1217 in roman numbers.

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672. Which of the following is the wrong statement?

- A. Ozone is diamagnetic gas.
- B.  $\text{ONCl}$  and  $\text{ONO}^-$  are not isoelectronic
- C.  $\text{O}_3$  molecule is linear
- D. Ozone is violet-black in solid state.

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673. Which among the following is the most reactive ?

A.  $I_2$

B.  $ICl$

C.  $Cl_2$

D.  $Br_2$



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674. Which one has the highest boiling point?

A. (a) Kr

B. (b) Xe



C. (c) He

D. (d) Ne



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**675.** The reaction of zinc with dilute and concentrated nitric acid, respectively produces

A.  $N_2O$  and  $NO_2$

B.  $NO$  and  $NO_2$

C.  $NO$  and  $N_2O$

D.  $NO_2$  and  $N_2O$



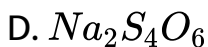
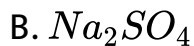
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**676.** The pair in which phosphorus atoms have a formal oxidation state of +3 is

- A. orthophosphorous and pyrophosphorous acids
- B. pyrophosphorous and hypophosphoric acids
- C. orthophosphorous and hypophosphoric acids
- D. pyrophosphorous and pyrophosphoric acids.

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**677.**  $Na_2S_2O_3$  is reduced by  $I_2$  to :



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**678.** Write method of preparation of  $H_2SO_4$  acid by Contact process.

A. to detect colloidal impurity

B. to remove moisture

C. to remove dust particles

D. to remove arsenic impurity.



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679. Sulphur trioxide gas when dissolved in  $H_2SO_4$ , the product obtained is

A. (a)  $H_2SO_3$

B. (b)  $H_2SO_5$

C. (c)  $H_2S_2O_7$

D. (d)  $H_2S_2O_8$



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680. Which of the following contains P - O - P bond ?

A. (a) Hypophosphorous acid

B. (b) Phosphorus acid

C. (c) Pyrophosphoric acid

D. (d) Orthophosphoric acid

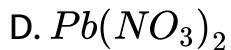
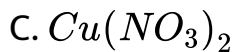


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681.  $NO_2$  is not obtained on heating

A.  $AgNO_3$

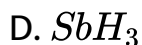
B.  $KNO_3$



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**682.** The order of basic strength of hydrides of the group -15 elements is

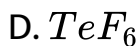
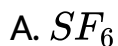
$NH_3 > PH_3 > AsH_3 > BiH_3$  this is due to





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683. Which of the following is most easily hydrolysed amongst the following ?



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684. Select the wrong statement:

- A. Nitrogen has the ability to form  $p\pi - p\pi$  bonds with itself.
- B. Bismuth forms metallic bonds in elemental state.
- C. Catenation tendency is higher in nitrogen when compared with other elements of the same group.
- D. Nitrogen has higher first ionisation enthalpy when compared with other elements of the same group.

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**685.** The graph of inverse trigonometric function can be obtained from the graph of their corresponding trigonometric function by interchanging x and y axes.



- A. nitric oxide and nitrogen dioxide
- B. nitrogen and nitric oxide
- C. nitric oxide and dinitrogen pentoxide
- D. nitrogen and nitrous oxide

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**686.**  $H_2S$  is a gas while  $H_2O$  is liquid at room temperature?

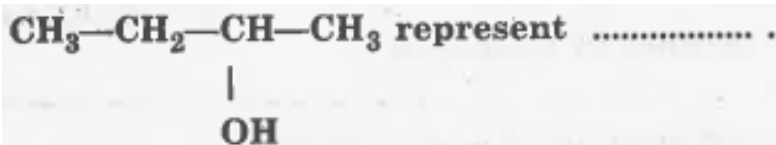
Why ?

- A.  $NH_4NO_3$ ,  $N_2O$ ,  $H_2O$
- B.  $NH_4NO_2$ ,  $NO$ ,  $H_2O$
- C.  $CaO$ ,  $H_2O$ ,  $CaCl_2$

D.  $Ba(NO_3)_2$ ,  $H_2O$ ,  $NO_2$

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687. Fill in the blanks:



- A. (A)- (iv), (B) - (iii), (C) - (ii), (D) - (i)
- B. (A)- (i), (B) - (iii), (C) - (ii), (D) - (iv)
- C. (A)- (iv), (B) - (iii), (C) - (i), (D) - (ii)
- D. (A)- (ii), (B) - (iii), (C) - (i), (D) - (iv)

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**688.** The same quantity of electrical charge that deposited 0.583g of silver was passed through solution of gold salt and 0.355g of gold was formed. What is the oxidation state of gold in this salt?

- A. -1 and +1
- B. -1 and +5
- C. +1 and +5
- D. -1 and +3



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**689.** For the function  $f(x) = x \cos \frac{1}{x}$ ,  $x \geq 1$  which one of the following is incorrect ?

A.  $O_3$  oxidises PbS to  $PbSO_4$ .

B.  $O_3$  oxidises nitric oxide to nitrogen dioxide.

C.  $O_3$  oxidises aqueous KI at pH = 9.2.

D. The two oxygen-oxygen bond lengths in  $O_3$  are different.



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**690.** The statement that is not correct is

A. Hypophosphorous acid reduces silver nitrate to silver

B. In solid state  $PCl_5$  exists as  $[PCl_4]^+ [PCl_6]^-$

C. Pure phosphine is non-inflammable

D. Phosphorous acid on heating disproportionates to give metaphosphoric acid and phosphine.



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**691.** Which of the following compounds is most acidic

A.  $XeF_2$

B.  $XeF_4$

C.  $XeOF_4$

D.  $XeO_3$



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692. Which one of the following statements is incorrect?

A. It is more basic than  $NH_3$  .

B. Its solution in water decomposes in the presence of  
light.

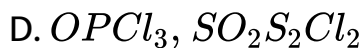
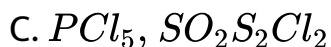
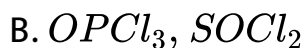
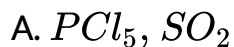
C. It is less basic than  $NH_3$  .

D. It is highly poisonous and has smell like rotten fish.



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**693.** Phenol reacts with bromine in  $CS_2$ , to give:



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**694.** Electronic configuration of only one p-block element is exceptional. One molecule of that element consist of how many atoms of it?

A. One

B. Two

C. Three

D. Four



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**695.** Which among the following group 15 element forms most stable pentavalent compound?

A. Phosphorus

B. Antimony

C. Bismuth

D. Arsenic





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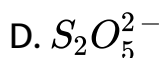
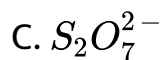
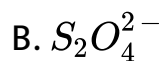
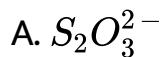
**696.** What is the basicity of orthophosphorus acid?

- A. One
- B. Two
- C. Three
- D. Four



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**697.** Which of the following does not have S-S bond?



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**698.** Complete the following statement- Sources of vitamin A are-

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**699.** In the solid state  $PCl_5$  exists as

A.  $[PCl_4]^-$  and  $[PCl_6]^+$  ions

B. covalent  $PCl_5$  molecules only

C.  $[PCl_4]^+$  and  $[PCl_6]^-$  ions

D. covalent  $P_2Cl_{10}$  molecules only.

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**700.** The acid in which O - O bonding is present, is

A.  $H_2S_2O_3$

B.  $H_2S_2O_6$

C.  $H_2S_2O_8$

D.  $H_2S_4O_6$



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**701.** The most abundant noble gas in atmosphere is argon / helium.

- A. Neon
- B. Argon
- C. Xenon
- D. Krypton.



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**702.** What is the highest oxidation state exhibited by group 17 elements?

A. +1

B. +3

C. +5

D. +7



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**703.** The element that does NOT form acidic oxide is:

A. Carbon

B. Phosphorus

C. Chlorine

D. Barium.



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**704.** Which one of the following group 16 element does not exist in -2 oxidation state?

A. S

B. Se

C. O

D. Po



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705. Thermal decomposition of ammonium dichromate gives

- A.  $N_2$ ,  $H_2O$  and  $Cr_2O_3$
- B.  $N_2$ ,  $NH_3$  and  $CrO$
- C.  $(NH_4)_2CrO_4$  and  $H_2O$
- D.  $N_2$ ,  $H_2O$  and  $CrO_3$



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706. The property which is not true about fluorine is

- A. most of its reactions are exothermic
- B. it forms only one oxo acid
- C. highest electronegativity
- D. high F-F bond dissociation enthalpy.



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707. Which is true regarding nitrogen?

- A. Less electronegative
- B. Has low ionisation enthalpy
- C. d-orbitals are available
- D. Ability to form  $p\pi - p\pi$  bonds with itself





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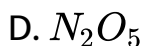
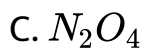
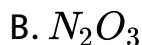
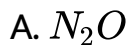
708. The shape of  $XeF_6$  is

- A. square planar
- B. distorted octahedral
- C. square pyramidal
- D. pyramidal.



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709. Which blue liquids obtained on reacting equimolar amounts of two gases at  $-30^{\circ}C$ ?



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710. Which of the following contains maximum number of lone pairs of electrons on the central atom ?





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**711.** The reaction of  $P_4$  with X leads selectively to  $P_4O_6$ . The

X is





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712. Extra pure  $N_2$  can be obtained by heating

A.  $NH_3$  with  $CuO$

B.  $NH_4NO_3$

C.  $(NH_4)_2Cr_2O_7$

D.  $Ba(N_3)_2$



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**713.** The reaction of white phosphorus with aqueous NaOH gives phosphine along with another phosphorus containing compound. The reaction type, the oxidation states of phosphorus in phosphine and the other product are respectively.

- A. redox reaction, - 3 and -5
- B. redox reaction, + 3 and + 5
- C. disproportionation reaction, - 3 and +5
- D. disproportionation reaction, - 3 and +3



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714. Concentrated nitric acid, upon long standing, turns yellow-brown due to the formation of

A. NO

B.  $NO_2$

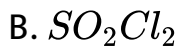
C.  $N_2O$

D.  $N_2O_4$



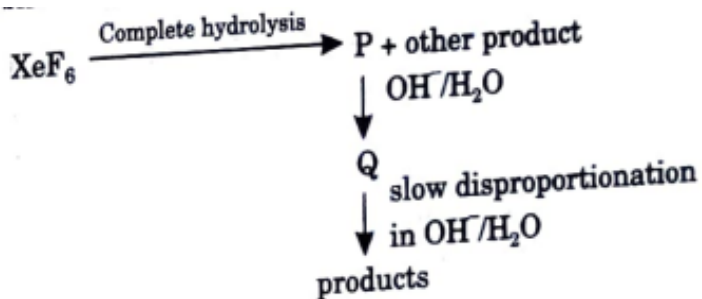
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715. The product formed in the reaction of  $SOCl_2$  with white phosphorus is



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**716.** Under ambient conditions, the total number of gases released as products in the final step of the reaction scheme shown below is



A. 0

B. 1

C. 2

D. 3



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717. White phosphorus has

A. four P-P bonds

B. bond angle  $\angle PPP = 60^\circ$

C. six P-P bonds

D. polymeric structure.





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**718.** Draw lewis structure of carbonate ion .

A.

B.

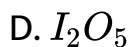
C.

D.



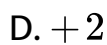
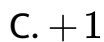
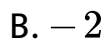
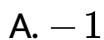
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**719.** Which of the following contains cationic iodine ?



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720. Oxygen exhibit positive oxidation state in





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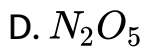
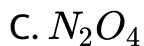
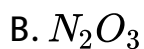
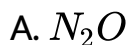
**721.** A solution of colourless salt H on boiling with excess NaOH produces a non-flammable gas. The gas evolution ceases after some time. Upon addition of Zn dust to the same solution, the gas evolution restarts. The colourless salt(s) H is (are)





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722. Nitrogen oxide(s) that contain(s) N-N bond(s) is (are)



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723. The correct statement(s) about  $O_3$  is (are)

A. O-O bond lengths are equal

B. thermal decomposition of  $O_3$  is endothermic

C.  $O_3$  is diamagnetic in nature

D.  $O_3$  has a bent structure

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**724.** Ionization potential values of noble gases decrease down the group with increase in atomic size. Xenon forms binary fluorides by the direct reaction of elements. Identify the correct statement(s) from below:

A. Only the heavier noble gases form such compounds.

B. It happens because the noble gases have higher ionization energies.

C. It happens because the compounds are formed with electronegative ligands.

D. Octet of electrons provide the stable arrangements.

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**725.** The correct Statement(s) regarding, (i)  $\text{HClO}$ , (ii)  $\text{HClO}_2$ , (iii)  $\text{HClO}_3$  and (iv)  $\text{HClO}_4$ , is(are)

A. The number of  $\text{Cl}=\text{O}$  bonds in (ii) and (iii) together is two

B. The number of lone pairs of electrons in Cl in (ii) and (iii) together is three

C. The hybridization of Cl in (iv) is  $sp^3$

D. Amongst (i) to (iv), the strongest acid is (i)

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**726.** Complete the following reaction:  $HNO_3 + P_4O_{10} \rightarrow$

A. can also be prepared by reaction of  $P_4$  and  $HNO_3$

B. is diamagnetic

C. contains one N-N bond

D. reacts with Na metal producing brown gas.

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727. Express 1223 in roman numbers.



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728. The oxidation state of P in ( $H_3PO_2$ ) is

A. +1

B. +7

C. +4

D. 0



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**729.** Express 1227 in roman numbers.

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**730.** Express 1225 in roman numbers.

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**731.** Express 1226 in roman numbers.

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**732.** Express 1128 in roman numbers.

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733. Which of the following statement is not correct ?

- A.  $H_3PO_3$  is dibasic and reducing
- B.  $H_4P_2O_7$  and  $H_4P_2O_6$  are tetrabasic
- C.  $H_3PO_4$  is tribasic and has P in +5 oxidation state
- D.  $H_3PO_5$  is dibasic and has P in +7 oxidation state

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734. Express 1233 in roman numbers.

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735. Among the following, the correct statement is

- A. Between  $NH_3$  and  $PH_3$ ,  $NH_3$  is a better electron donor because the lone pair of electrons occupies spherical 's' orbital and is less directional.
- B. Between  $NH_3$  and  $PH_3$ ,  $PH_3$  is a better electron donor because the lone pair of electrons occupies  $sp^3$  orbital and is more directional.
- C. Between  $NH_3$  and  $PH_3$ ,  $NH_3$  is a better electron donor because the lone pair of electrons occupies  $sp^3$  orbital and is more directional.
- D. Between  $NH_3$  and  $PH_3$ ,  $PH_3$  is a better electron donor because the lone pair of electrons occupies

spherical 's' orbital and is less directional.



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**736.** Express 1230 in roman numbers.



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**737.** Express 1231 in roman numbers.



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**738.** Express 1232 in roman numbers.



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**739.** The questions given below consist of an Assertion and Reason. Use the following key to choose the appropriate answer. (a) If both assertion and reason are CORRECT and reason is the correct explanation of the assertion. (b) If both assertion and reason are CORRECT, but reason is NOT THE CORRECT explanation of the assertion. (c) If assertion is CORRECT but, reason is INCORRECT. (d) If assertion is INCORRECT but, reason is CORRECT. (e) If both assertion and reason are INCORRECT. Assertion : Ozone is a powerful oxidising agent in comparison to  $O_2$ . Reason: Ozone is diamagnetic but  $O_2$  is paramagnetic.

**740.** Assertion :  $F_2$  has low reactivity.

Reason: F-F bond has low bond dissociation enthalpy.

A. (a) Both assertion and reason are true and reason is the correct explanation of the assertion.

B. (b) Both assertion and reason are true and reason is the not the correct explanation of the assertion.

C. (c) Assertion is correct but reason is incorrect.

D. (d) Assertion is incorrect but reason is correct.



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**741.** Assertion : F-F bond in  $F_2$  molecule is strong. Reason: F atom is small in size.

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**742.** Assertion :  $P_4$  is more reactive than  $N_2$ . Reason: P-P single bond in  $P_4$  is much weaker than  $N \equiv N$  in  $N_2$  molecule.

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**743.** Express 1235 in roman numbers.

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**744.** Express 1236 in roman numbers.

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**745.** Express 1237 in roman numbers.

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**746.** Express 1238 in roman numbers.

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**747.** Express 1250 in roman numbers.

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748. Express 1251 in roman numbers.

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749. Express 1265 in roman numbers.

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750. Match the compound in Column I with the property in Column II.

Column I	Column II
(A) $\text{XeF}_6$	(p) has square pyramidal structure
(B) $\text{BrF}_5$	(q) does not exist
(C) $\text{XeF}_4$	(r) has +5 oxidation state of central atom
(D) $\text{FCl}_3$	(s) gets hydrolysed.

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751. Match each of the reactions given in Column I with the corresponding product(s) given in Column II.

Column I	Column II
(A) $\text{Cu} + \text{dil. H}_2\text{SO}_4$	(p) $\text{NO}$
(B) $\text{Cu} + \text{conc. HNO}_3$	(q) $\text{NO}_2$
(C) $\text{Zn} + \text{dil. HNO}_3$	(r) $\text{N}_2\text{O}$
(D) $\text{Cu} + \text{conc. HNO}_3$	(s) $\text{Cu}(\text{NO}_3)_2$
	(t) $\text{Zn}(\text{NO}_3)_2$

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752. Express 1252 in roman numbers.

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753. Express 1253 in roman numbers.





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**754.** Express 1255 in roman numbers.



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**755.** Express 1256 in roman numbers.



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**756.** Express 1257 in roman numbers.



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757. Total number of dibasic acids among

$H_3PO_4$ ,  $H_4P_2O_7$ ,  $H_4P_2O_6$ ,  $H_3PO_5$ ,  $H_3PO_3$ ,  $H_4P_2O_5$ ,  $H_3PO_2$

is

0	1	2	3	4	5	6	7	8	9
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758. Express 1258 in roman numbers.

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759. Express 1260 in roman numbers.

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760. Express 1261 in roman numbers.

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761. Among the following, the number of compounds that can react with  $PCl_5$  to give  $POCl_3$ , is  $O_2$ ,  $CO_2$ ,  $SO_2$ ,  $H_2O$ ,  $H_2SO_4$ ,  $P_4O_{10}$ .

0	1	2	3	4	5	6	7	8	9
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762. Express 1262 in roman numbers.

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763. The total number of lone pairs of electrons in  $N_2O_3$  is

0	1	2	3	4	5	6	7	8	9
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764. Express 1263 in roman numbers.

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765. In qualitative analysis when  $H_2S$  is passed through an aqueous solution of salt acidified with dil. HCl, a black precipitate is obtained. On boiling the precipitate with dil.  $HNO_3$ , it forms a solution of blue colour. Addition of excess

of aqueous solution of ammonia to this solution gives

\_\_\_\_\_.

- A. deep blue precipitate of  $Cu(OH)_2$
- B. deep blue solution of  $[Cu(NH_3)_4]^{2+}$
- C. deep blue solution of  $Cu(NO_3)_2$
- D. deep blue solution of  $Cu(OH)_2 \cdot Cu(NO_3)_2$



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**766.** In a cyclotrimetaphosphoric acid molecule, how many single and double bonds are present?

- A. 3 double bonds, 9 single bonds

- B. 6 double bonds, 6 single bonds
- C. 3 double bonds, 12 single bonds
- D. Zero double bonds, 12 single bonds

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**767.** Which of the following elements can be involved in  $p\pi$  -  $d\pi$  bonding

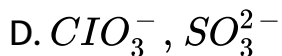
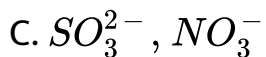
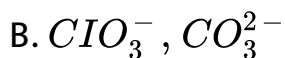
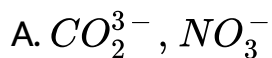
- A. Carbon
- B. Nitrogen
- C. Phosphorus
- D. Boron





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768. Which of the following pairs of ions are isoelectronic and isostructural?



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**769.** Express 1266 in roman numbers.

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**770.** Express 1127 in roman numbers.

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**771.** On heating with concentrated NaOH solution in an inert atmosphere of  $CO_2$ , white phosphorus gives a gas. Which of the following statement is incorrect about the gas?

A. It is highly poisonous and has smell like rotten fish.

B. It's solution in water decomposes in the presence of light.

C. It is more basic than  $NH_3$ .

D. It is less basic than  $NH_3$ .

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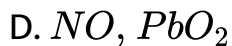
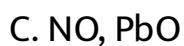
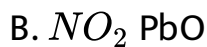
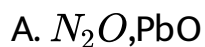
**772.** Express 1268 in roman numbers.

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**773.** Express 1270 in roman numbers.

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774. On heating lead nitrate forms oxides of nitrogen and lead. The oxides formed are\_\_.



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**775.** Which of the following elements does not show allotropy?

A. Nitrogen

B. Bismuth

C. Antimony

D. Arsenic



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**776.** Complete the following statement- Sources of calcium are-



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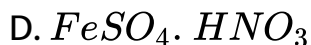
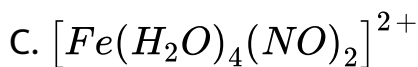
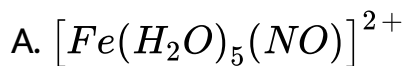
777. Which of the following statements is wrong?

- A. Single N-N bond is stronger than the single P-P bond
- B.  $PH_3$  can act as a ligand in the formation of coordination compound with transition elements.
- C.  $NO_2$  is paramagnetic in nature.
- D. Covalency of nitrogen in  $N_2O_5$  is four.



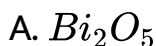
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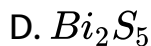
778. A brown ring is formed in the ring test for  $NO_3^-$  ion. It is due to the formation of



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**779.** Elements of group-15 form compounds in +5 oxidation state. However, bismuth forms only one well characterised compound in +5 oxidation state. The compound is :





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**780.** On heating ammonium dichromate and barium azide separately we get

A.  $N_2$  in both cases

B.  $N_2$  with ammonium dichromate and NO with barium azide

C.  $N_2O$  with ammonium dichromate and  $N_2$  with barium azide



D.  $N_2O$  with ammonium dichromate and  $NO_2$  with barium azide



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**781.** In the preparation of  $HNO_3$ , we get NO gas by catalytic oxidation of ammonia. The moles of NO produced by the oxidation of two moles of  $NH_3$  will be \_\_\_\_\_ .

A. 2

B. 3

C. 4

D. 6



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782. The oxidation state of central atom in the anion of compound  $NaH_2PO_2$  will be \_\_\_\_\_ .

A. +3

B. +5

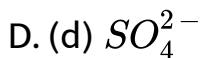
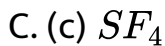
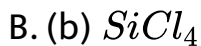
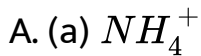
C. +1

D. -3



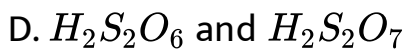
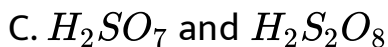
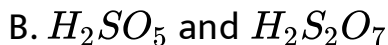
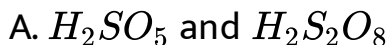
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783. Which of the following is not tetrahedral in shape?



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**784.** Which of the following are peroxyacids of sulphur?





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**785.** Hot concentrated sulphuric acid is a moderately strong oxidizing agent. Which of the following reactions does not show oxidizing behaviour?

A. Cu

B. S

C. C

D. Zn



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**786.** A black compound of manganese reacts with a halogen acid to give greenish yellow gas. When excess of this gas reacts with  $NH_3$  an unstable trihalide is formed. In this process the oxidation state of nitrogen changes from \_\_\_\_\_ .

A. - 3 to +3

B. - 3 to 0

C. - 3 to +5

D. 0 to -3



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**787.** In the preparation of compounds of Xe, Bartlett had taken  $O_2^+ PtF_6^-$  as a base compound. This is because

- A. both  $O_2$  and Xe have same size.
- B. both  $O_2$  and Xe have same electron gain enthalpy.
- C. both  $O_2$  and Xe have almost same ionisation enthalpy.
- D. both Xe and  $O_2$  are gases.



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**788.**  $PCl_5$  in solid state exists as ionic compound having cation ..... and anion .....

- A. covalent solid

B. octahedral structure

C. ionic solid with  $[PCl_6]^+$  octahedral and  $[PCl_4]^-$  tetrahedra

D. ionic solid with  $[PCl_4]^+$  tetrahedral and  $[PCl_6]^-$  octahedra

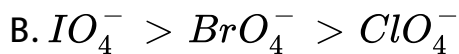
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**789.** Reduction potentials of some ions are given below.

Arrange them in decreasing order of oxidising power.

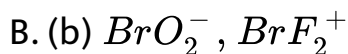
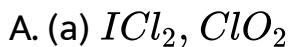
Ion	$ClO_4^-$	$IO_4^-$	$BrO_4^-$
Reduction potential $E^{\circ}/V$	1.19V	1.65V	1.74V

A.  $ClO_4^- > IO_4^- > BrO_4^-$



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**790.** Which of the following is isoelectronic pair?







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**791.** What happens when chlorine gas is passed through a hot concentrated solution of NaOH ?

A. 0 to +5

B. 0 to +3

C. 0 to -1

D. 0 to +1



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**792.** Complete the following statement- Vitamin A is important for our body because-



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**793.** Which of the following is correct for  $P_4$  molecule of white phosphorus?

- A. It has 6 lone pairs of electrons.
- B. It has six P-P single bonds.
- C. It has three P-P single bonds.
- D. It has four lone pairs of electrons.



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**794.** Which of the following statements are correct?

A. Among halogens, radius ratio between iodine and fluorine is maximum.

B. Leaving F-F bond, all halogens have weaker X-X bond than X-X' bond in interhalogens.

C. Among interhalogen compounds maximum number of atoms are present in iodine fluoride.

D. Interhalogen compounds are more reactive than halogen compounds.



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**795.** Which of the following has maximum number of unpaired d electrons :

A.  $N^{3+}$ ,

B.  $O^{2-}$

C.  $Fe^{2+}$

D.  $Ti^{3+}$



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**796.** Draw lewis structure of ammonium ion .

A.

B.

C.

D.



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**797.** Express 1271 in roman numbers.



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**798.** Which of the following statements are correct?

A. S-S bond is present in  $H_2S_2O_6$ .

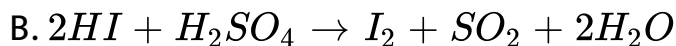
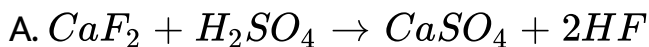
B. In peroxosulphuric acid ( $H_2SO_5$ ) sulphur is in +6 oxidation state.

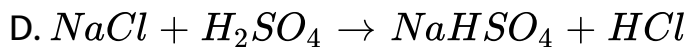
C. Iron powder along with  $Al_2O_3$  and  $K_2O$  is used as a catalyst in the preparation of  $NH_3$  by Haber's process.

D. Change in enthalpy is positive for the preparation of  $SO_3$  by catalytic oxidation of  $SO_2$ .

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**799.** In which of the following reactions conc.  $H_2SO_4$  is used as an oxidising reagent?





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800. Which of the following statements are true?

- A. Only type of interactions between particles of noble gases are due to weak dispersion forces.
- B. Ionisation enthalpy of molecular oxygen is very close to that of xenon.
- C. Hydrolysis of  $\text{XeF}_6$  is a redox reaction.
- D. Xenon fluorides are not reactive.

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801. Match the compounds given in Column I with the hybridisation and shape given in Column II and mark the correct option.

Column I	Column II
(A) $\text{XeF}_6$	(1) $sp^3d^3$ - distorted octahedral
(B) $\text{XeO}_3$	(2) $sp^3d^2$ - square planar
(C) $\text{XeOF}_4$	(3) $sp^3$ - pyramidal
(D) $\text{XeF}_4$	(4) $sp^3d^2$ - square pyramidal

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802. Express 1657 in roman numbers.

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803. Express 1272 in roman numbers.

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804. Match the species given in Column I with the shape given in

Column II and mark the correct option.

Column I	Column II
(A) $\text{SF}_4$	(1) Tetrahedral
(B) $\text{BrF}_3$	(2) Pyramidal
(C) $\text{BrO}_3^-$	(3) Sea-saw shaped
(D) $\text{NH}_4^+$	(4) Bent T-shaped

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805. Express 1273 in roman numbers.



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**806.** In the following questions a statement of assertion followed by a statement of reason is given. Choose the correct answer out of the following choices. (a) Both assertion and reason are correct statements, and reason is the correct explanation of the assertion. (b) Both assertion and reason are correct statements, but reason is not the correct explanation of the assertion. (c) Assertion is correct, but reason is wrong statement. (d) Assertion is wrong but reason is correct statement. (e) Both assertion and reason are wrong statements. Assertion :  $N_2$  is less reactive than  $P_4$ . Reason : Nitrogen has more electron gain enthalpy than phosphorus.



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**807.** Assertion :  $HNO_3$  makes iron passive. Reason :  $HNO_3$  forms a protective layer of ferric nitrate on the surface of iron.

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**808.** Unlike HCl, why HBr cannot be prepared by the action of concentrated sulphuric acid on sodium bromide? Explain.

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**809.** Assertion : Both rhombic and monoclinic sulphur exist as  $S_8$  but oxygen exists as  $O_2$ . Reason : Oxygen forms

$p\pi - p\pi$  multiple bond due to small size and small bond length but  $p\pi - p\pi$  bonding is not possible in sulphur.

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**810.** Which of the following reacts with  $NaNO_2 + HCl$  at 273-278 K to give alcohol/phenol ?

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**811.** Assertion :  $SF_6$  cannot be hydrolysed but  $SF_4$  can be.  
Reason : Six F atoms in  $SF_6$  prevent the attack of  $H_2O$  on sulphur atom of  $SF_6$ .

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**812.** Which halogen has a tendency to form cations?

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**813.** Give the disproportionation reaction of  $H_3PO_3$ .

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**814.** Why ICl is more reactive than  $I_2$  ?

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**815.** Name the halogen which forms only one oxoacid and write the formula of the oxoacid ?



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**816.** Arrange  $H_2O$ ,  $H_2S$ ,  $H_2Se$  and  $H_2Te$  in order of their increasing acidic strength ?

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**817.** Why does  $R_3P = O$  exist but  $R_3N = O$  does not? (R=alkyl group)

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**818.** Comment on nature of two S-O bond formed in  $SO_2$  molecule. Are the two S-O bonds in this molecule equal ?

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**819.** Draw the structures of  $SF_4$ .

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**820.** Draw the structure of  $XeF_2$ ,  $XeF_4$  and  $XeF_6$ .

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**821.** Give reasons for the following :  $SF_6$  is not readily hydrolysed.

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**822.** Why does sulphur in vapour state exhibit paramagnetic character ?



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**823.** What are the interhalogen compounds ? Why are these more reactive than halogens ?



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**824.** Considering the parameters such as bond dissociation enthalpy, electron gain enthalpy and hydration enthalpy, compare the oxidising power of  $F_2$  and  $Cl_2$ .



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**825.** Why is helium used in diving apparatus?



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**826.** Account for the following :  $NH_3$  is a stronger base than  $PH_3$ .



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**827.** Sulphur exhibits greater tendency for catenation than selenium. Explain why?



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**828.** How  $H_3PO_3$  is diprotic acid?

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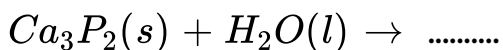
**829.** Give the structure of various oxoacids of chlorine.

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**830.** Describ chemistry of manufacture of nitric acid by Ostwald's process.

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**831.** Complete the following chemical equation :

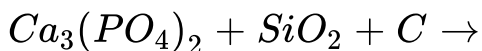


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**832.** Complete the following reaction :  $F_2(g) + H_2O(l) \rightarrow$

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**833.** Complete the following equation :



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**834.** Nitrogen exists as diatomic molecule and phosphorous acts as tetra atomic molecule. Explain.

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**835.** Give the resonating structures of  $NO_2$  and  $N_2O_5$ .

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**836.** Give two examples to show the anomalous behaviour of fluorine.

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837. Draw the structure of  $P_4O_{10}$ .

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838. Which of the two  $NH_3$  and  $PH_3$  is more basic and why ?

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839. Among the hydrides of group 15, predict the hydride having lowest boiling point .

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**840.** Name three allotropes of Phosphorus. Which of these is most reactive ?

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**841.** Which of the two :  $NH_3$  or  $PH_3$  is soluble in water ?

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**842.** Arrange the following in increasing order of property mentioned : Reducing character :

$NH_3$ ,  $AsH_3$ ,  $PH_3$ ,  $SbH_3$ ,  $BiH_3$

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**843.** Give an example of compounds in which the oxidation state of nitrogen : +3 .

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**844.** Give an example of compounds in which the oxidation state of nitrogen : -3 .

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**845.** Give an example of compounds in which the oxidation state of nitrogen : 0.

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**846.** Give an example of compounds in which the oxidation state of nitrogen : +5.

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**847.** What does the abbreviation T.N .T. stand for ?

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**848.** What is laughing gas ? How is it prepared ?

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**849.** Which plants mostly help in nitrogen fixing ?

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**850.** Write the formula of the compound formed during ring test of nitrate . Give its name.

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**851.** Name the oxide of nitrogen Which is blue solid ?

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**852.** Name the oxide of nitrogen Causes pollution problem.

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**853.** Which oxide of nitrogen is produced by heating lead nitrate ?

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**854.** Give one example each of oxyacid of P having the oxidation state +4 .

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**855.** Give one example each of oxyacid of P having the oxidation state +3.

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**856.** What is the chemical formula of laughing gas ? How is it prepared ?

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**857.** Among the hydrides of group 15, predict the hydride having most basic character.

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**858.** Among the hydrides of group 15, predict the hydride having highest thermal stability.

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**859.** Among the hydrides of group 15, predict the hydride having lowest boiling point .

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**860.** Among the hydrides of group 15, predict the hydride having strongest reducing agent.

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**861.** Name the oxide of nitrogen obtained in the following reaction :  $Pb(NO_3)_2 \xrightarrow[673K]{Heat}$

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862. Complete the reaction :  $NH_4NO_3(s) \xrightarrow{\text{Heat}}$

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863. Name the oxide of nitrogen obtained in the following reaction :  $N_2O_4 + NO \xrightarrow{250K}$

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864. What is the oxidation state of phosphorus in the following :  $H_3PO_3$

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**865.** What are the oxidation states of phosphorus in the following:  $PCl_3$

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**866.** What is the oxidation state of phosphorus in the following :  $Ca_3P_2$

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**867.** What are the oxidation states of phosphorus in the following:  $Na_3PO_4$

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**868.** What is the oxidation state of phosphorous in  $POF_3$ ?

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**869.** Which of the following has maximum P-OH bonds ? (i)

Orthophosphoric acid (ii) Pyrophorous acid (iii)

Pyrophosphoric acid

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**870.** Name the oxoacid of P which exists as polymeric.

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**871.** Name the oxoacid of P which has basicity two.

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**872.** Name the element of group 16 which has highest electronegativity.

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**873.** The element which shows least metallic character

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**874.** Name the element of group 16 which has highest melting point .

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**875.** Describe the trends in the elements of group 16 in order of increasing atomic number: Ionisation energy.

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**876.** Among the hydrides of the members of oxygen family, which has lowest boiling point.

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**877.** Among the hydrides of the members of oxygen family, which has maximum thermal stability .

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**878.** Among the hydrides of the members of oxygen family, which has weakest acidic character .

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**879.** What is the oxidation state of Te in Telluric acid?

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**880.** What is the oxidation state of S in the following oxyacids of sulphur ? Thiosulphuric acid ?

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**881.** What is the oxidation state of S in the following oxyacids of sulphur ? Dithionic acid ?

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**882.** What is the oxidation state of S in the following oxyacids of sulphur ? Thiosulphuric acid ?

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**883.** Why sulphuric acid is oily and viscous liquid ?

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**884.** Name the acid formed when sulphur dioxide dissolves in water.

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**885.** What is the oxidation state of S in  $H_2S_2O_7$  and  $SO_3$  ?

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**886.** What happens when conc.  $H_2SO_4$  is dropped on sugar ?

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**887.** What is the formula of peroxodisulphuric acid ? What is its basicity ?

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**888.** Arrange  $H_2O$ ,  $H_2S$ ,  $H_2Se$  and  $H_2Te$  in order of their increasing acidic strength ?

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**889.** What is the structure of  $SCl_2$  ?

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**890.** Give an example of oxide of chlorine having +6 oxidation state of Cl .

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**891.** Name the element of group 17 which has the following properties : highest electron affinity .

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**892.** Name the element of group 17 which has the following properties : strongest oxidising agent .

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**893.** Which of the following noble gases has highest boiling point :

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**894.** Express 1781 in roman numbers.

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**895.** Among hydrides of halogens predict the hydride having highest boiling point.

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**896.** Among hydrides of halogens predict the hydride having most acidic.

 [Watch Video Solution](#)

**897.** Express 1803 in roman numbers.

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898. Which type of hybridisation occurs in  $BrF_3$  .

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899. Which type of hybridisation occurs in  $BrF_5$  .

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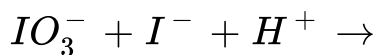
900. Which type of hybridisation occurs in  $IF_7$  .

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901. Give two examples of pseudohalides.

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902. Complete the following reaction:



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903. Express 1783 in roman numbers.

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904. Complete the reaction :  $I_2 + S_2O_3^{2-} \rightarrow$

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905. Which among the following pairs is stronger acid ?

HF or HCl .

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906. Which of the following is strongest acid ?

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907. Which among the following pairs is stronger acid ?

$HClO_3$  or  $HClO_4$  .

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**908.** Which among the following pairs is stronger acid ?

HF or HCl .

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**909.** Which among the following pairs is stronger acid ?

$HClO_3$  or  $HClO_4$  .

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**910.** Which of the following pairs of elements would have a more negative electron gain enthalpy? i) O or N ii) F or Cl

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**911.** Express 1801 in roman numbers.

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**912.** Name the noble gas which is radioactive.

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**913.** Name the noble gas which has least boiling Point .

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**914.** Express 1802 in roman numbers.

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**915.** Draw the structure of  $XeF_2$ , and what is the state of hybridisation of Xe in it ?

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**916.** What is the state of hybridisation of Xe in :  $XeOF_4$

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**917.** What is the state of hybridisation of Xe in :  $XeO_3$

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918. What is the state of hybridisation of Xe in  $XeF_4$ .

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919. What is the covalence of nitrogen in  $N_2O_5$  ?

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920. Write the oxidation number of central atom of following compound :  $[CoCl_2(en)_2]SO_4$

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921. Why all bonds in  $PCl_5$  are not equal?

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**922.** True or False: The bleaching action of  $SO_2$  is permanent while that of  $Cl_2$  is temporary.

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**923.** True or False:  $NH_3$  is less basic than  $PH_3$ .

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**924.** True or False: Sulphuric acid has high boiling point and a high viscosity because it forms intramolecular hydrogen bonding.







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**925.** True or False: In group 16, the volatility of hydrides first increases from  $H_2O$  to  $H_2S$  and then decreases from  $H_2S$  to  $H_2Te$ .



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**926.** Write the oxidation number of central atom of following compound :  $[CoCl(en)_2ONO]^+$



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**927.** Write the oxidation number of central atom of following compound :  $Na[Co(CO)_4]$



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928. Write the oxidation number of central atom of following compound :  $K_2[PtF_6]$



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929. Write the oxidation number of central atom of following compound :  $[PtBrCl(C_5H_5N)NH_3]$



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930. Write the oxidation number of central atom of following compound :  $[CoCl_2(en)_2]_2SO_4$



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**931.** True or False: Concentrated  $H_2SO_4$  can be used to prepare HBr from NaBr.

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**932.** What is the oxidation number of central atom  $K_2[OsCl_5N]$

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**933.** True or False:  $I_2$  cannot liberate  $Cl_2$  from aqueous KCl but it can liberate  $Cl_2$  from  $KClO_3$ .

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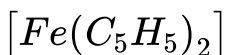
**934.** Complete the missing links : Calcium phosphide on hydrolysis gives ..... and calcium hydroxide.

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**935.** Sulphuric acid is viscous in nature due to .....

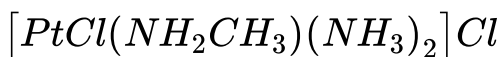
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**936.** What is the oxidation number of central atom



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937. What is the oxidation number of central atom



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938. The formula of acidic nitrogen hydride is .....

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939. In brown ring test for nitrates,  $Fe^{2+}$  ion reduces  $NO_3^-$  ion to ..... Which reacts with  $Fe^{2+}$  ion to form a brown ring complex having the molecular formula .....

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**940.**  $PCl_5$  in solid state exists as ionic compound having cation ..... and anion .....

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**941.** The strongest reducing agent among all the halide ions is .....

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**942.** In  $ClF_3$  and  $SF_4$ , Cl involves..... hybridisation and S involves..... hybridisation.

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**943.** Among hydrides of oxygen family, the strongest reducing agent is .....

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**944.** Nitrogen is a gas because of its tendency to form .....

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**945.** In  $XeF_4$ , xenon involves..... hybridisation and its shape is .....

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**946.** Oleum is formed when..... is passed through conc.  $H_2SO_4$ .

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**947.** The two neutral oxides of nitrogen are..... and .....

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**948.** In gaseous state nitric oxide is ..... while in the liquid or solid state it is .....

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949. Among group 15 hydrides, ..... is most stable.

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950.  $P_4O_6$  and  $P_4O_{10}$  dissolve in water to give ..... and .....

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951. Calcium cyanamide is used as fertilizer under the name  
.....

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**952.** The oxide of nitrogen obtained on heating lead nitrate is .....

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**953.** Phosphorus reacts with nitric acid to form ..... acid.

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**954.** Laughing gas is obtained on heating a mixture of  $NH_4Cl$  and ..... but nitrogen gas is obtained when a mixture of  $NH_4Cl$  and ..... is heated.

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**955.** Hypophosphoric acid is ..... basic but pyrophosphorous acid is ..... basic.

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**956.** Orthophosphorous acid on heating gives ..... and .....

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**957.** The nitrogen oxide which is blue liquid below 253K..... is and which is brown gas is .....

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**958.** The formula of epsom salt is..... and that of baryte is .....

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**959.** Choose the correct alternative: Reducing power of hydrides of group 16 increases/decreases from  $H_2O$  to  $H_2Te$ .

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**960.**  $SF_4$  molecule has square planar /see saw geometry.

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**961.** Nitrogen gas is obtained by heating ammonium nitrite/ammonium nitrate.

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**962.** Both  $In_2O_3$  and  $Tl_2O_3$  are acidic/basic oxides.

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**963.** In  $H_2S_2O_8$ , the oxidation state of S is +6/+7.

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**964.** The negative electron gain enthalpy of F is less/more than Cl.

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**965.** Express 1815 in roman numbers.

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**966.** Express 1816 in roman numbers.

 [Watch Video Solution](#)

**967.**  $HClO_4$  is less/more acidic than  $HClO_3$ .

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**968.** Hydrogen chloride gas can be dried over conc. sulphuric acid /phosphorus pentoxide.

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**969.** When  $Cl_2$  gas is passed through hot milk of lime, bleaching powder /calcium chlorate is formed.

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**970.** Express 1817 in roman numbers.

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**971.** Express 1818 in roman numbers.

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**972.** Dipole moment of  $SO_3$  is higher /lower than that of  $SO_2$

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**973.** Express 1082 in roman numbers.

 [Watch Video Solution](#)



**974.** Express 1821 in roman numbers.

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**975.** Express 1822 in roman numbers.

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**976.** The most abundant noble gas in atmosphere is argon / helium.

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**977.** The square pyramidal shape is of  $XeOF_4/XeO_2F_2$  .

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**978.** White phosphorus is less/more reactive than red phosphorus.

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**979.** Express 1831 in roman numbers.

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**980.** Express 1832 in roman numbers.

 [Watch Video Solution](#)

**981.** Express 1833 in roman numbers.

 [Watch Video Solution](#)

**982.** Express 1835 in roman numbers.

 [Watch Video Solution](#)

**983.** Express 1836 in roman numbers.

 [Watch Video Solution](#)

**984.** Express 1837 in roman numbers.

 [Watch Video Solution](#)

**985.** Express 1838 in roman numbers.

 [Watch Video Solution](#)

**986.** Express 1850 in roman numbers.

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**987.** Express 1851 in roman numbers.

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**988.** Express 1852 in roman numbers.



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**989.** Express 1853 in roman numbers.

 [Watch Video Solution](#)

**990.** Express 1855 in roman numbers.

 [Watch Video Solution](#)

**991.** Express 1856 in roman numbers.

 [Watch Video Solution](#)

**992.** Express 1857 in roman numbers.

 [Watch Video Solution](#)

**993.** Express 1858 in roman numbers.

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**994.** Express 1860 in roman numbers.

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**995.** What is the commercial name of potassium aluminium sulphate?

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**996.** Express 1861 in roman numbers.

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**997.** The chemical formula for potash alum is-

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**998.** Complete the following statement- Potash alum is used  
in-

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999. The chemical mixture used to form lithopone is-

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1000. The chemical mixture used to form Bordeaux mixture is-

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1001. Write the IUPAC name of :  $[Co(en)_2Cl_2]$

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**1002.** The chemical mixture use for the formation of ammonal is-

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**1003.** Which is a stronger reducing agent,  $SbH_3$  or  $BiH_3$  , and why ?

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**1004.** Name two poisonous gases which can be prepared from chlorine gas.

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**1005.** Express 1862 in roman numbers.

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**1006.** Express 1863 in roman numbers.

 [Watch Video Solution](#)

**1007.** Express 1865 in roman numbers.

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**1008.** Express 1866 in roman numbers.

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**1009.** Out of white phosphorus and red Phosphorus, which one is More reactive and why?

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**1010.** On heating  $Pb(NO_3)_2$  a brown gas is evolved which undergoes dimerization on cooling. Identify the gas.

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**1011.** Which of the following compounds contains S=O and S=S bonds ?

A. Sulphuric acid

B. Thiosulphuric acid

C. Sulphurous acid

D. Thiosulphurous acid.



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**1012.** The transition temperature between Rhombic sulphur and monoclinic sulphur is

A. 369 K

B. 269K

C. 396 K

D. 296K



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**1013.** Which of the following halogen shows only negative oxidation state ?

A. Chlorine

B. Bromine

C. Fluorine

D. Iodine



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1014. The hybridisation state of S in  $SO_2$  is

A.  $sp$

B.  $sp^2$

C.  $sp^3$

D.  $sp^3d$



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1015. Which of the following is the strongest acid?

A.  $H_2O$

B.  $H_2S$

C.  $H_2Se$

D.  $H_2Te$

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**1016.** P-P-P bond angle in white phosphorus is :

A.  $120^\circ$

B.  $60^\circ$

C.  $90^\circ$

D.  $109^\circ 28'$

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**1017.** The oxoacid of halogen having maximum acidic character is



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**1018.** Express 1868 in roman numbers.



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1019. Express 1870 in roman numbers.

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1020. Express 1871 in roman numbers.

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1021. What is the basicity of  $H_3PO_2$  acid and why ?

A. 1

B. 2

C. 3

D. 4



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**1022.** Which of the following element has maximum electron gain enthalpy(negative)? *F, Cl, Br, I.*

A. F

B. Cl

C. Br

D. I



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**1023.** The basicity of phosphorus acid is :

- A. Two
- B. Three
- C. One
- D. Zero



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**1024.** Describe the trends in the elements of group 16 in order of increasing atomic number: Atomic radii .



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**1025.** Describe the trends in the elements of group 16 in order of increasing atomic number: Ionisation energy.

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**1026.** Describe the trends in the elements of group 16 in order of increasing atomic number: Oxidation state.

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**1027.** Express 1878 in roman numbers.

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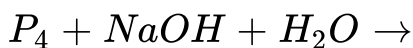
**1028.** Express 1872 in roman numbers.

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**1029.** Describe the manufacture of  $H_2SO_4$  by contact process?

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**1030.** Complete the following chemical reaction equation :



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**1031.** Express 1873 in roman numbers.

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**1032.** Express 1876 in roman numbers.

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**1033.** Explain the following situation :  $XeF_2$  has a linear structure and not bent angular structure.

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**1034.** Explain with reason : The majority of known noble gas compounds are those of xenon.

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**1035.** Draw the structures of white phosphorus and red Phosphorus. Which one of these two types of phosphorus is More reactive and why ?

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**1036.** Draw the Structural formulae of molecules of the following compound :  $BrF_3$

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**1037.** Draw the Structural formulae of molecules of the following compound :  $XeF_4$

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**1038.** State reasons for the following: The N-O bond in  $NO_2^-$  is shorter than the N-O bond in  $NO_3^-$  .

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**1039.** State reasons for the following:  $SF_6$  is kinetically an inert substance.

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1040. All the five bonds in  $PCl_5$  are not equivalent justify.

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1041. Express 1875 in roman numbers.

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1042. Why ammonia is a stronger base than phosphine?

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1043. Why  $SF_6$  is known but  $OF_6$  is not known

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**1044.** Why is phosphorus solid and reactive, but nitrogen is a gas and inert?

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**1045.** Why  $SF_6$  is known but  $SH_6$  is not known ?

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**1046.** Express 1877 in roman numbers.

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**1047.** Express 1880 in roman numbers.

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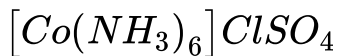
**1048.** Nitrogen forms number of oxides in different oxidation states. Write the names of any four oxides of nitrogen.

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**1049.** Boiling point of  $H_2O$  (373 K) is very much higher than that of  $H_2S$  (213 K). Give reason.

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1050. What is the oxidation number of central atom



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1051. Express 1881 in roman numbers.

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1052. Express 1882 in roman numbers.

 [Watch Video Solution](#)

1053. Discuss the shape of  $P_4O_6$ .



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1054. why does nitrogen not form  $NCl_5$ .

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1055. Draw the structure of  $P_4O_{10}$ .

 [Watch Video Solution](#)

1056. Halogens are highly reactive. Explain.

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1057. Complete the reaction :XeF<sub>2</sub>+ PF<sub>5</sub> rarr`?

 [Watch Video Solution](#)

1058. Compare the acidic strength of  $HClO_4$ ,  $HClO_3$ ,  $HClO_2$ , HClO. Give reasons.

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1059. What happens when  $PCl_5$  is heated . Write the reactions involved.

 [Watch Video Solution](#)

**1060.** What happens when  $H_3PO_3$  is heated? Write the reactions involved .

 [Watch Video Solution](#)

**1061.** Express 1883 in roman numbers.

 [Watch Video Solution](#)

**1062.** How is nitric acid manufactured by Ostwald process?

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**1063.** How will you prepare the following ? Give chemical equation also. Chlorine from HCl.

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**1064.** How will you prepare the following ? Give chemical equation also. Phosphoric acid from  $PCl_5$ .

 [Watch Video Solution](#)

**1065.** How will you prepare the following ? Give chemical equation also. Bleaching powder from  $Cl_2$  .

 [Watch Video Solution](#)



**1066.** Write the balanced chemical equation for the reaction of  $Cl_2$  with hot and concentrated NaOH. Is this reaction a disproportionation reaction? Justify.

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**1067.**  $OF_2$  should be called oxygen difluoride and not fluorine oxide. Explain.

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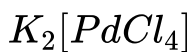
**1068.** What is the oxidation number of central atom  $Na[PtBrCl(NO_2)(NH_3)]$

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**1069.** Express 1885 in roman numbers.

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**1070.** What is the oxidation number of central atom



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**1071.** Express 1886 in roman numbers.

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**1072.** Why are the elements of Group 18 known as noble gases ?

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**1073.** Why does ammonia act as a Lewis base ?

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**1074.** Bond angle in  $NH_4^+$  is more than that in  $NH_3$ .

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**1075.** Arrange the following in the order of property indicated against set : HF, HCL, HBr, HI. increasing bond dissociation enthalpy.

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**1076.** Arrange the following in the order of property indicated against set :  $H_2O$ ,  $H_2S$ ,  $H_2Se$ ,  $H_2Te$  increasing acidic character.

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**1077.** Account for the following:  $PCl_5$  is more covalent than  $PCl_3$ .

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**1078.** Account for the following: Iron on reaction with HCl forms  $FeCl_2$  and not  $FeCl_3$ .

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**1079.** What is the oxidation number of central atom  $[PtCl_2(C_5H_5N)(NH_3)]$

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**1080.** Bi (V) is a stronger oxidising agent than Sb (V). Why?

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**1081.** N-N single bond is weaker than P-P single bond.

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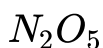
**1082.** Noble gases have low boiling points. Explain.

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**1083.** Draw the molecular structure of the following :  $XeF_4$

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**1084.** Draw the structures of the following compound :



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**1085.** Write the structural difference between white P and red P.

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**1086.** Explain: Electron gain enthalpy of chlorine is more negative than fluorine.

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**1087.** How  $H_3PO_3$  is diprotic acid?

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**1088.** Give two methods of preparation of dioxygen in laboratory and give its uses ?

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**1089.** What happens when  $PCl_5$  is heated?

 [Watch Video Solution](#)

**1090.** Complete the reaction:  $4Al + 3O_2 \rightarrow$

 [Watch Video Solution](#)



**1091.** Why is  $H_2S$  less acidic than  $H_2Te$  ?

 [Watch Video Solution](#)

**1092.** How is nitric acid manufactured by Ostwald process?

 [Watch Video Solution](#)

**1093.** Why sulphuric acid is oily and viscous liquid ?

 [Watch Video Solution](#)

**1094.** Molecular nitrogen is chemically very inert. Explain why?

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**1095.** Write short notes on various allotropes of phosphorus.

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**1096.** Name any five oxoacids of phosphorus and write their formulas .

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**1097.** Why does  $PCl_3$  fume in moisture ?

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**1098.** Explain the following:  $NO_2$  dimerises to  $N_2O_4$ .

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**1099.** Give two methods of preparation of  $NH_3$  and three important uses of  $NH_3$  .

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**1100.** Draw the structures of  $XeO_4$

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**1101.** Fluorine exhibits only - 1 oxidation state whereas other halogens exhibit positive oxidation states such as +1, +3, +5, +7.

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**1102.** What is the oxidation number of central atom  
 $K_2[Zn(OH)_4]$

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**1103.** Noble gases have low boiling points. Explain.

 [Watch Video Solution](#)

**1104.** What are interhalogen compounds ? Give example.

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**1105.** What are the interhalogen compounds ? Why are these more reactive than halogens ?

 [Watch Video Solution](#)

**1106.** Explain the manufacture of sulphuric acid by contact process.

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**1107.** Describe the commercial uses of sulphuric acid.

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**1108.**  $NH_3$  is a strong base but  $NF_3$  does not show any basic property. Why?

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**1109.** What is laughing gas ?

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**1110.** Draw the structure of  $XeF_4$  . What is the state of hybridisation of Xe in it?

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**1111.** Why does bond angle decreases in the hydrides of nitrogen family while going down a group ?

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**1112.** Why are halogens coloured ?

 [Watch Video Solution](#)

**1113.** How will ozone oxidise the following : Lead sulphide to lead sulphate

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**1114.** How will ozone oxidise the following : Potassium nitrite to potassium nitrate.

 [Watch Video Solution](#)

**1115.** What is the oxidation number of central atom  $Mn_3(CO)_{12}$

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1116. What is tailing of mercury ?

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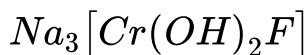
1117. All the five bonds in  $PCl_5$  are not equivalent justify.

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1118.  $H_3PO_2$  is monoprotic acid. Explain.

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1119. What is the oxidation number of central atom



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**1120.** How will ozone oxidise the following : Copper sulphide to copper sulphate

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**1121.** How will ozone oxidise the following : Potassium manganate to potassium per manganate.

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**1122.** Explain why moist chlorine can bleach dry coloured articles but dry chlorine cannot.

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**1123.** Write down the structure of  $SO_2$  and state with reason whether it is polar or non-polar.

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**1124.** Explain why phosphorus forms  $PCl_5$  whereas nitrogen does not form  $NCl_5$ .

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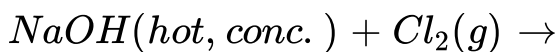
**1125.** What is the oxidation number of central atom  $[Mn(H_2O)_6]^{+2}$

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1126. Why is  $HNO_2$  not stable.

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1127. Complete the following reaction :

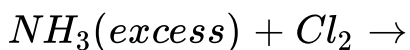


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1128. Complete the following reaction:  $P_4 + SO_2Cl_2 \rightarrow$

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**1129.** Complete the following reaction :



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**1130.** How do you account for the reducing behaviour of  $H_3PO_2$  on the basis of its structure ?

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**1131.** When HCl reacts with finely powdered iron, it forms ferrous chloride and not ferric chloride. Why?

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**1132.** What are interhalogen compounds ? Give example.

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**1133.** What are the interhalogen compounds ? Why are these more reactive than halogens ?

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**1134.** Draw structure of  $HClO_4$ .

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**1135.** Why noble gases have very high values of ionisation enthalpies?

 [Watch Video Solution](#)

**1136.** Why are halogens strong oxidising agents?

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**1137.** (i) why are halogens strong oxidising agents ?

(ii) Why oxygen shows anomalous behaviour from rest of members of its family ?

(iii) Ammonia acts as a good complexing agent. Explain.

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**1138.** Give the preparation, hybridisation and structure of

$XeF_4$  (XenonTetrafluoride)



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**1139.** What is the oxidation number of central atom

$[CuBr_2(H_2O)(NH_3)]$



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**1140.** Draw the structure of  $H_3PO_3$ .



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**1141.** Why conc. sulphuric acid is always diluted by adding sulphuric acid to water with constant stirring and not water to the acid ?

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**1142.** Compare the acidic strength of  $HClO_4$ ,  $HClO_3$ ,  $HClO_2$ ,  $HClO$ . Give reasons.

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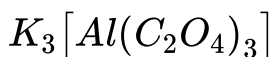
**1143.** Name the Scientist who prepared the first compound of noble gases.

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**1144.** Why are halogens coloured ?

 [Watch Video Solution](#)

**1145.** What is the oxidation number of central atom



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**1146.** Why does concentrated sulphuric acid has high boiling point?

 [Watch Video Solution](#)

**1147.** Fluorine exhibits only - 1 oxidation state whereas other halogens exhibit positive oxidation states such as +1, +3, +5, +7.

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**1148.** Molecular nitrogen  $N_2$  is not particularly reactive.  
Explain

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**1149.** What is the oxidation number of central atom  
 $[CuBr_2(H_2O)(NH_3)]$

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1150. Write the IUPAC name of :  $[Ag(NH_3)_2]Cl$

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1151. Write the IUPAC name of :  $[CoCl_2(NH_3)_4]Cl$

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1152. What are interhalogen compounds ? Give example.

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1153. Yeast is used in the production of:





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1154. What happens when ammonia reacts with Na.



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1155. What happens when ammonia reacts with  $CO_2$ .



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1156. Account for the following :  $NH_3$  is a stronger base than  $PH_3$ .



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**1157.** How would you account for the following : Sulphur has a great tendency for catenation than oxygen.

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**1158.** Account for the following : Bond energy of  $F_2$  is less than  $Cl_2$ .

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**1159.**  $NCl_3$  is an endothermic compound while  $NF_3$  is an exothermic compound. explain

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**1160.** How would you account for the following :  $XeF_2$  is a linear molecule without a bend.

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**1161.** How would you account for the following : The electron gain enthalpy with negative sign for fluorine is less than that for chlorine, still fluorine is a stronger oxidising agent than chlorine.

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**1162.** Why  $H_2S$  is more Acidic than  $H_2O$  ?

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**1163.** How would you account for the following :

$SF_6$  is kinetically inert.



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**1164.** How would you account for the following :  $NF_3$  is an exothermic compound but  $NCl_3$  is not .



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**1165.** How would you account for the following : The acidic strength of compounds increases in the order :  $PH_3 < H_2S$



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**1166.** How would you account for the following :

$SF_6$  is kinetically inert.

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**1167.** Draw the molecular structure of the following :  $XeOF_4$

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**1168.** Draw the structures of the following molecule :  $H_3PO_2$

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**1169.** How are interhalogen compound formed? What general compositions can be assigned to them?

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**1170.** Why does  $R_3P = O$  exist but  $R_3N = O$  does not? (R= alkyl group)

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**1171.** Give reasons for the following :  $PbCl_4$  is more covalent than  $PbCl_2$  .

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**1172.** Give reasons for the following : At room temperature,  $N_2$  is much less reactive.

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**1173.** Why is dioxygen gas but sulphur a solid?

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**1174.** Why does  $O_3$  act as a powerful oxidising agent ?

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**1175.** Why is  $\text{BiH}_3$  the strongest reducing agent amongst all the hydrides of Group 15 elements ?

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**1176.** Though nitrogen exhibits + 5 oxidation state, it does not form penta-halide. Given reason.

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**1177.** Explain: Electron gain enthalpy of chlorine is more negative than fluorine.

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1178. The two O-O bond lengths in ozone molecule are identical explain ?

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1179. Complete the following equation :  $P_4 + H_2O \rightarrow$

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1180. Complete the following reaction :  $XeF_4 + O_2F_2 \xrightarrow{143K}$

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1181. Draw the molecular structure of the following :  $XeF_2$





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1182. Draw the structures of the following :  $BrF_3$



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1183. Why does  $R_3P = O$  exist but  $R_3N = O$  does not? (R = alkyl group)



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1184. Give reasons for the following: Oxygen has less electron gain enthalpy with negative sign than sulphur .



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**1185.**  $H_3PO_2$  is a stronger reducing agent than  $H_3PO_3$ .

Give reasons..

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**1186.** Complete the following equation :  $Ag + PCl_5 \rightarrow$

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**1187.** Complete the following equation :  $CaF_2 + H_2SO_4 \rightarrow$

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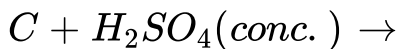
**1188.** Draw the molecular structure of the following :  $XeF_4$

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**1189.** Draw the structures of the following :  $HClO_4$

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**1190.** Write balanced equations for the following reaction :



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**1191.** Complete the following reaction :  $XeF_2 + H_2O \rightarrow$

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1192. Draw the molecular structure of the following :  $XeO_3$

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1193. Draw the structure of the following molecule :  $H_2SO_4$

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1194. Draw the structures of the following:  $(HPO_3)_3$

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1195. Draw the molecular structure of the following :  $XeF_4$

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**1196.**  $H_3PO_2$  is a stronger reducing agent than  $H_3PO_3$ .

Give reasons..

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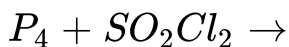
**1197.** How would you account for the following : Sulphur has a great tendency for catenation than oxygen.

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**1198.** Account for the following: Acidic character increases from HF to HI.

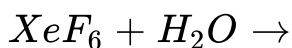
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**1199.** Complete the following chemical reaction equation :



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**1200.** Complete the following chemical reaction equation :



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**1201.** Predict the shape and the asked angle ( $90^\circ$  or more or less) in the following case:  $SO_3^{2-}$  and the angle O-S-O .

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**1202.** Predict the shape and the asked angle ( $90^\circ$  or more or less) in the following case:  $ClF_3$  and the angle F-Cl-F .

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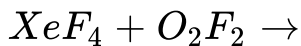
**1203.** Predict the shape and the asked angle ( $90^\circ$  or more or less) in the following case:  $XeF_2$  and the angle F - Xe - F .

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**1204.** Complete the following chemical equation :  
 $NaOH + Cl_2 \rightarrow$  (hot and conc.)

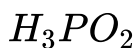
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1205. Complete the following chemical equation :



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1206. Draw the structures of the following molecule :



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1207. Draw the structure of the following molecule :  $\text{H}_2\text{SO}_4$

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1208. Draw the structures of the following molecule :  $\text{XeF}_4$



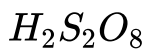
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1209. Draw the molecular structure of the following :  $XeF_6$



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1210. Draw the molecular structures of following compound :



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1211. Which out of  $NH_3$  and  $NF_3$  have higher dipole moment and why?



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1212. All the five bonds in  $PCl_5$  are not equivalent justify.



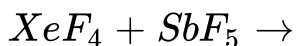
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1213. Why does sulphur in vapour state exhibit paramagnetic character ?



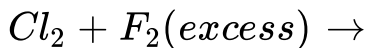
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1214. Complete the following chemical equation :



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**1215.** Complete the following chemical equation :



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**1216.** Explain the following : Nitrogen is much less reactive than phosphorus.



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**1217.** Explain the following : The stability of + 5 oxidation state decreases down group 15.



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**1218.** Explain the following : The bond angles (O -N-O) are not of the same value in  $\text{NO}_2^-$  and  $\text{NO}_2^+$  .

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**1219.** Write down the steps involved in the manufacture of  $\text{HNO}_3$  by Ostwald process.

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**1220.** Draw the structure of  $\text{HClO}_4$ . What is the oxidation number of Cl in this compound? Write the formula of oxyacid of Cl in its +5 oxidation state.

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**1221.** Write the reaction of  $XeF_4$  with  $H_2O$ .

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**1222.** Write down the preparation of ozone from oxygen. Mention the conditions required to maximize the yield of ozone.

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**1223.** Write the structural formula of  $PCl_5$  in solid state and also indicate the hybridisation of phosphorus atoms.

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**1224.** What happens, when sulphur is treated with conc.  $HNO_3$  ?

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**1225.** How is  $SO_2$  an air pollutant?

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**1226.** Explain the following fact : Halogens are coloured.

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1227. Why does  $NH_3$  form hydrogen bond but  $PH_3$  does not?

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1228. Write the IUPAC name of :  $[Pd(NH_3)_4]Cl_2$

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1229. Explain the following fact :  $NH_3$  is more basic than  $BiH_3$  .

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1230. Write structures of  $XeF_2$  and  $XeF_4$  .

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1231. Write the IUPAC name of :  $[Ni(H_2O)_6]Cl_2$

 [Watch Video Solution](#)

1232. Explain Ostwald process for manufacturing nitric acid.

Draw structure of nitric acid and write its uses also.

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1233. Write the IUPAC name of :  $[Co(NH_3)_4Cl_2]^+$

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1234. Write the IUPAC name of :  $[Co(NH_3)_6]^{+3}$

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1235. Write the IUPAC name of :  $[Ni(NH_3)_6]^{+2}$

 [Watch Video Solution](#)

1236. Write formula of phosphine.

 [Watch Video Solution](#)

1237. Why does ammonia act as a Lewis base?

 [Watch Video Solution](#)

1238. All the five bonds in  $PCl_5$  are not equivalent justify.

 [Watch Video Solution](#)

1239. Why is  $H_2O$  a liquid and  $H_2S$  a gas?

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1240. Which formula of noble gas species is isoelectronic with  $IBr_2^-$  ?

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**1241.** Halogens have maximum negative electron gain enthalpy in the respective periods of the periodic table. Why?

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**1242.** Write the IUPAC name of :  $[CoCl(NH_3)_5]^{+2}$

 [Watch Video Solution](#)

**1243.** Write the IUPAC name of :  $[Pt(en)_2Br_2]$

 [Watch Video Solution](#)



1244. Write the IUPAC name of:  $[CoCl_3(NH_3)_3]$

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1245. Give reasons for the following: Bond enthalpy of  $F_2$  is lower than that of  $Cl_2$ .

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1246.  $PH_3$  has lower boiling point than  $NH_3$ . Why?

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1247. Write the IUPAC name of :  $[Fe(EDTA)]^-$

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1248. Draw the structures of the following molecule :



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1249. Draw the structures of the following molecule :  $XeF_4$

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1250. Why is helium used in diving apparatus?

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**1251.** Explain the following :

Fluorine does not show positive oxidation state.

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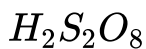
**1252.** Account for the following: Oxygen shows catenation behaviour less than sulphur.

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**1253.** Draw the molecular structure of the following :  $XeF_2$

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**1254.** Draw the structures of the following molecule :



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**1255.** Draw flow chart for Haber's process for the manufacture of ammonia.



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**1256.** Compounds of nitrogen, phosphorus and sulphur such as ammonia, phosphoric acid and sulphuric acid are used in fertilizer industry. Write the chemical equation for the

preparation of phosphoric acid ( $H_3PO_4$ ) from orthophosphorus acid ( $H_3PO_3$ )

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1257. what is the contact process for the manufacture of sulphuric acid.

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1258. Write method of preparation of  $H_2SO_4$  acid by Contact process.

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**1259.** What are amphoteric oxides? give two examples of amphoteric oxides?

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**1260.** Account for the following: Iron on reaction with HCl forms  $FeCl_2$  and not  $FeCl_3$ .

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**1261.** Give the chemistry of brown ring test.

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**1262.** Mention the conditions required to maximise the yield of ammonia in its synthesis by Haber's process.

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**1263.** Which form of sulphur shows paramagnetic behaviour and why?

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**1264.** Unlike HCl, why HBr cannot be prepared by the action of concentrated sulphuric acid on sodium bromide? Explain.

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1265. Write the reaction of white P with NaOH solution .

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1266. Write the IUPAC name of :  $[Fe(en)_3]Cl_3$

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1267. Explain the manufacture of sulphuric acid by contact process.

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1268. What are inter halogen compounds ?





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**1269.** Name two oxoacids of sulphur.

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**1270.** How will you manufacture ammonia by Haber process?

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**1271.** Write any two uses of inert gases.

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**1272.** State the hybridisation of the central atom and draw the structure of  $PCl_3$  and  $H_2SO_4$  .

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**1273.** The first ionisation enthalpy of nitrogen is higher than that of oxygen but the second ionisation enthalpy is higher in oxygen than that of nitrogen. Explain

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**1274.** Give the laboratory preparation of sulphur dioxide and write the chemical reaction involved .

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1275.  $SF_4$  is easily hydrolysed whereas  $SF_6$  is not easily hydrolysed. Why ?

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1276. Although electron gain enthalpy of fluorine is less negative as compared to chlorine, fluorine is stronger oxidizing agent than chlorine. Why?

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1277. Dry chlorine does not act as a bleaching agent. Why?

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**1278.** Why is  $H_3PO_4$  tribasic and  $H_3PO_3$  dibasic?

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**1279.** Why ICl is more reactive than  $I_2$  ?

 [Watch Video Solution](#)

**1280.** Nitrogen exists as diatomic molecule and phosphorus as  $P_4$ . Why ?

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**1281.** Describe the manufacture of  $H_2SO_4$  by contact process?

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**1282.** Give reasons for the following: Chlorine has higher electron gain enthalpy than fluorine.

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**1283.** Give reasons for the following: Noble gases have very little tendency towards liquefaction.

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**1284.** Give reasons for the following: Elements of group 16 are more electronegative than those of group 15.

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**1285.** Though nitrogen exhibits + 5 oxidation state, it does not form penta-halide. Given reason.

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**1286.** Give reasons for the following: Sulphur vapour is paramagnetic.

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**1287.** Give reasons for the following: Moist chlorine is powerful bleaching agent.

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**1288.** Describe chemistry of manufacture of ammonia by Haber's process and discuss conditions for good yield of ammonia.

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**1289.** What are interhalogen compounds? Give example.

 [Watch Video Solution](#)

**1290.** What are noble gases? Why are they named so? Account for the fact that noble gases exhibit low chemical reactivity.

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**1291.** Account for the following: Acidic character increases from HF to HI.

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**1292.** Account for the following: There is large difference between the melting and boiling points of oxygen and sulphur.

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**1293.** Account for the following: Nitrogen does not form pentahalide.

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**1294.** Draw the structure of the following :  $ClF_3$

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**1295.** Draw the structures of the following molecule :  $XeF_4$

 [Watch Video Solution](#)

**1296.** Which allotrope of phosphorus is more reactive and why ?

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**1297.** How are the supersonic jet aeroplanes responsible for the depletion of ozone layer ?

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**1298.**  $F_2$  has lower bond dissociation enthalpy than  $Cl_2$ . Why?

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**1299.** Which noble gas is used in filling balloons for meteorological observations ?

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**1300.** Complete the reaction :  $XeF_2 + PF_5 \rightarrow ?$

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**1301.** Give the structure and basicity of  $H_3PO_4$ .

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**1302.**  $SF_6$  is known but  $SCl_6$  is not known. Explain.

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**1303.** Give the shape of  $IF_7$ .

 [Watch Video Solution](#)

**1304.** Why nitric acid acts as an oxidising agent ? How it oxidises: Carbon to carbonic acid.

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**1305.** Why nitric acid acts as an oxidising agent? How it oxidises: Sulphur to sulphuric acid.

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1306. Give the structure of  $XeOF_4$  and state of hybridization of Xe in it.

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1307. Give the structure and basicity of  $H_3PO_4$ .

 [Watch Video Solution](#)

1308.  $SO_3$  has zero dipole moment. Why ?

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**1309.** Give the shape of  $ClF_3$ .

 [Watch Video Solution](#)

**1310.** Why nitric acid acts as an oxidizing agent? How it oxidizes: Phosphorus to phosphoric acid

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**1311.** Why nitric acid acts as an oxidising agent? How it oxidises: Hydrogen Sulphide to sulphur.

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**1312.** Give the structure of  $XeOF_2$  and state of hybridization of Xe in it.

 [Watch Video Solution](#)

**1313.** Give the structure and basicity of  $H_3PO_2$ .

 [Watch Video Solution](#)

**1314.** Why  $SF_6$  is known but  $SH_6$  is not known ?

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**1315.** Give the shape of  $IF_5$ .

 [Watch Video Solution](#)

**1316.** Why nitric acid acts as an oxidising agent? How it oxidises: Sulphur to sulphuric acid.

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**1317.** Why nitric acid acts as an oxidising agent? How it oxidises: Ferrous Sulphate to Ferric sulphate acid.

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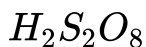
**1318.** Give the structure of  $XeO_2F_2$  and state of hybridization of Xe in it.





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**1319.** Draw the structures of the following molecule :



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**1320.** Write the structure of the following compound :  $XeF_4$

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**1321.** Explain with reason : The negative electron gain enthalpy of oxygen is less than that of sulphur.

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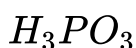
**1322.** Explain with reason : the reducing power of phosphine is higher than that of ammonia.

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**1323.** Explain with reason : The majority of known noble gas compounds are those of xenon.

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**1324.** Write the structure of the following compound :



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**1325.** Write the structure of the following compound :



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**1326.** Explain with reason :  $H_2S$  is more acidic than  $H_2O$ .

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**1327.** Express 1887 in roman numbers.

 [Watch Video Solution](#)

**1328.** Express 1888 in roman numbers.





[Watch Video Solution](#)

**1329.** Express 2000 in roman numbers.



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**1330.** Express 2001 in roman numbers.



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**1331.** Write down the steps involved in the manufacture of  $HNO_3$  by Ostwald process.



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1332. Account for the following:  $NH_3$  acts as a Lewis base.

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1333. Account for the following:  $PCl_3$  fumes in moist air.

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1334. Account for the following: Fluorine shows only -1 oxidation state.

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1335. Suggest any two fluorides of xenon.

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[Watch Video Solution](#)

**1336.** Express 2002 in roman numbers.

 [Watch Video Solution](#)

**1337.** Express 2003 in roman numbers.

 [Watch Video Solution](#)

**1338.** Noble gases have low boiling points. Explain.

 [Watch Video Solution](#)

**1339.** Explain the following:  $NO_2$  dimerises to  $N_2O_4$ .



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**1340.** What are inter halogen compounds ?



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**1341.** Give two examples of interhalogen compounds.



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**1342.** Express 2005 in roman numbers.



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**1343.** Arrange the following oxoacids in decreasing order of acidic strength:  $\text{HClO}$ ,  $\text{HClO}_2$ ,  $\text{HClO}_3$ ,  $\text{HClO}_4$ .

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**1344.** How is  $\text{XeF}_4$  prepared ?

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**1345.** Draw the structures of  $\text{XeF}_2$ ,  $\text{XeF}_4$ ,  $\text{XeOF}_4$  and mention the type of hybridization of Xe in each case.

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**1346.** How will you manufacture ammonia by Haber process?

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**1347.** Give the electronic configurations and oxidation states of group 17 elements.

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**1348.** Account for the following: Ozone is thermodynamically unstable.

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**1349.** Account for the following: Solid  $PCl_5$  is ionic in nature.

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**1350.** Explain why fluorine forms only one oxoacid, HOF.

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**1351.** Express 2006 in roman numbers.

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**1352.** Express 2007 in roman numbers.

 [Watch Video Solution](#)

**1353.** Express 2008 in roman numbers.

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**1354.** Express 2010 in roman numbers.

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**1355.** Arrange the following in the increasing order of property mentioned:  $H_3PO_3$ ,  $H_3PO_4$ ,  $H_3PO_2$  (Reducing character)

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**1356.** Express 2012 in roman numbers.

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**1357.** Draw the structures of the following molecule :

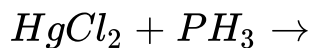


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**1358.** Express 2013 in roman numbers.

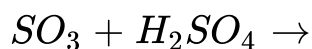
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**1359.** Complete the following chemical equation :



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**1360.** Complete the following chemical equation :



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**1361.** Express 2015 in roman numbers.

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**1362.** What happens when chlorine gas is passed through a hot concentrated solution of NaOH ?

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**1363.** What happens when sulphur dioxide is passed through an aqueous solution of Fe(III) salt?

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**1364.** Answer the following : What is the basicity of  $H_3PO_3$  and why?

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**1365.** Answer the following : Why does fluorine not play the role of a central atom in interhalogen compounds ?

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**1366.** Express 2016 in roman numbers.

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**1367.** Draw the structures of the following compound :  $N_2O_5$

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**1368.** Draw the molecular structure of the following :



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**1369.** How would you account for the following : Sulphur has a great tendency for catenation than oxygen.

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**1370.** Why ICl is more reactive than  $I_2$  ?

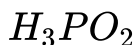
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**1371.** Explain the following observations : Despite lower value of its electron gain enthalpy with negative sign, fluorine ( $F_2$ ) is a stronger oxidising agent than  $Cl_2$  .

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**1372.** Draw the structures of the following molecule :



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**1373.** Express 2035 in roman numbers.

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**1374.** Express 2017 in roman numbers.

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**1375.** Explain the following observation : Despite having greater polarity, hydrogen fluoride boils at a lower temperature than water.

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**1376.** Express 2018 in roman numbers.

 [Watch Video Solution](#)

**1377.** Express 2020 in roman numbers.

 [Watch Video Solution](#)

**1378.** Express 2021 in roman numbers.

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**1379.** Why  $H_2S$  is more Acidic than  $H_2O$  ?

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**1380.** Explain the following observation : Fluorine does not exhibit any positive oxidation state.

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**1381.** Explain the following observation : Helium forms no real chemical compound.

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**1382.** Account for the following: Interhalogens are more reactive than pure halogens.

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**1383.** Why is  $N_2$  less reactive at room temperature ?

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**1384.** Account for the following: Reducing character decreases from  $NH_3$  to  $BiH_3$ .

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**1385.** Draw the structure of the following:  $H_4P_2O_7$   
(Pyrophosphoric acid)

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**1386.** Draw the structures of the following molecule :  $XeF_4$

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**1387.** What happens when white phosphorus is heated with concentrated NaOH solution in an inert atmosphere of  $CO_2$  ?

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**1388.** Name the noble gas which has least boiling Point .

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**1389.** Although electron gain enthalpy of fluorine is less negative as compared to chlorine, fluorine is stronger oxidizing agent than chlorine. Why?

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**1390.** What happens when  $H_3PO_3$  is heated? Write the reactions involved .

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**1391.** Complete the equation:  $PbS + O_3 \rightarrow$

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**1392.** For the reaction  $N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$ , what is the effect of the temperature and pressure to get more yield of ammonia ?

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**1393.** Nitrogen fertilizers are commonly used to promote the growth of plants and boost the crop yield. As a student of chemistry, can you suggest a farmer whether he should use excess nitrogen fertilizers to get maximum yield or not ?

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**1394.** Express 2022 in roman numbers.

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**1395.** Express 2023 in roman numbers.

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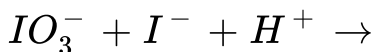
**1396.** How are the supersonic jet aeroplanes responsible for the depletion of ozone layer ?

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**1397.** The mixture of gases that forms gobar gas are-

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**1398.** Complete the following reaction:



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**1399.** Complete the reaction :  $I_2 + S_2O_3^{2-} \rightarrow$



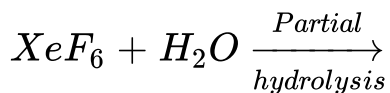
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1400. Complete the following reaction:  $NaClO_3 + I_2 \rightarrow$



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1401. Complete the following reaction:



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1402. Complete the following reaction:  $Br_2 + NaI \rightarrow$



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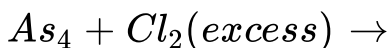
1403. Complete the following reaction:  $PCl_3 + H_2O \rightarrow$

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1404. Complete the following reaction:  $SbCl_3 + H_2O \rightarrow$

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1405. Write balanced equations for the following reaction :



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1406. Complete the following reaction:  $SCl_2 + NaF \rightarrow$



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1407. Complete the following reaction:  $H_2S_2O_7 + H_2O \rightarrow$

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1408. Complete the following reaction:  $P_4O_{10} + H_2O \rightarrow$

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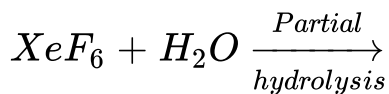
1409. Express 2025 in roman numbers.

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1410. Complete the following reaction:  $H_3PO_3 \xrightarrow{\text{Heat}}$

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1411. Complete the following reaction:



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1412. Ammonal is made up of-

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1413. Complete the following reaction:  $HNO_3 + P_4O_{10} \rightarrow$

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**1414.** Express 2026 in roman numbers.

 [Watch Video Solution](#)

**1415.** Complete the following reaction:



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**1416.** Express 2027 in roman numbers.

 [Watch Video Solution](#)

1417. Complete the following reaction:  $P_4 + SO_2Cl_2 \rightarrow$

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1418. Arrange the following in increasing order of property mentioned : Acidic strength (in water) : HF, HCl, HBr, HI

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1419. Arrange the following in increasing order of property mentioned : Bond dissociation enthalpy :  $Br_2, Cl_2, F_2, I_2$

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**1420.** Arrange the following in increasing order of property mentioned : Oxidising power :  $BrO_4^-$  ,  $IO_4^-$  ,  $ClO_4^-$

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**1421.** Arrange the following in increasing order of property mentioned : Ionic character of bond : M-F, M-Cl, M-Br, M-I

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**1422.** Arrange the following in the decreasing order of property mentioned :  $H_2O$ ,  $H_2S$ ,  $H_2Se$ ,  $H_2Te$  : Boiling point

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**1423.** Arrange the following in the order of property indicated for each set:  $NH_3$ ,  $PH_3$ ,  $AsH_3$ ,  $SbH_3$ ,  $BiH_3$  - increasing base strength.

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**1424.** Write the IUPAC name of :  $[Rh(PPh_3)_3]Cl$

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**1425.** Arrange the following in increasing order of property mentioned : Bond angle :  $H_2O$ ,  $H_2S$ ,  $H_2Te$ ,  $H_2Se$

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**1426.** Arrange the following in increasing order of property mentioned : Melting point :  $F_2, Cl_2, Br_2, I_2$

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**1427.** Arrange the following in increasing order of property mentioned : Reducing character :  
 $NH_3, AsH_3, PH_3, SbH_3, BiH_3$

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**1428.** Arrange the following in increasing order of property mentioned : Thermal stability :  $NH_3, PH_3, AsH_3, SbH_3$

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**1429.** Arrange the following in increasing order of property mentioned : Acidic character :  $SO_3$ ,  $CO_2$ ,  $SiO_2$ ,  $N_2O_5$

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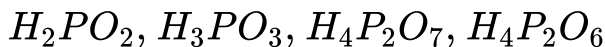
**1430.** Arrange the following oxoacids in decreasing order of acidic strength:  $HClO$ ,  $HClO_2$ ,  $HClO_3$ ,  $HClO_4$  .

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**1431.** Arrange the following in increasing order of property mentioned : Acidic strength :  $HBrO$ ,  $HClO$ ,  $HIO$

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**1432.** Arrange the following in increasing order of property mentioned : Oxidation state of P :

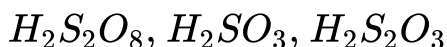


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**1433.** Arrange the following in increasing order of property mentioned : Boiling point : He, Ne, Ar, Kr

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**1434.** Arrange the following in increasing order of property mentioned : Oxidation state of S :



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**1435.** Arrange the following in increasing order of property mentioned : Melting point :  $F_2$ ,  $Cl_2$ ,  $Br_2$ ,  $I_2$



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**1436.** Dehydration of formic acid with sulphuric acid gives

A. CO

B. C

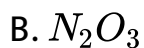
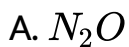
C. CO and  $CO_2$

D.  $C_2H_4O_4$ .



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**1437.** The brown gas formed when  $HNO_3$  is reduced by metals is



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**1438.** The hydride of group 15 having largest bond angle is :

A.  $NH_3$

B.  $PH_3$

C.  $AsH_3$

D.  $BiH_3$ .



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**1439.** The oxoacid of P having oxidation state + 4 is:

A. Phosphorus acid

B. Hypophosphoric acid

C. Phosphoric acid

D. Metaphosphoric acid.



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**1440.** Out of all the halogen hydracids, the weakest in aqueous solution is :

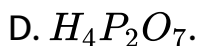
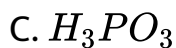
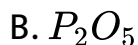
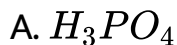
- A. HI
- B. HBr
- C. HF
- D. HCl.



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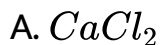


**1441.** Why nitric acid acts as an oxidizing agent? How it oxidizes: Phosphorus to phosphoric acid



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**1442.** Ammonia gas can be dried over



B. Conc.  $H_2SO_4$

C.  $PCl_5$

D. Quick lime



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**1443.** Of the following hydrides which is the strongest reducing agent ?

A.  $NH_3$

B.  $SbH_3$

C.  $AsH_3$

D.  $PH_3$



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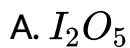
1444. The geometry of  $XeOF_2$  is :

- A. Pyramidal
- B. T-shaped
- C. Octahedral
- D. Tetrahedral.



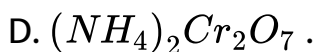
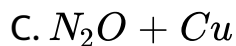
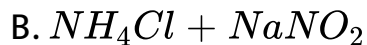
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1445. Ozone oxidises moist iodine to



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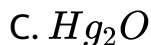
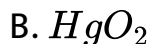
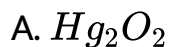
**1446.** Pure nitrogen gas is obtained from





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1447. Mercury reacts with Ozone to give

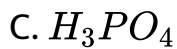
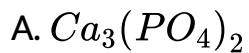


D. none of these



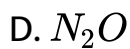
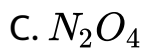
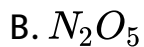
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1448. Calcium phosphide gets hydrolysed and gives



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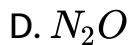
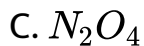
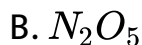
**1449.** Which of the following is a coloured gas ?





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**1450.** The oxide of nitrogen obtained by dehydration of nitric acid with phosphorus pentoxide is



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1451.  $XeF_4$  reacts with water at  $-80^\circ C$  to give



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1452.  $XeF_4$  molecule has the shape

A. Tetrahedral

B. Square planar



C. Square pyramidal

D. trigonal bipyramidal.



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**1453.** Ozone gives brown colour with

A. benzidine

B. lead acetate paper

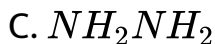
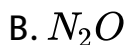
C. starch iodide paper

D. tetramethyl base.



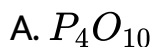
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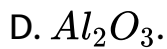
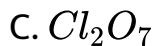
**1454.** Which compound of nitrogen is formed when  $CaCN_2$  reacts with hot water ?



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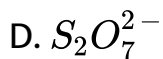
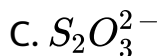
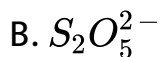
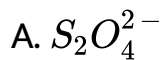
**1455.** Which of the following oxide is strongly acidic ?





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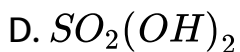
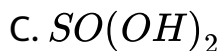
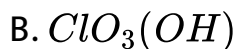
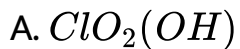
1456. Which of the following does not have S-S bond?





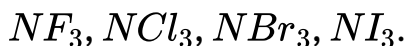
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1457. Which of the following is the strongest acid?



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1458. Among trihalide of nitrogen, which one is least basic?



A.  $NF_3$

B.  $NCl_3$

C.  $NBr_3$

D.  $NI_3$ .



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**1459.** On heating ammonium dichromate, the gas evolved is

A. Oxygen

B. Ammonia

C. Nitric acid

D. Nitrogen.



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**1460.** Gobar gas is made up of-



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**1461.** The number of P-O-P bonds in cyclic metaphosphoric acid is

A. zero

B. two

C. three

D. four.



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**1462.** The no of S - S bonds in sulphur trioxide trimer ( $S_3O_9$ ) is

A. three

B. two

C. one

D. zero



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**1463.** The number of  $\sigma$  -bonds in  $P_4O_{10}$  is

- A. 6
- B. 16
- C. 20
- D. 7



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**1464.** Which of the following is not true ?

- A. Among halide ions, iodide ion is the most Powerful reducing agent.



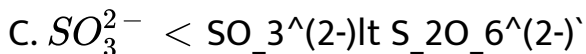
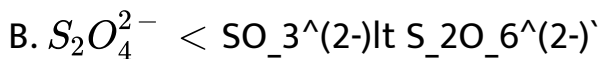
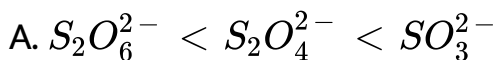
B. Fluorine is the only halogen which does Not show a variable oxidation state

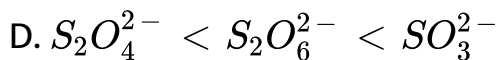
C. HOCl is stronger acid than HOBr

D. HF is a stronger acid than HCl.

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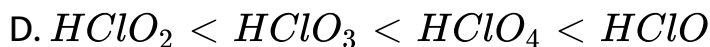
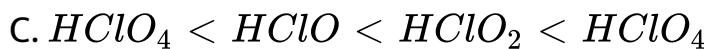
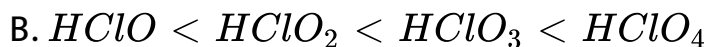
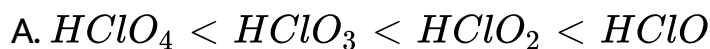
**1465.** The oxidation state of sulphur in anion  $SO_3^{2-}$ ,  $S_2O_4^{2-}$  and  $S_2O_6^{2-}$  follows the order -





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1466. The correct order of acid strength is



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1467. The chemical mixture that forms gun powder is-

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1468. Among the following which is the strongest oxidising agents:  $Br_2$ ,  $I_2$ ,  $F_2$ ,  $Cl_2$ .

A.  $Br_2$

B.  $I_2$

C.  $Cl_2$

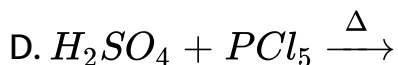
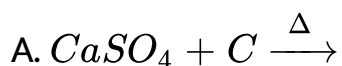
D.  $F_2$

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**1469.** An explosive called Gun powder has the composition as-

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**1470.** Sulphur trioxide can be obtained by which of the following reaction?



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**1471.** Which of the following statements is not valid for oxoacids of phosphorus?

- A. Orthophosphoric acid is used in the manufacture of triple superphosphate.
- B. Hypophosphorous acid is a diprotic acid.
- C. All oxoacids contain tetrahedral four coordinated Phosphorus.
- D. All oxoacids contain at least one  $P = O$  unit and one  $P-OH$  group.



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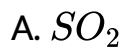
**1472.** When  $Cl_2$  gas reacts with hot and concentrated sodium hydroxide solution, the oxidation number of chlorine changes from

- A. zero to +1 and zero to - 5
- B. zero to - 1 and zero to + 5
- C. zero to - 1 and zero to + 3
- D. zero to +1 and zero to -3

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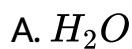
**1473.** Roasting of sulphides gives the gas X as a by-product. This is a colourless gas with choking damage to the respiratory organs as a result of acid rain. Its aqueous

solution is acidic, acts as a reducing agent and its acid has never been isolated. The gas 'X' is



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**1474.** Which one of the molecule contains no  $\pi$ -bond?



C.  $NO_2$

D.  $CO_2$



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1475. Which of the following is a polar molecule?

A.  $SF_4$

B.  $SiF_4$

C.  $XeF_4$

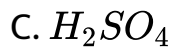
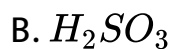
D.  $BF_3$



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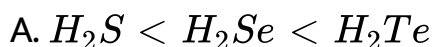


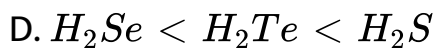
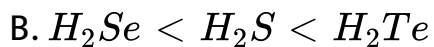
**1476.** Which is the strongest acid in the following:



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**1477.** Acidity diprotic acids in aqueous solution increases in the order





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**1478.** What happens when zinc sulphide and barium sulphate react together?

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**1479.** Which of the statements given below is incorrect?



B.  $OF_2$  is an oxide of fluorine

C.  $Cl_2O_7$  is an anhydride of perchloric acid

D.  $O_3$  molecule is bent .

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**1480.** Express 2028 in roman numbers.

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**1481.** Express 2030 in roman numbers.

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**1482.** Which is the correct statement for the given acids?

- A. Phosphinic acid is a monoprotic acid while phosphonic acid is a diprotic acid.
- B. Phosphinic acid is a diprotic acid while phosphonic acid is a monoprotic acid.
- C. Both are diprotic acids.
- D. both are triprotic acids.



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**1483.** Match the compounds given in Column I with the hybridisation and shape given in Column II and mark the

correct option.

Column I	Column II
(A) $\text{XeF}_6$	(1) $sp^3d^3$ - distorted octahedral
(B) $\text{XeO}_3$	(2) $sp^3d^2$ - square planar
(C) $\text{XeOF}_4$	(3) $sp^3$ - pyramidal
(D) $\text{XeF}_4$	(4) $sp^3d^2$ - square pyramidal

A.

A	B	C	D
(a) (iv)	(iii)	(i)	(ii)

B.

(b) (iv)	(i)	(ii)	(iii)
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C.

(c) (i)	(iii)	(iv)	(ii)
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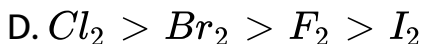
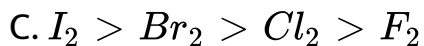
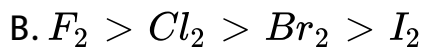
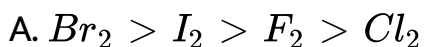
D.

(d) (i)	(ii)	(iv)	(iii)
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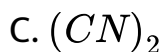
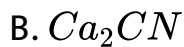
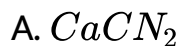
**1484.** Which one of the following order is correct for the bond dissociation enthalpy of halogen molecules?



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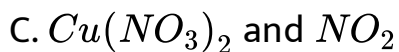
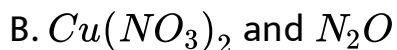
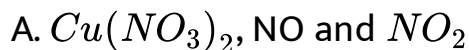
**1485.** The product obtained as a result of a reaction of nitrogen

with  $CaC_2$  is



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**1486.** When copper is heated with conc.  $HNO_3$  it produces



D.  $Cu(NO_3)_2$  and  $NO$

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**1487.** What happens when ammonium nitrate reacts with aluminium powder together?

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**1488.** What happens when solution of copper sulphate and quick lime react together?

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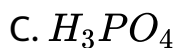
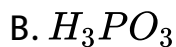
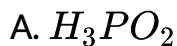
**1489.** Express 2031 in roman numbers.

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**1490.** Express 2032 in roman numbers.

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**1491.** The maximum number of P-H bonds are contained in which of the following molecules?



D.  $H_4P_2O_7$ .



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1492. Which of the following has-O-O- linkage?

A.  $H_2S_2O_6$

B.  $H_2S_2O_8$

C.  $H_2S_2O_3$

D.  $H_2S_2O_6$



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**1493.** When  $Br_2$  is treated with aqueous solutions of NaF, NaCl and NaI separately

- A.  $F_2$ ,  $Cl_2$  and  $I_2$  are liberated
- B. only  $F_2$  and  $Cl_2$  are liberated
- C. only  $I_2$  is liberated
- D. only  $Cl_2$  is liberated

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**1494.** The basicity of pyrophosphorous acid is

- A. 2
- B. 4

C. 1

D. 5

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**1495.** The oxidation state of phosphorus in cyclotrimetaphosphoric acid is

A. +3

B. +5

C. -3

D. +2

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**1496.** The p-block element that forms predominantly basic oxide is

A. N

B. P

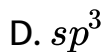
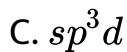
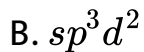
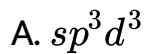
C. As

D. Bi



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**1497.** Give the structure of  $XeOF_2$  and state of hybridization of Xe in it.



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**1498.** The oxo acid of Sulphur which contain a lonepair of electrons on sulphur is

A. sulphurous acid

B. sulphuric acid

C. peroxodisulphuric acid

D. pyrosulphuric acid



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**1499.** Which one of the following is used for the production of  $UF_6$  in the enrichment of  $U^{235}$  ?

A.  $ClF_3$

B. KF

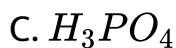
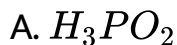
C.  $KHF_2$

D. HF



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**1500.** The oxoacid of phosphorus that reduces silver nitrate into metallic silver is



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**1501.** Which of the following oxides of nitrogen contains N-O-N bond?

A. (a) Dinitrogen oxide



B. (b) Nitrogen monoxide

C. (c) Dinitrogen pentaoxide

D. (d) Dinitrogen trioxide

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1502. Express 2033 in roman numbers.

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1503. What products are expected from the disproportionation reaction of hypochlorous acid ?

A.  $HClO_2$  and  $HClO_4$

B. HCl and  $Cl_2O$

C. HCl and  $HClO_3$

D.  $HClO_3$  and  $Cl_2O$

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**1504.** Express 2036 in roman numbers.

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**1505.** Express 2037 in roman numbers.

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**1506.** Express 2038 in roman numbers.

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**1507.** Express 2050 in roman numbers.

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**1508.** Express 2051 in roman numbers.

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**1509.** Express 2052 in roman numbers.

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**1510.** Express 2053 in roman numbers.

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**1511.** Express 2055 in roman numbers.

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**1512.** Express 2056 in roman numbers.

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**1513.** Which among the following is the most reactive ?

A.  $I_2$

B. ICl

C.  $Cl_2$

D.  $Br_2$



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**1514.** Which one has the highest boiling point?

A. Kr

B. Xe

C. He

D. Ne



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**1515.** The reaction of zinc with dilute and concentrated nitric acid, respectively produces

A.  $N_2O$  and  $NO_2$

B.  $NO$  and  $NO_2$

C.  $NO$  and  $N_2O$

D.  $NO_2$  and  $N_2O$



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**1516.** The pair in which phosphorus atoms have a formal oxidation state of +3 is

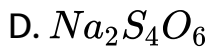
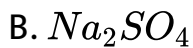
- A. orthophosphorous and pyrophosphorous acids
- B. pyrophosphorous and hypophosphoric acids
- C. orthophosphorous and hypophosphoric acids
- D. pyrophosphorous and pyrophosphoric acids.



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**1517.**  $Na_2S_2O_3$  is reduced by  $I_2$  to :

- A.  $Na_2S$



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**1518.** The function of  $Fe(OH)_3$  in the Contact process is

A. to detect colloidal impurity

B. to remove moisture

C. to remove dust particles

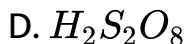
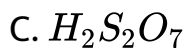
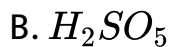
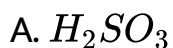
D. to remove arsenic impurity.





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1519. Sulphur trioxide gas when dissolved in  $H_2SO_4$ , the product obtained is



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1520. Which of the following contains P - O - P bond ?

A. Hypophosphorous acid

B. Phosphorus acid

C. Pyrophosphoric acid

D. Orthophosphoric acid



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1521.  $NO_2$  is not obtained on heating

A.  $AgNO_3$

B.  $KNO_3$

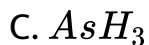
C.  $Cu(NO_3)_2$

D.  $Pb(NO_3)_2$



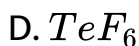
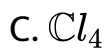
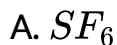
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1522. The least stable hydride of 15th group elements is



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**1523.** Which of the following is most easily hydrolysed amongst the following ?



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**1524.** What happens when 70% of copper react with 30% of zinc?



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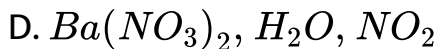
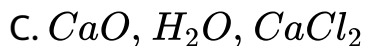
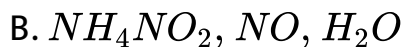
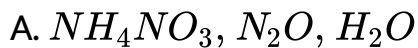
**1525.** Nitric acid can be obtained from ammonia via the formation of the intermediate compounds

- A. nitric oxide and nitrogen dioxide
- B. nitrogen and nitric oxide
- C. nitric oxide and dinitrogen pentoxide
- D. nitrogen and nitrous oxide

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**1526.** An inorganic salt (A) is decomposed on heating to give two products (B) and (C). Compound (C) is a liquid at room temperature and is neutral to litmus while the compound

(B) is a colourless neutral gas. Compounds (A), (B) and (C) are



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1527. What happens when 90% of copper combines with 10% of aluminium?

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**1528.** If  $Cl_2$  is passed through hot aqueous NaOH, the products formed have Cl in different oxidation states. These are indicated as

A. (a) -1 and +1

B. (b) -1 and +5

C. (c) +1 and +5

D. (d) -1 and +3



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**1529.** What happens when 88% of copper and 12% of tin react together?





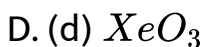
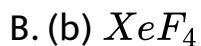
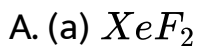
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**1530.** What happens when 2.4% of chromium, 1.5% of carbon and 90-95% of iron combine together?



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**1531.** Which of the following compounds of xenon has pyramidal geometry ?







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1532. On heating with concentrated NaOH solution in an inert atmosphere of  $CO_2$ , white phosphorus gives a gas. Which of the following statement is incorrect about the gas?

- A. It is more basic than  $NH_3$  .
- B. Its solution in water decomposes in the presence of light.
- C. It is less basic than  $NH_3$  .
- D. It is highly poisonous and has smell like rotten fish.



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**1533.** Sulphuryl chloride ( $SO_2Cl_2$ ) reacts with white phosphorus ( $P_4$ ) to give

A. (a)  $PCl_5$ ,  $SO_2$

B. (b)  $OPCl_3$ ,  $SOCl_2$

C. (c)  $PCl_5$ ,  $SO_2S_2Cl_2$

D. (d)  $OPCl_3$ ,  $SO_2S_2Cl_2$



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**1534.** Electronic configuration of only one p-block element is exceptional. One molecule of that element consist of how many atoms of it?

A. One

B. Two

C. Three

D. Four



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**1535.** Which among the following group 15 element forms most stable pentavalent compound?

A. Phosphorus

B. Antimony

C. Bismuth

D. Arsenic



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**1536.** What is the basicity of orthophosphorus acid?

A. One

B. Two

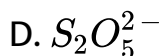
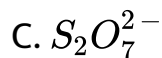
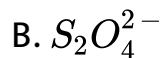
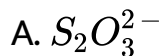
C. Three

D. Four



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1537. Which of the following does not have S-S bond?



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1538. The boiling points of HF, HCl, HBr and HI follow the order



C.  $\text{HI} > \text{HBr} > \text{HCl} > \text{HF}$

D.  $\text{HCl} > \text{HF} > \text{HBr} > \text{HI}$

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**1539.** In the solid state  $\text{PCl}_5$  exists as

A.  $[\text{PCl}_4]^-$  and  $[\text{PCl}_6]^+$  ions

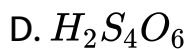
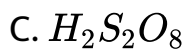
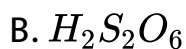
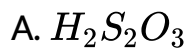
B. covalent  $\text{PCl}_5$  molecules only

C.  $[\text{PCl}_4]^+$  and  $[\text{PCl}_6]^-$  ions

D. covalent  $\text{P}_2\text{Cl}_{10}$  molecules only.

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**1540.** The acid in which O - O bonding is present, is



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**1541.** The most abundant noble gas in atmosphere is argon / helium.

A. Neon

B. Argon

C. Xenon

D. Krypton.



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**1542.** What is the highest oxidation state exhibited by group 17 elements?

A. +1

B. +3

C. +5

D. +7





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**1543.** The element that does NOT form acidic oxide is:

A. Carbon

B. Phosphorus

C. Chlorine

D. Barium.



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**1544.** Which one of the following group 16 element does not exist in -2 oxidation state?

A. S

B. Se

C. O

D. Po



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**1545.** Thermal decomposition of ammonium dichromate gives

A.  $N_2$ ,  $H_2O$  and  $Cr_2O_3$

B.  $N_2, NH_3$  and  $CrO$

C.  $(NH_4)_2CrO_4$  and  $H_2O$

D.  $N_2, H_2O$  and  $CrO_3$



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**1546.** The property which is not true about fluorine is

A. most of its reactions are exothermic

B. it forms only one oxo acid

C. highest electronegativity

D. high F-F bond dissociation enthalpy.



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1547. Which is true regarding nitrogen?

- A. Less electronegative
- B. Has low ionisation enthalpy
- C. d-orbitals are available
- D. Ability to form  $p\pi - p\pi$  bonds with itself



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1548. The shape of  $XeF_6$  is

- A. square planar

B. distorted octahedral

C. square pyramidal

D. pyramidal.



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**1549.** Which blue liquids obtained on reacting equimolar amounts of two gases at  $-30^{\circ}C$ ?

A.  $N_2O$

B.  $N_2O_3$

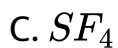
C.  $N_2O_4$

D.  $N_2O_5$



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1550. Which of the following contains maximum number of lone pairs of electrons on the central atom ?



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**1551.** The reaction of  $P_4$  with X leads selectively to  $P_4O_6$ . The

X is

A. Dry  $O_2$

B. A mixture of  $O_2$  and  $N_2$

C. Moist  $O_2$

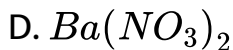
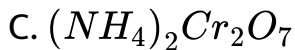
D.  $O_2$  in the presence of aqueous NaOH



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**1552.** Extra pure  $N_2$  can be obtained by heating

A.  $NH_3$  with CuO



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**1553.** The reaction of white phosphorus with aqueous NaOH gives phosphine along with another phosphorus containing compound. The reaction type, the oxidation states of phosphorus in phosphine and the other product are respectively.

A. redox reaction, - 3 and -5

B. redox reaction, + 3 and + 5



C. disproportionation reaction, - 3 and +5

D. disproportionation reaction, - 3 and +3

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**1554.** Concentrated nitric acid, upon long standing, turns yellow-brown due to the formation of

A. NO

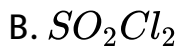
B.  $NO_2$

C.  $N_2O$

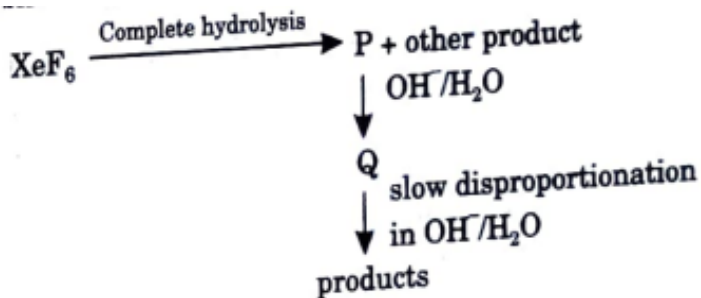
D.  $N_2O_4$

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1555. The product formed in the reaction of  $SOCl_2$  with white phosphorus is



1556. Under ambient conditions, the total number of gases released as products in the final step of the reaction scheme shown below is



- A. 0
- B. 1
- C. 2
- D. 3



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**1557.** White phosphorus has

- A. four P-P bonds
- B. bond angle  $\angle PPP = 60^\circ$
- C. six P-P bonds
- D. polymeric structure.



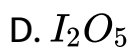
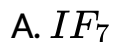
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**1558.** What happens when 14% of manganese combine with 80-85% of iron?



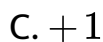
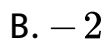
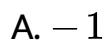
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**1559.** Which of the following contains cationic iodine ?



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**1560.** In its compounds, oxygen can show oxidation state of



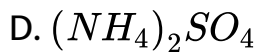
D. + 2



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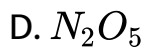
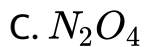
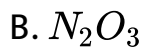
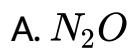
**1561.** A solution of colourless salt H on boiling with excess NaOH produces a non-flammable gas. The gas evolution ceases after some time. Upon addition of Zn dust to the same solution, the gas evolution restarts. The colourless salt(s) H is (are)





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1562. Nitrogen oxide(s) that contain(s) N-N bond(s) is (are)



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**1563.** The correct statement(s) about  $O_3$  is (are)

- A. O-O bond lengths are equal
- B. thermal decomposition of  $O_3$  is endothermic
- C.  $O_3$  is diamagnetic in nature
- D.  $O_3$  has a bent structure



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**1564.** Ionization potential values of noble gases decrease down the group with increase in atomic size. Xenon forms binary fluorides by the direct reaction of elements. Identify the correct statement(s) from below:



- A. Only the heavier noble gases form such compounds.
- B. It happens because the noble gases have higher ionization energies.
- C. It happens because the compounds are formed with electronegative ligands.
- D. Octet of electrons provide the stable arrangements.



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**1565.** The correct Statement(s) regarding, (i)  $\text{HClO}$ , (ii)  $\text{HClO}_2$ , (iii)  $\text{HClO}_3$  and (iv)  $\text{HClO}_4$ , is(are)

- A. The number of Cl=O bonds in (ii) and (iii) together is two
- B. The number of lone pairs of electrons in Cl in (ii) and (iii) together is three
- C. The hybridization of Cl in (iv) is  $sp^3$
- D. Amongst (i) to (iv), the strongest acid is (i)



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**1566.** The nitrogen containing compound produced in the reaction of  $HNO_3$  with  $P_4O_{10}$  on

- A. can also be prepared by reaction of  $P_4$  and  $HNO_3$

B. is diamagnetic

C. contains one N-N bond

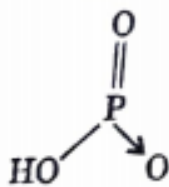
D. reacts with Na metal producing brown gas.

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**1567.** Phosphorus forms a variety of oxyacids. In all these, phosphorus is  $sp^3$  hybridised and is tetrahedrally bonded to four neighbouring atoms. These contain P-OH bonds, the hydrogen of which are ionisable giving acidic character to these compounds. These also contain P-H bonds in which hydrogens are not ionisable because P and H have nearly same electronegativity. The presence of P-H group in these oxyacids is responsible for their reducing properties. The

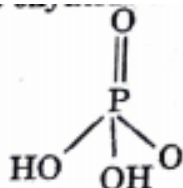
structures of some oxyacids are given below :

properties. The structures of some oxyacids are given below :



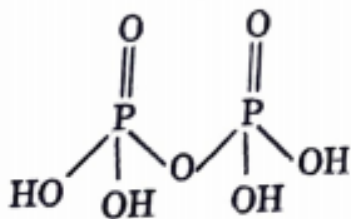
*meta*-Phosphoric acid

(A)



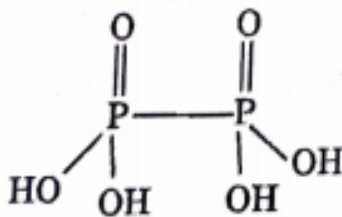
*ortho*-phosphoric acid

(B)



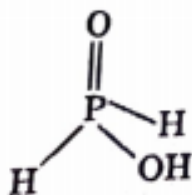
Pyrophosphoric acid

(C)



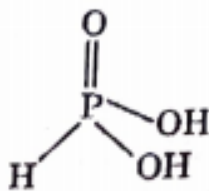
Hypophosphoric acid

(D)



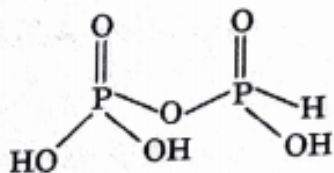
Hypophosphorus acid

(E)



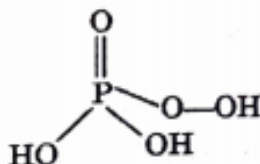
Phosphorus acid

(F)



Pyrophosphorous acid

(G)



Peroxomonophosphoric acid

(H)

Answer the

following (1 to 7) questions : The oxyacid of P having tetrabasicity is

A. C and H

B. C and E

C. C and D

D. B and E



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1568. Write the IUPAC name of :  $[Fe(CO)_5]$

A.

B.

C.

D.



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**1569.** Which of the acids show reducing properties ?

A. E, F and G

B. E,G and H

C. E only

D. E and F



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**1570.** Express 2556 in roman numbers.



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**1571.** Which of these is not a tree?

A. A and E

B. A only

C. C and G

D. H only.



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1572. Which oxide of sulphur acts as oxidising as well as reducing agent?

A. E

B. A

C. G

D. F



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1573. Which of the following statement is not correct ?

A.  $H_3PO_3$  is dibasic and reducing



B.  $H_4P_2O_7$  and  $H_4P_2O_6$  are tetrabasic

C.  $H_3PO_4$  is tribasic and has P in +5 oxidation state

D.  $H_3PO_5$  is tribasic and has P in +7 oxidation state

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**1574.** Haloalkanes are soluble in water.

A. Phosphates have no biological significance in humans

B. Between nitrates and phosphates, phosphates are less abundant in earth's crust .

C. Between nitrates and phosphates, nitrates are less abundant in earth's crust .

D. Oxidation of nitrates is possible in soil.



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1575. Among the following, the correct statement is

- A. Between  $NH_3$  and  $PH_3$ ,  $NH_3$  is a better electron donor because the lone pair of electrons occupies spherical 's' orbital and is less directional.
- B. Between  $NH_3$  and  $PH_3$ ,  $PH_3$  is a better electron donor because the lone pair of electrons occupies  $sp^3$  orbital and is more directional.

C. Between  $NH_3$  and  $PH_3$ ,  $NH_3$  is a better electron donor because the lone pair of electrons occupies  $sp^3$  orbital and is more directional.

D. Between  $NH_3$  and  $PH_3$ ,  $PH_3$  is a better electron donor because the lone pair of electrons occupies spherical 's' orbital and is less directional.



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**1576.** White phosphorus on reaction with NaOH gives  $PH_3$  as one of the products. This is a

A. (a) dimerization reaction

B. (b) disproportionation reaction

C. (c) condensation reaction

D. (d) precipitation reaction .

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**1577.** The reactions of  $Cl_2$  gas with cold-dilute and hot-concentrated NaOH in water give sodium salts of two (different) oxoacids of chlorine, P and Q, respectively. The  $Cl_2$  gas reacts with  $SO_2$  gas, in the presence of charcoal, to give a product R. R reacts with white phosphorus to give a compound S. On hydrolysis, S gives an oxoacid of phosphorus, T. Answer the following (11-12) questions: R, S and T, respectively, are

A.  $SO_2Cl_2$ ,  $PCl_5$  and  $H_3PO_4$

B.  $SO_2Cl_2$ ,  $PCl_3$  and  $H_3PO_3$

C.  $SOCl_2$ ,  $PCl_3$  and  $H_3PO_2$

D.  $SOCl_2$ ,  $PCl_5$  and  $H_3PO_4$



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**1578.** Express 2555 in roman numbers.



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**1579.** The questions given below consist of an Assertion and Reason. Use the following key to choose the appropriate

answer. (a) If both assertion and reason are CORRECT and reason is the correct explanation of the assertion. (b) If both assertion and reason are CORRECT, but reason is NOT THE CORRECT explanation of the assertion. (c) If assertion is CORRECT but, reason is INCORRECT. (d) If assertion is INCORRECT but, reason is CORRECT. (e) If both assertion and reason are INCORRECT. Assertion : Ozone is a powerful oxidising agent in comparison to  $O_2$ . Reason: Ozone is diamagnetic but  $O_2$  is paramagnetic.



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**1580.** Assertion :  $F_2$  has low reactivity.

Reason: F-F bond has low bond dissociation enthalpy.



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**1581.** Assertion : F-F bond in  $F_2$  molecule is strong. Reason: F atom is small in size.

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**1582.** Assertion :  $P_4$  is more reactive than  $N_2$ . Reason: P-P single bond in  $P_4$  is much weaker than  $N \equiv N$  in  $N_2$  molecule.

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**1583.** The question given below consist of an assertion (A) and a reason ( R). Use the following key to choose the appropriate answer to these questions from the codes (a),

(b), (c) and (d) given below:

(a) Both A and R are true and R is the correct explanation of A.

(b) Both A and R are true but R is NOT the correct explanation of A.

(c) A is true but R is false.

(d) A is false and R is also false.

Assertion: A transformer cannot work on DC.

Reason: Because DC does not vary and hence the magnetic flux linked with the core does not change.

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**1584.** Explain, why  $HClO_4$  is stronger acid than  $HClO_2$

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**1585.** When mercuric iodide is added to the aqueous solution of KI, then the :

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**1586.**  $HClO_4$  is less/more acidic than  $HClO_3$ .

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**1587.** These questions consist of two statements each, printed as Assertion and Reason. While answering these questions you are required to choose any one of the following four responses.

If both Assertion and Reason are true and Reason is correct

explanation of Assertion.

If both assertion and Reason are true but reason is not correct explanation of Assertion.

If Assertion is true but Reason is false.

If both Assertion and Reason are false.

Assertion: There are 4 carbon atoms in an oxaloacetic acid molecule, which joins with an acetyl group during step 1 of Krebs' citric acid cycle.

Reason: There are 6 carbon atoms in citric acid molecule.



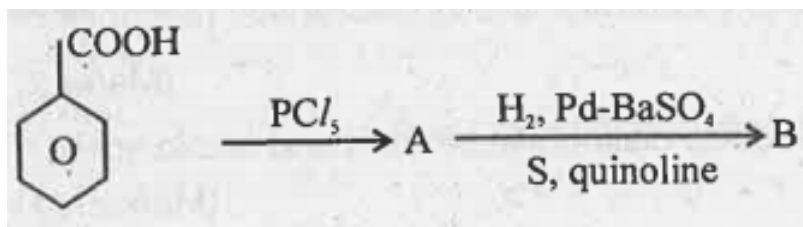
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**1588.** How is the presence of  $SO_2$  detected ?



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1589. Complete the following:



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1590. Match the compound in Column I with the property in

Column II.

Column I	Column II
(A) $\text{XeF}_6$	(p) has square pyramidal structure
(B) $\text{BrF}_5$	(q) does not exist
(C) $\text{XeF}_4$	(r) has +5 oxidation state of central atom
(D) $\text{FCl}_3$	(s) gets hydrolysed.

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**1591.** Match each of the reactions given in Column I with the corresponding product(s) given in Column II.

Column I	Column II
(A) $\text{Cu} + \text{dil. H}_2\text{SO}_4$	(p) $\text{NO}$
(B) $\text{Cu} + \text{conc. HNO}_3$	(q) $\text{NO}_2$
(C) $\text{Zn} + \text{dil. HNO}_3$	(r) $\text{N}_2\text{O}$
(D) $\text{Cu} + \text{conc. HNO}_3$	(s) $\text{Cu}(\text{NO}_3)_2$
	(t) $\text{Zn}(\text{NO}_3)_2$



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**1592.** The incomplete chemical reactions given in List I show missing reagent or conditions (?) which are provided in List II. Match List I with List II and select the correct answer using

the code given below the lists.

List I	List II
P. $\text{PbO}_2 + \text{H}_2\text{SO}_4 \xrightarrow{?} \text{PbSO}_4 + \text{O}_2$	1. NO
Q. $\text{Na}_2\text{S}_2\text{O}_3 + \text{H}_2\text{O} \xrightarrow{?} \text{NaHSO}_4$	2. $\text{I}_2$
R. $\text{N}_2\text{H}_4 \xrightarrow{?} \text{N}_2 + \text{other products}$	3. Warm
S. $\text{XeF}_6 \xrightarrow{?} \text{Xe} + \text{other products}$	4. $\text{Cl}_2$

A.

	P	Q	R	S
(a)	4	2	3	1

B.

(b)	3	2	1	4
-----	---	---	---	---

C.

(c)	1	4	2	3
-----	---	---	---	---

D.

(d)	3	4	2	1
-----	---	---	---	---

1593. Match the compound given in List I with structure and number of lone pairs in List II.

List I	List II
P. $\text{XeOF}_4$	1. T shaped, 2
Q. $\text{ClF}_3$	2. Square, 2
R. $\text{ICl}_2^-$	3. Square pyramidal, 1
S. $\text{ICl}_4^-$	4. Linear, 3

A.

	P	Q	R	S
(a)	3	2	4	1

B.

(b)	3	1	4	2
-----	---	---	---	---

C.

(c)	2	1	4	3
-----	---	---	---	---

D.

(d)	1	3	4	2
-----	---	---	---	---

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1594. Write the IUPAC name of :  $K_2 [Fe(C_2O_4)_3]$

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1595. Write the IUPAC name of :  $[Co(CN)(en)_2(H_2O)]^{+2}$

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1596. Write the IUPAC name of :  $[Fe(CN)_5Br]^{-3}$

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1597. Total number of dibasic acids among

$H_3PO_4$ ,  $H_4P_2O_7$ ,  $H_4P_2O_6$ ,  $H_3PO_5$ ,  $H_3PO_3$ ,  $H_4P_2O_5$ ,  $H_3PO_2$

is

0	1	2	3	4	5	6	7	8	9
---	---	---	---	---	---	---	---	---	---

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1598. Write the IUPAC name of :  $[Cr(NH_3)_3(en)_2]Cl_3$

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**1599.** The difference in the oxidation numbers of the two types of sulphur atoms in  $Na_2S_4O_6$  is

0	1	2	3	4	5	6	7	8	9
---	---	---	---	---	---	---	---	---	---

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**1600.** Reaction of  $Br_2$  with  $Na_2CO_3$  in aqueous solution gives sodium bromide and sodium bromate with evolution of  $CO_2$  gas. The number of sodium bromide molecules involved in the balanced chemical equation is

0	1	2	3	4	5	6	7	8	9
---	---	---	---	---	---	---	---	---	---

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**1601.** Among the following, the number of compounds that can react with  $PCl_5$  to give  $POCl_3$ , is  $O_2, CO_2, SO_2, H_2O, H_2SO_4, P_4O_{10}$ .

0	1	2	3	4	5	6	7	8	9
---	---	---	---	---	---	---	---	---	---

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**1602.** The difference between the number of lone pairs and P - O bonds in  $P_4O_6$  molecule is

0	1	2	3	4	5	6	7	8	9
---	---	---	---	---	---	---	---	---	---

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1603. The total number of lone pairs of electrons in  $N_2O_3$  is

0	1	2	3	4	5	6	7	8	9
---	---	---	---	---	---	---	---	---	---

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1604. On addition of conc.  $H_2SO_4$  to a chloride salt, colourless fumes are evolved but in case of iodide salt, violet fumes come out. This is because

- A.  $H_2SO_4$  reduces HI to  $I_2$
- B. HI is of violet colour
- C. HI gets oxidised to  $I_2$
- D. HI changes to  $HIO_3$

**1605.** In qualitative analysis when  $H_2S$  is passed through an aqueous solution of salt acidified with dil. HCl, a black precipitate is obtained. On boiling the precipitate with dil.  $HNO_3$ , it forms a solution of blue colour. Addition of excess of aqueous solution of ammonia to this solution gives \_\_\_\_\_ .

- A. deep blue precipitate of  $Cu(OH)_2$
- B. deep blue solution of  $[Cu(NH_3)_4]^{2+}$
- C. deep blue solution of  $Cu(NO_3)_2$
- D. deep blue solution of  $Cu(OH)_2 \cdot Cu(NO_3)_2$

**1606.** In a cyclotrimetaphosphoric acid molecule, how many single and double bonds are present?

- A. 3 double bonds, 9 single bonds
- B. 6 double bonds, 6 single bonds
- C. 3 double bonds, 12 single bonds
- D. Zero double bonds, 12 single bonds



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**1607.** Which of the following elements can be involved in  $p\pi$ - $d\pi$  bonding

A. Carbon

B. Nitrogen

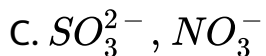
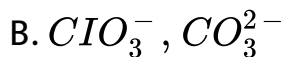
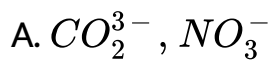
C. Phosphorus

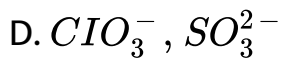
D. Boron



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**1608.** Which of the following pairs of ions are isoelectronic and isostructural?





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**1609.** Affinity for hydrogen decreases in the group from fluorine to iodine. Which of the halogen acids should have highest bond dissociation enthalpy?

A. HF

B. HCl

C. HBr

D. HI



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1610. Bond dissociation enthalpy of E-H (E = element) bonds is given below. Which of the compounds will act as strongest reducing agent?

Compound	$\text{NH}_3$	$\text{PH}_3$	$\text{AsH}_3$	$\text{SbH}_3$
$\Delta_{\text{diss}}(\text{E}-\text{H})/\text{kJ mol}^{-1}$	389	322	297	255

- A.  $\text{NH}_3$
- B.  $\text{PH}_3$
- C.  $\text{AsH}_3$
- D.  $\text{SbH}_3$



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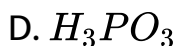
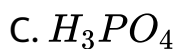
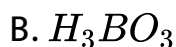
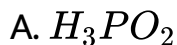
1611. On heating with concentrated NaOH solution in an inert atmosphere of  $CO_2$ , white phosphorus gives a gas. Which of the following statement is incorrect about the gas?

- A. It is highly poisonous and has smell like rotten fish.
- B. It's solution in water decomposes in the presence of light.
- C. It is more basic than  $NH_3$ .
- D. It is less basic than  $NH_3$ .



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**1612.** Which of the following acids forms three series of salts?



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**1613.** How do you account for the reducing behaviour of  $H_3PO_2$  on the basis of its structure ?

A. Low oxidation state of phosphorus

B. Presence of two -OH groups and one P-H bond

C. Presence of one -OH group and two P-H bonds

D. High electron gain enthalpy of phosphorus

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**1614.** Write the IUPAC name of :  $[CoBr_2(en)_2]^+$

A.

B.

C.

D.



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1615. Write the IUPAC name of :  $[PtBr_4]^{-2}$

A.

B.

C.

D.



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1616. Write the IUPAC name of :  $[PtCl_4]^{-2}$

A.

B.

C.

D.



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**1617.** Which of the following statements is wrong?

A. Single N-N bond is stronger than the single P-P bond

B.  $PH_3$  can act as a ligand in the formation of coordination compound with transition elements.

C.  $NO_2$  is paramagnetic in nature.

D. Covalency of nitrogen in  $N_2O_5$  is four.



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1618. Write the IUPAC name of :  $[Fe(H_2O)_5(NO)]^{2+}$

A.

B.

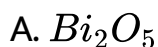
C.

D.



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**1619.** Elements of group-15 form compounds in +5 oxidation state. However, bismuth forms only one well characterised compound in +5 oxidation state. The compound is :



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**1620.** On heating ammonium dichromate and barium azide separately we get

A.  $N_2$  in both cases

B.  $N_2$  with ammonium dichromate and NO with barium azide

C.  $N_2O$  with ammonium dichromate and  $N_2$  with barium azide

D.  $N_2O$  with ammonium dichromate and  $NO_2$  with barium azide



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**1621.** In the preparation of  $HNO_3$ , we get NO gas by catalytic oxidation of ammonia. The moles of NO produced by the oxidation of two moles of  $NH_3$  will be\_\_\_\_\_ .



A. 2

B. 3

C. 4

D. 6



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**1622.** The oxidation state of central atom in the anion of compound  $NaH_2PO_2$  will be \_\_\_\_\_ .

A. +3

B. +5

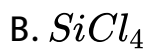
C. +1

D. - 3



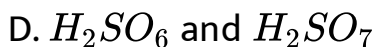
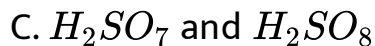
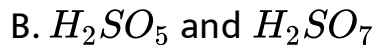
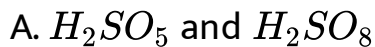
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1623. Which of the following is not tetrahedral in shape?



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**1624.** Which of the following are peroxyacids of sulphur?



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**1625.** Hot conc.  $H_2SO_4$  acts as moderately strong oxidising agent. It oxidises both metals and non metals. Which of the following element is oxidised by conc.  $H_2SO_4$  into two gaseous products?

A. Cu

B. S

C. C

D. Zn



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**1626.** Write the IUPAC name of :  $[Fe(H_2O)_4(NO)_2]^{2+}$

A.

B.

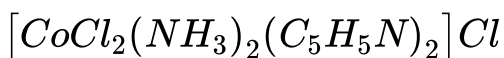
C.

D.



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1627. Write the IUPAC name of :



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1628. In solid state  $PCl_5$  is a \_\_\_\_\_ .

A. covalent solid

B. octahedral structure

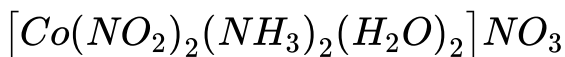
C. ionic solid with  $[PCl_6]^+$  octahedral and  $[PCl_4]^-$  tetrahedral

D. ionic solid with  $[PCl_4]^+$  tetrahedral and  $[PCl_6]^-$  octahedral



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**1629.** Write the IUPAC name of :



A.

B.

C.

D.



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**1630.** Write the IUPAC name of :  $Na[Fe(CO)_4]$

A.

B.

C.

D.

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**1631.** In the following questions two or more options may be correct. If chlorine gas is passed through hot NaOH solution, two changes are observed in the oxidation number of

chlorine during the reaction. These are \_\_\_\_\_ and \_\_\_\_\_

.

A. 0 to +5

B. 0 to +3

C. 0 to -1

D. 0 to +1



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**1632.** Write the iupac name of following :  $[Co(NH_3)_6]Cl_3$

A.

B.



C.

D.



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**1633.** Write the IUPAC name of :  $[PdI_2(ONO)_2(H_2O)_2]$

A.

B.

C.

D.



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**1634.** Express 2075 in roman numbers.



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**1635.** Write the IUPAC name of :  $[Co(NH_3)_6]^{+3}$

A.

B.

C.

D.



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**1636.** Write the IUPAC name of :  $K_3[Co(ONO)_6]$

A.

B.

C.

D.



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**1637.** Write the iupac name of following :  $K[PtCl_5(NH_3)]$

A.

B.

C.

D.



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**1638.** Which of the following statements are correct?

A. S-S bond is present in  $H_2S_2O_6$ .

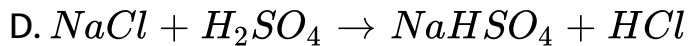
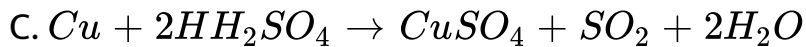
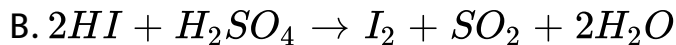
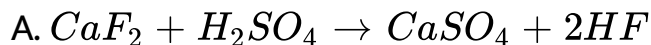
B. In peroxosulphuric acid ( $H_2SO_5$ ) sulphur is in +6 oxidation state.

C. Iron powder along with  $Al_2O_3$  and  $K_2O$  is used as a catalyst in the preparation of  $NH_3$  by Haber's process.

D. Change in enthalpy is positive for the preparation of  $SO_3$  by catalytic oxidation of  $SO_2$ .

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**1639.** In which of the following reactions conc.  $H_2SO_4$  is used as an oxidising reagent?



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1640. Which of the following statements are true?

- A. Only type of interactions between particles of noble gases are due to weak dispersion forces.
- B. Ionisation enthalpy of molecular oxygen is very close to that of xenon.
- C. Hydrolysis of  $XeF_6$  is a redox reaction.
- D. Xenon fluorides are not reactive.



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**1641.** Match the compounds given in Column I with the hybridisation and shape given in Column II and mark the correct option.

Column I	Column II
(A) $\text{XeF}_6$	(1) $sp^3d^3$ - distorted octahedral
(B) $\text{XeO}_3$	(2) $sp^3d^2$ - square planar
(C) $\text{XeOF}_4$	(3) $sp^3$ - pyramidal
(D) $\text{XeF}_4$	(4) $sp^3d^2$ - square pyramidal

A.

(a) A (1)   B (3)   C (4)   D (2)

B.

(b) A (1)   B (2)   C (4)   D (3)

C.

(c) A (4)   B (3)   C (1)   D (2)

D.

(d) A (4) B (1) C (2) D (3)



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**1642.** Match the formulas of oxides given in Column I with the type of oxide given in Column II and mark the correct option.

Column I	Column II
(A) $\text{Pb}_3\text{O}_4$	(1) Neutral oxide
(B) $\text{N}_2\text{O}$	(2) Acidic oxide
(C) $\text{Mn}_2\text{O}_7$	(3) Basic oxide
(D) $\text{Bi}_2\text{O}_3$	(4) Mixed oxide

A.

(a) A (1) B (2) C (3) D (4)



B.

(b) A (4)    B (1)    C (2)    D (3)

C.

(c) A (3)    B (2)    C (4)    D (1)

D.

(d) A (4)    B (3)    C (1)    D (2)



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**1643.** Match the items of Columns I and II and mark the correct option.

Column I	Column II
(A) $\text{H}_2\text{SO}_4$	(1) Highest electron gain enthalpy
(B) $\text{CCl}_3\text{NO}_2$	(2) Chalcogen
(C) $\text{Cl}_2$	(3) Tear gas
(D) Sulphur	(4) Storage batteries

A.

(a) A (4)    B (3)    C (1)    D (2)

B.

(b) A (3)    B (4)    C (1)    D (2)

C.

(c) A (4)    B (1)    C (2)    D (3)

D.

(d) A (2)    B (1)    C (3)    D (4)



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**1644.** Match the species given in Column I with the shape given in

Column II and mark the correct option.

Column I	Column II
(A) $\text{SF}_4$	(1) Tetrahedral
(B) $\text{BrF}_3$	(2) Pyramidal
(C) $\text{BrO}_3^-$	(3) Sea-saw shaped
(D) $\text{NH}_4^+$	(4) Bent T-shaped

A.

(a) A (3)    B (2)    C (1)    D (4)

B.

(b) A (3)    B (4)    C (2)    D (1)

C.

(c) A (1)    B (2)    C (3)    D (4)

D.

(d) A(1)    B(4)    C(3)    D(2)



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**1645.** Match the items of Columns I and II and mark the correct option.

Column I	Column II
(A) Its partial hydrolysis does not change oxidation state of central atom	(1) He
(B) It is used in modern diving apparatus	(2) XeF <sub>6</sub>
(C) It is used to provide inert atmosphere for filling electrical bulbs	(3) XeF <sub>4</sub>
(D) Its central atom is in $sp^3d^2$ hybridisation	(4) Ar

A.

(a) A(1)    B(4)    C(2)    D(3)

B.

(b) A (1)    B (2)    C (3)    D (4)

C.

(c) A (2)    B (1)    C (4)    D (3)

D.

(d) A (1)    B (3)    C (2)    D (4)



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**1646.** Express 2057 in roman numbers.



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**1647.** Assertion :  $HNO_3$  makes iron passive. Reason :  $HNO_3$  forms a protective layer of ferric nitrate on the surface of iron.

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**1648.** Express 2058 in roman numbers.

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**1649.** Assertion : Both rhombic and monoclinic sulphur exist as  $S_8$  but oxygen exists as  $O_2$ . Reason : Oxygen forms  $p\pi - p\pi$  multiple bond due to small size and small bond length but  $p\pi - p\pi$  bonding is not possible in sulphur.

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**1650.** Assertion : NaCl reacts with concentrated  $H_2SO_4$  to give colourless fumes with pungent smell. But on adding  $MnO_2$  the fumes become greenish yellow. Reason :  $MnO_2$  oxidises HCl to chlorine gas which is greenish yellow.



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**1651.** Assertion :  $SF_6$  cannot be hydrolysed but  $SF_4$  can be. Reason : Six F atoms in  $SF_6$  prevent the attack of  $H_2O$  on sulphur atom of  $SF_6$ .



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**1652.** Express 2060 in roman numbers.

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**1653.** Give the disproportionation reaction of  $H_3PO_3$ .

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**1654.** Express 2061 in roman numbers.

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**1655.** Name the halogen which forms only one oxoacid and write the formula of the oxoacid ?



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**1656.** Arrange  $H_2O$ ,  $H_2S$  and  $H_2Se$  in decreasing order of acid strength?

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**1657.** Why does  $R_3P = O$  exist but  $R_3N = O$  does not? (R=alkyl group)

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**1658.** Comment on nature of two S-O bond formed in  $SO_2$  molecule. Are the two S-O bonds in this molecule equal ?



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**1659.** Express 2062 in roman numbers.

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**1660.** Give hybridization and draw structure of  $XeF_4$ .

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**1661.** Give reasons for the following :  $SF_6$  is not readily hydrolysed.

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**1662.** Give reasons for the following: Sulphur vapour is paramagnetic.

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**1663.** What are the interhalogen compounds ? Why are these more reactive than halogens ?

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**1664.** Considering the parameters such as bond dissociation enthalpy, electron gain enthalpy and hydration enthalpy, compare the oxidising power of  $F_2$  and  $Cl_2$ .

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**1665.** Why is helium used in diving apparatus?

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**1666.** Account for the following :  $NH_3$  is a stronger base than  $PH_3$ .

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**1667.** Sulphur exhibits greater tendency for catenation than seleniun. Explain why?

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**1668.** How  $H_3PO_3$  is diprotic acid?

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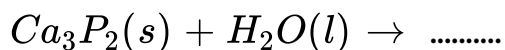
**1669.** Write the four oxoacids of chlorine. Explain their relative acidic character.

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**1670.** Explain the chemistry of manufacture of nitric acid by Ostwald's process? How does it react with iodine?

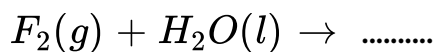
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**1671.** Complete the following chemical equation :



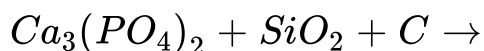
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**1672.** Complete the following chemical equation :



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**1673.** Complete the following equation :



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**1674.** Nitrogen exists as diatomic molecule and phosphorus as  $P_4$ . Why ?

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**1675.** Give the resonating structures of  $NO_2$  and  $N_2O_5$ .

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**1676.** Give two examples to show the anomalous behaviour of fluorine.

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1677. Draw the structure of  $P_4O_{10}$ .



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