

CHEMISTRY

BOOKS - CHETANA PUBLICATION

Elements of groups 16, 17 and 18

Example

1. How does the valence shell electronic configuration of elements vary in the p block of periodic table.



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2. Name first element of Group 16 to 18



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3. Name elements of Group 16



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4. Give reason Group 16 elements are also called Chalcogens



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5. Name most and least abundant elements of Group 16



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6. Name three Sulphate ores



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7. Name three sulphide ore



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8. Name radioactive element of Group 17
Halogens family



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9. Why do halogens not found in free state.



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10. Which member of halogen family is radioactive



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11. Name elements of Group 18



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12. Give name and formula of ores of chlorine



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13. Give reason of inert gases



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14. Write names and electronic configuration
of Group 16



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15. Explain the properties of Group 16 elements

Electro-negativity



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16. Explain the properties of Group 16 elements

Melting and boiling point





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17. Explain the properties of Group 16 elements

Metallic character



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18. Explain the properties of Group 16 elements

Allotropy



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19. Explain properties of group 16 elements

with respect to

Atomic or Ionic radii



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20. Explain properties of group 16 elements

with respect to

Ionization enthalpy



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21. Explain properties of group 16 elements with respect to

Electron gain enthalpy



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22. Explain periodic properties of Group 17 with respect to

Atomic or Ionic radii



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23. Explain periodic properties of Group 17
with respect to
Ionization enthalphy



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24. Explain periodic properties of Group 17
with respect to
Electron gain enthalphy



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25. Give reason

nert gases have positive value of electron gain enthalpy



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26. Elements of Group 16 generally show lower values of first ionization enthalpy compared to the elements of corresponding period of group15. why?



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27. The values of first ionization enthalpy of S and Cl are 1000 and 1256kJmol^{-1} , 1520kJmol^{-1} . Explain the observed trend.



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28. Explain physical state of Group 16 element



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29. Why is there a large difference between the melting and boiling points of oxygen and sulfur



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30. Explain physical state of Group 17 element



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31. Explain solubilities of Group 17 elements in water



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32. Fluorine has less negative electron gain affinity than chlorine. Why?



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33. Bond dissociation enthalpy of F_2 (158.8 KJmol^{-1}) is lower than that of Cl_2 (242.6 KJmol^{-1}) Why?



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34. Explain solubility trend in Group 18 element



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35. Nobel gases have very low melting and boiling points. Why?



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36. The first member of group usually differ in properties from rest of members of group? Why?



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37. Describe anomalous behaviour of oxygen compared with other elements of Group 16.

Atomicity



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38. Describe anomalous behaviour of oxygen compared with other elements of Group 16.

Magnetic property



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39. Describe anomalous behaviour of oxygen compared with other elements of Group 16.

Oxidation state



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40. Describe anomalous behaviour of oxygen compared with other elements of Group 16.

Nature of hydrides



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41. Oxygen forms OF_2 with fluorine while sulfur forms SF_6 . Explain why?



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42. Which of following process hydrogen bonding H_2S , H_2O , H_2Se , H_2Te show hydrogen bonding in above molecule with help of diagram?



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43. Give causes or reason for anomalous behaviour of oxygen



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44. Give reasons for anomalous behaviour of fluorine.



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45. Describe anomalous behaviour of fluorine with other elements of Group 17 with references to.

Hydrogen bonding



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46. Describe anomalous behaviour of fluorine with other elements of Group 17 with references to.

Oxidation state





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47. Describe anomalous behaviour of fluorine with other elements of Group 17 with references to.

Polyhalide ions



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48. Explain some anomalous properties of fluorine



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49. Explain oxidation state of Group 16 element



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50. Explain oxidation state of Group 17 elements



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51. Give reasons

Fluorine shows only -1, other halogen shows -1,+1,+3,+5,+7. Explain.



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52. What is oxidation state of Te in TeO_3



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53. Write order of thermal stability of hydrides of Group 16



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54. What is oxidation state of xenon in $XeOF_4$, XeO_3 , XeF_6 , XeF_4 , XeF_2



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55. Give reason xenon exhibits higher oxidation state



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56. Explain hybridization and structure of hydride of Group 16



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57. Give reasons acidic character of hydride increases while thermal stability decreases from H_2O to H_2Te



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58. Name hydride of Group 16 which does not show reducing property



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59. Give trend in reducing property of hydride of Group 16



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60. Give reason acidic properties of halogen acid increases from HF to HI and thermal stability decreases.



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61. Write the boiling point order of hydride of

Group 16



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62. Give melting point order of hydride of

Group 16



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63. Give reason HF has higher boiling point than other halogen acid



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64. Give melting point trend in hydride of Group 17



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65. Explain nature of oxides of Group 16



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66. Explain trend in reducing property of dioxide of Group 16



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67. Name oxides formed by fluorine Which of its oxide is thermal stable



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68. Name oxides of fluorine which oxidizes Pu to PuF_6 and used to remove Pu from PuF_6



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69. Match column

(a) ClO_2	(i) estimation of CO
(b) I_2O_5	(ii) Bleaching agent for water pulp
(c) Cl_2O	(iii) Oxidising agent
(d) BrO_3	(iv) tendency to explode



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70. Give trend in stability of oxides of halogen



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71. Give types of halide formed by elements of Group 16 and explain them in detail.



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72. Find and draw structure of SeF_4 and SCl_2



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73. Give balanced reaction

Aluminium is burnt in air



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74. Give balanced reaction

Copper reacts with sulfur



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75. Give balanced reaction

Magnesium reacts with selenium



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76. Give balanced reaction

Aluminium reacts with Tellurium



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77. Give actions of chlorine on sodium and bromine on magnesium



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78. Give trend in ionic character of halide.



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79. Answer in one word

Which is more covalent $PbCl_4$ or PCl_2



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80. What is allotrop?



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81. Give allotrope of Oxygen, Sulfer, Selenium, Tellurium and Polonium



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82. Which allotrope of selenium is used in photocell



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83. Which form of sulfure shows paramagnetic behaviour?



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84. Explain photocopying process.



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85. Distinguish between Rhombic sulfur and Monochlinic sulfur



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86. Give oxoacids of sulfur



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87. Give oxoacids of chlorine and give their structure



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88. Name four oxoacid isolated in pure form



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89. Give trend in acidic strength of oxoacidic of chlorine



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90. How Is dioxygen prepared in laboratory from $KClO_3$



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91. Give balanced equation:

Silver oxide and mecuric oxide are heated



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92. Give preparation of oxygen by heating peroxide.



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93. Give industrial method for preparation of dioxygen.



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94. Give physical properties of dioxygen





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95. Give balanced equation

Carbon when burnt with oxygen



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96. Give balanced equation

Phosphorous burnt in air



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97. Give balanced equation

Zinc sulfur burnt in air



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98. Give balanced equation

Methane burnt in air



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99. Give balanced equation

Hydrogen chloride burnt in air



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100. Give balanced equation

Sulfur dioxide when burnt in air



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101. Give balanced equation

Aluminium and calcium burnt in air



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102. Give four uses of oxygen



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103. Dioxygen is paramagnetic in spite of having even number of electrons. Explain.



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104. Give classification of oxide give example



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105. How is ozone prepared in laboratory



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106. Give physical properties of ozone



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107. High concentration of ozone can be dangerously explosive.Explain.





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108. Describe structure of ozone. Give uses of ozone



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109. Give one example showing reducing property of ozone



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110. Ozone is used as bleaching agent. Explain.



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111. Why does ozone act as powerful oxidizing agent.



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112. What happens when

Lead sulphide reacts with ozone



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113. What happens when

Nitric oxide reacts with ozone



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114. What happens when

KI is treated with ozone



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115. Write a note on ozone depletion.



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116. How is SO_2 prepared in laboratory from sodium sulfite? Give two physical properties of sulfur SO_2



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117. How is sulfur dioxide prepared from zinc sulphide and iron pyrite or Give industrial method of reparation of



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118. Give actions of sulfur dioxide on



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119. Give actions of sulfur dioxide on



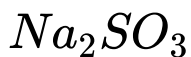
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120. Give actions of sulfur dioxide on



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121. Give actions of sulfur dioxide on



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122. Give reactions in which sulfur dioxide acts as reducing agent



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123. Give structure of sulfur dioxide



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124. Give four uses of sulfur dioxide



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125. Give preparation of sulfuric acid by contact process



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126. Give four physical properties of sulphuric acid



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127. Explain sulfuric acid is strong acid



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128. Give three reaction in which H_2SO_4 act as oxidising agent



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129. Explain concentrated H_2SO_4 is better oxidizing agent than dilute acid.



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130. Write the reaction of cone. H_2SO_4 with sugar



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131. What is oxidation state of S in H_2SO_4



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132. Give action of NaCl, KNO_3 and CaF_2 on conc sulfuric acid



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133. What is the action of concentrated H_2SO_4 on HBr and HI





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134. Give any four uses of sulfuric acid



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135. Give preparation of chlorine by Scheele



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136. How is chlorine prepared from potassium permanganate



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137. Give action of chlorine on SO_2 and I_2 in presence of water.



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138. Explain bleaching property of chlorine. OR

*Give reason for bleaching action of chlorine



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139. Give four uses of chlorine.



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140. Name two gases used in war.



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141. Give preparation of hydrogen chloride by Glauber. OR

How is HCl prepared from sodium.



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142. Give physical properties of HCl.



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143. Why HCl is strong acid in water.



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144. What is aqua regia Show reaction of aquaregia on gold and platinum



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145. can you recall.

Which type of bonds do halogen form with

other element.



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146. can you recall.

Does BrF_3 obey octet rule.



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147. can you recall.

What is oxidation state of Br in BrF_5



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148. can you recall.

How many electrons do halogen require to complete octet.



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149. can you recall.

What is shape of ClF_3



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150. What are interhalogen compounds? Give two examples.



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151. What is Wijs solution? Where it is used?



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152. Chlorine and fluorine combine to form inter halogen compounds, the halide ion will

be of chlorine or fluorine



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153. Why does fluorine combine with other halogen to form maximum number of fluorides.



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154. Explain physical state of inter halogen.



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155. Give General characteristic of interhalogen compound.



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156. What will be name of compound.

ICI



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157. What will be name of compound.

BrF



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158. Which halogen (X) has maximum number of other halogen (X') attached.



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159. Which halogen has tendency to form more interhalogen compound.



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160. Which is more reactive

ClF_3 or ClF_5



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161. Which is more reactive

BrF_5 or BrF



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162. Give reason:

XX' compound are more reactive than X_2 or X_2 .



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163. .What happens when (1) ICl is dissolved in water.



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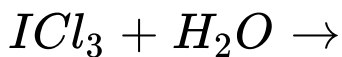


Which is oxidant and reluctant.



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165. Complete the following.



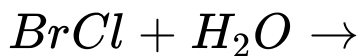
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166. Complete the following.



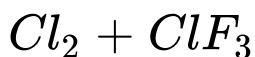
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167. Complete the following.



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168. Complete the following.



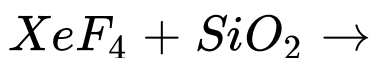
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169. Complete the following.



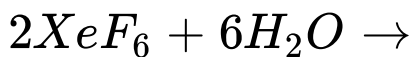
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170. Complete the following.



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171. Complete the following.



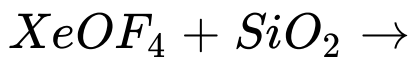
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172. Complete the following.



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173. Complete the following.



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174. Complete the following.



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175. Give uses of XX' compound



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176. Give uses of XX'_3 compound.



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177. Discuss structure and shape of

ICl_2 -



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178. Discuss structure and shape of



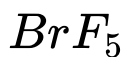
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179. Discuss structure and shape of



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180. Discuss structure and shape of



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181. Discuss structure and shape of



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182. Give oxidation state and number of lone pair of electron in



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183. Give oxidation state and number of lone pair of electron in



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184. Give oxidation state and number of lone pair of electron in



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185. Give oxidation state and number of lone pair of electron in



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186. What is correlation between ionization energies and reactivity of element.



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187. How Neil Barlelt prepared first noble gas compound.



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188. .Give preparation of XeF_2 , XeF_4 and XeF_6 .



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189. Give balanced reaction

XeF_2 undergoes hydrolysis.



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190. Give balanced reaction

XeF_2 reacts with PF_5



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191. Give preparation of Xenon trioxide.



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192. Give structure and oxidation state of.



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193. Give structure and oxidation state of.





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194. Give structure and oxidation state of.



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195. Give structure and oxidation state of.



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196. Give structure and oxidation state of.



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197. Give hydrolysis reaction of XeF_4 , XeF_6 and XeOF_4 .



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198. Give uses of Helium, Neon and Argon.



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Exercise

1. Which of the following has highest electron gain enthalpy ?

A. Fluorine

B. Chlorine

C. Bromine

D. Iodine

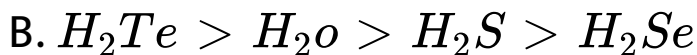
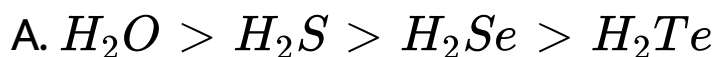
Answer:



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2. Hydrides of group 16 are weakly acidic.

The correct order of acidity is



Answer:



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3. Which of the following element does not show oxidation state of +4 ?

A. O

B. S

C. Se

D. Te

Answer:



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4. HI acid when heated with conc. H_2SO_4 forms



Answer:



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5. Ozone layer is depleted by

A. NO

B. NO_2

C. NO_3

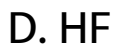
D. N_2O_5

Answer:



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6. Which of the following occurs in liquid state at room temperature?



Answer:



7. In pyrosulfurous acid oxidation state of sulfur is

- A. Only +2
- B. Only +4
- C. +2 and +6
- D. Only +6

Answer:



8. Stability of interhalogen compounds follows the order

A. $\text{BrF} > \text{IBr} > \text{ICl} > \text{ClF} > \text{BrCl}$

B. $\text{IBr} > \text{BrF} > \text{ICl} > \text{ClF} > \text{BrCl}$

C. $\text{ClF} > \text{ICl} > \text{IBr} > \text{BrCl} > \text{BrF}$

D. $\text{ICl} > \text{ClF} > \text{BrCl} > \text{IBr} > \text{BrF}$

Answer:



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9. BrCl reacts with water to form

A. HBr

B. $Br_2 + Cl_2$

C. HOBr

D. HOBr+HCl

Answer:



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10. Chlorine reacts with excess of fluorine to form.

A. ClF

B. ClF_3

C. ClF_2

D. Cl_2F_3

Answer:



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11. In interhalogen compounds, which of the following halogens is never the central atom.

A. I

B. Cl

C. Br

D. F

Answer:



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12. Which of the following has one lone pair of electrons?



Answer:



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13. In which of the following pairs, molecules are paired with their correct shapes ?

A. $[I_3]$: bent

B. BrF_5 : trigonal bipyramid

C. CiF_3 : trigonal planar

D. $[BrF_4]$: square planar

Answer:



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14. Which is the most abundant noble gas?

A. Argon

B. Helium

C. Neon

D. Krypton

Answer:



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15. Ozone is:

A. A compound of oxygen

B. An allotrope of Oxygen

C. An isotope of oxygen

D. An isobar of oxygen

Answer:



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16. Maximum covalency of sulphur is:

A. Four

B. Six

C. Three

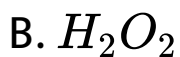
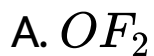
D. Two

Answer:



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17. Oxygen exhibits state in:



Answer:



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18. Fluorine can exist in the oxidation state.

A. -1 only

B. -1 and $+1$

C. -1 , $+1$, $+3$ only

D. -1 , $+1$, $+3$, $+7$

Answer:



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19. The maximum, abundant elements in earth's crust is:

A. nitrogen

B. oxygen

C. silicon

D. iron

Answer:



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20. Give structure of sulfur dioxide



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21. Explain trend in atomic properties of group 17 element.

Atomic radius



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