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 abudant elements of Group 16

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6. Name three Sulphate ores

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7. Name three sulpfide 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

20. Explain properties of group 16 elements with respect to

Ionization enthalpy

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 $1256 kJ mol^{-1}$, $1520 kJ mol^{-1}$. 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 cholrine. Why?

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33. Bond dissociation enthalpy of $F_2\left(158.8Kjmol^{-1}\right)$ is lower than that of $Cl_2\left(242.6KJmol^{-1}\right)$ 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 fromrest 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. Gove 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 decreses.

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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 iconic 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

Watch Video Solution

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 $S0_2$

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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

Cl_2

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119. Give actions of sulfur dioxide on

O_2

Watch Video Solution

120. Give actions of sulfur dioxide on

NaOH

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121. Give actions of sulfur dioxide on

Na_2SO_3

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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 H2S04 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 prefared 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 hallogen 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) ICI is dissolved in water.

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164. $I_2 + Cl_2 \rightarrow Icl_2$.

Which is oxidant and reluctant.

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165. Complete the following.

$ICl_3 + H_2O \rightarrow$

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166. Complete the following.

$I_2 + KClO_2 \rightarrow$

Watch Video Solution

167. Complete the following.

$BrCl + H_2O \rightarrow$

Watch Video Solution

168. Complete the following.

$Cl_2 + ClF_3$

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169. Complete the following.

$H_2C = CH_2 + Icl$

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170. Complete the following.

$XeF_4 + SiO_2 \rightarrow$

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171. Complete the following.

$2XeF_6 + 6H_2O \rightarrow$

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172. Complete the following.

$XeOF_4 + H_2O \rightarrow$

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173. Complete the following.

$XeOF_4 + SiO_2 \rightarrow$

174. Complete the following.

$U + ClF_3 \rightarrow$

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

ICl2-

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178. Discuss structure and shape of

ClF_3

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179. Discuss structure and shape of

BrF_3

Watch Video Solution

180. Discuss structure and shape of

BrF_5

Watch Video Solution

181. Discuss structure and shape of

ClF_5

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

IF_7

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

CLF_5

Watch Video Solution

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

CLF_3

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

BrCl3

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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.

XeF_2

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193. Give structure and oxidation state of.

XeF_4

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194. Give structure and oxidation state of.

XeF_6

Watch Video Solution

195. Give structure and oxidation state of.

XeO_2

Watch Video Solution

196. Give structure and oxidation state of.

$XeOF_4$

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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

A. $H_2O > H_2S > H_2Se > H_2Te$

B. $H_2Te > H_2o > H_2S > H_2Se$

C. $H_2Te > H_2Se > H_2S > H_2O$

D. $H_2Te > H_2Se > H_2S > H_2S$

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_2S0_4 forms

A. HIO_3

B. KlO_3

C. I_2

D. KI

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?

A. HIO_3

B. HBr

C. HCl

D. HF

Answer:

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7. In pyrosulfurous acid oxidation state of sulfur is

A. Only +2

B. Only +4

C. $+2$ and $+6$

D. Only +6

Answer:

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8. Stability of interhalogen compounds follows the order

A. BrFgtIbrgtIclgtCIFgtBrCl

B. IbrgtBeFgtICLgtCIFgtBrCl

C. CIFgtICIltIbrgtBrClgtBrF

D. IclgtCIFgtBrClgtIbrgtBrF

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. CIF

B. CIF_3

C. CIF_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?

A. IF_3

B. Icl

C. IF_5

D. CIF_3

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 sulphue is:

A. Four

B. Six

C. Three

D. Two

Answer:

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17. Oxygen exhibite-1 state in:

A. OF_2

B. H_2O_2

C. HClO

D. HI

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 maximu, abudant elements in earth's crust is:

A. nitrogen

B. oxygn

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

l7 element.

Atomic radius

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