



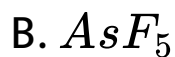
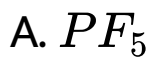
CHEMISTRY

BOOKS - JMD CHEMISTRY (PUNJABI ENGLISH)

THE p-BLOCK ELEMENTS

Example

1. Which of the following pentafluorides cannot be prepared?



Answer: D



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2. Maximum covalency of sulphur is :

A. 2

B. 4

C. 6

D. 8

Answer: C



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3. Which one of the following is tailing of mercury?

A. N_2O

B. SiO_2

C. Hg_2O

D. None of these

Answer: C



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4. The basicity of phosphorus acid is :

A. Two

B. Three

C. One

D. Zero

Answer: A



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5. 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. $HI > HBr > HCl > HF$

B. $HF > HCl > HBr > HI$

C. $HCl < HF < HBr < HI$

D. $HI > HCl > HF > HBr$

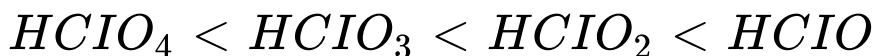
Answer: B



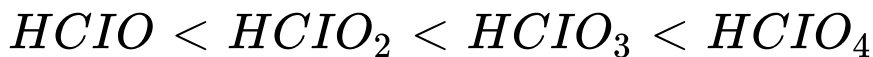
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6. The correct order of acid strength is

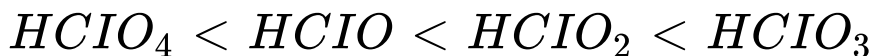
A.



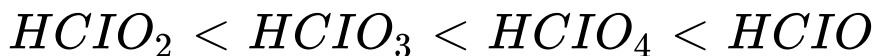
B.



C.



D.

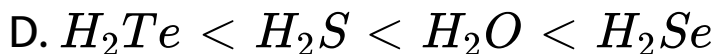
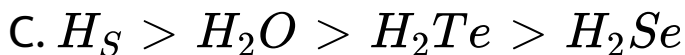
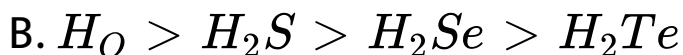
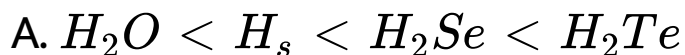


Answer: B



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7. The correct order of acidic strength is



Answer: A



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8. SO_2 acts as oxidising and reducing agent.

A. SO_2

B. SO_3

C. H_2S

D. None of these

Answer: A



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9. Oleum is :

A. castor oil

B. oil of Vitriol

C. fuming H_2SO_4

D. None of these

Answer: C



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10. Sulphur molecule is : diatomic, tetratomic, triatomic, octatomic.

A. diatomic

B. tetratomic

C. triatomic

D. octatomic

Answer: D



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11. Which member of the halogen family (X_2) does not show positive oxidation state (X_2^+)?

A. Fluorine

B. Chlorine

C. Bromine

D. Iodine

Answer: A



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12. Bleaching action of chlorine is due to :

A. reduction

B. hydrogenation

C. chlorination

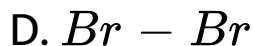
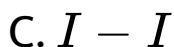
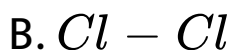
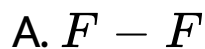
D. oxidation

Answer: D



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13. Which of the following bonds is the strongest? $F - F$, $Cl - Cl$, $I - I$, $Br - Br$.



Answer: B



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14. Sea divers go deep in the sea water with a mixture of

which of the following gases?

A. O_2 and He

B. O_2 and Ar

C. O_2 and CO_2

D. CO_2 and Ar

Answer: A



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15. Which is the least polarisable among all the noble gases?

A. He

B. Xe

C. Ar

D. Ne

Answer: A



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16. Shape of $XeOF_4$ is :

- A. octahedral
- B. square pyramidal
- C. pyramidal
- D. T-shaped

Answer: B



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17. Among trihalide of nitrogen, which one is least basic? NF_3 , NCl_3 , NBr_3 , NI_3 .



Answer: A



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18. What is maximum no. of hydrogen bonds in which a water molecule may participate is :

A. 1

B. 2

C. 3

D. 4

Answer: D



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

A. F

B. Cl

C. Br

D. I

Answer: B



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

- A. F
- B. Cl
- C. Br
- D. I

Answer: A



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21. Which of the following has highest ionisation enthalpy? P , N , As , Sb .

A. P

B. N

C. As

D. Sb

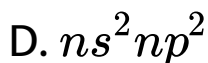
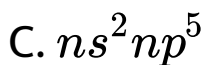
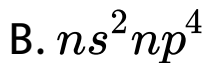
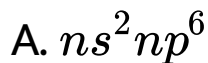
Answer: B



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22. General electronic configuration of element of Group 16

is :



Answer: B



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23. 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

Answer: D



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24. Which of the following does not exist?

$XeOF_4$, NeF_2 , XeF_2 , XeF_6 .

A. $XeOF_4$

B. NeF_2

C. XeF_2

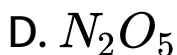
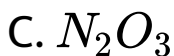
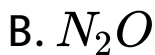
D. XeF_6

Answer: B



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



Answer: B



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26. What is the basicity of H_3PO_2 and why ?

A. 1

B. 2

C. 3

D. 4

Answer: A



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27. The basicity of phosphorus acid is :

A. Two

B. Three

C. One

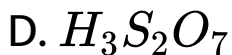
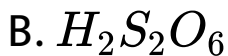
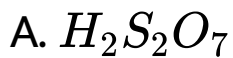
D. Zero

Answer: A



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28. Oleum is: $H_2S_2O_7$, $H_2S_2O_6$, $H_4S_2O_7$,
 $H_3S_2O_7$.

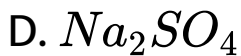
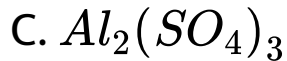
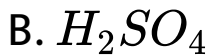


Answer: A



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29. Oil of vitriol is: $CuSO_4$, H_2SO_4 , $Al_2(SO_4)_3$,
 Na_2SO_4 .



Answer: B



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30. Which of the following have lowest boiling point ?

A. He

B. Ne

C. Ar

D. Na

Answer: A



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31. Why NH_3 is less basic than PH_3 ?



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32. H_3PO_2 is monoprotic acid. Explain.



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33. SO_2 has zero dipole moment.



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34. Oleum is pyrosulphuric acid.



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35. SO_2 acts as oxidising and reducing agent.



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36. Why HF is a weak acid ?



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37. Cynogen is a pseudohalogen.



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38. Bond dissociation energy of F_2 is less than Cl_2 .



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39. In XeO_3 , O.S. of Xe is +6.



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40. Hydrolysis of XeF_6 is a redox reaction.



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41. Define inert pair effect.



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42. Given reason: H_3PO_4 is triprotic acid but H_3PO_3 is diprotic acid. Why?



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43. What is the basicity of H_3PO_3 ?



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44. Why ammonia is a good complexing agent?



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45. Explain why the first element of a group differ from other elements of its group.



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46. Why does Nitrogen show anomalous behaviour in its group ?



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



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48. Draw the structure of $H_2S_2O_7$.



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49. Why does NH_3 form hydrogen bonds but PH_3 does not ?



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50. PH_3 has lower boiling point than NH_3 .

Why?



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



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52. PCl_5 exists but NCl_5 does not exist why



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53. Why is NH_3 more basic than PH_3 ?



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54. All the five bonds in PCl_5 are not equivalent justify.



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55. On the basis of hybridisation discuss the structure of

PCl_5 .



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56. What happens when white phosphorus is heated

with concentrated NaOH solution in an inert

atmosphere of

CO_2 ?



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57. Explain the difference in the structures of white and red phosphorus.



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



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59. What is basicity of H_3PO_4 ?



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60. What is the basicity of H_3PO_2 and why ?



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



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62. Why are pentahalides more covalent than trihalides ?



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63. Why does ammonia act as a Lewis base?



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64. Why does NO_2 dimerise ?



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65. Draw the structure of N_2O_5 . What is the covalency

of nitrogen in N_2O_5 ?



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66. Why does nitrogen show catenation properties

less than phosphorus ?



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67. Why white or yellow phosphorus is always kept

under water ?



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68. Nitric oxide becomes brown when released in air.

Explain why ?



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69. NO (Nitric oxide) is paramagnetic in the gaseous

slate but diamagnetic in the liquid and solid states. Why?



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



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71. Molecular nitrogen is not particularly and reactive. Why?



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72. Describ chemistry of manufacture of ammonia by Haber's process and discuss conditions for good yield of ammonia.



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73. Describe Ostwald's process for the manufacture of nitric acid. Give important uses of nitric acid.



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74. What is aqua regia ?



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75. Illustrate how copper metal can give different products on reaction with HNO_3 .



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



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77. Explain why NH_3 is basic but BiH_3 is only feebly basic.



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78. Why is oxygen a gas while sulphur is a solid at room temperature?



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79. Sulphur shows +4 and +6 oxidation state in their compounds but oxygen can not show these oxidation states.



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80. H_2S is a gas but H_2O is liquid at room temperature. Explain.



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81. Discuss anomalous character of oxygen.



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82. Why is H_2S less acidic than H_2Te ?



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83. Why does ozone (O_3) acts as a powerful oxidising

agent ? Give examples.





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84. Why does ozone (O_3) acts as a powerful oxidising agent ? Give examples.



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85. Why does ozone (O_3) acts as a powerful oxidising agent ? Give example with potassium iodide.



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86. Why does ozone (O_3) acts as a powerful oxidising agent ? Give examples acidified ferrous sulphate.



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87. Why does ozone (O_3) acts as a powerful oxidising agent ? Give examples black lead sulphide.



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88. Describe the manufacture of H_2SO_4 by

Contact

process and give its important uses.



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89. Give an example of a reaction in which

H_2SO_4

behaves as :

a strong acid.



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90. Give an example of a reaction in which



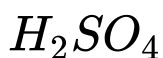
behaves as :

a dehydrating agent.



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91. Give an example of a reaction in which



behaves as :

an oxidising agent.



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92. Elements of Group 16 generally show lower value

of first ionisation enthalpy compared to the corresponding

periods of Group 15. Why ?



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93. Explain that SO_2 can act as an oxidising agent as well as a reducing agent, but SO_3 can act as an oxidising agent only.



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94. What is oleum ? Draw its structure.



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95. Draw the structure of one oxo acid of sulphur.



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96. Explain H_2SO_4 acid is dibasic. Draw structure.



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97. SO_3 has zero dipole moment. Why ?



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98. Discuss the structure of SF_6 on the basis of hybridisation.



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



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100. Which form of sulphur shows paramagnetic behaviour and why ?



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



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103. Among the hydrides of Group 16, water shows unusual physical properties. Why ?



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104. Explain the following :

SCl_6 is not known but SF_6 is known. Why ?



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105. Explain the following :

OF_6 does not exist and SF_6 exists. Why ?



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106. Give two examples to show the anomalous behaviour of fluorine.



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107. Why ClF_3 exists, but FCl_3 does not exist ?



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108. Why halogens are coloured gases and they are very reactive ? Comment on it.



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109. Bond dissociation energy of F_2 is less than Cl_2 .



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110. Explain the following :

Iodine is more soluble in KI solution than in water.



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111. Explain the following :

Fluorine does not show positive oxidation state.



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112. What are pseudohalogens ? Give example.



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



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114. Why electron affinity of fluorine is less than that of chlorine ?





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115. What are interhalogen compounds ? How interhalogen compounds are prepared ?



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116. What are the interhalogen compounds ? Why are these more reactive than halogens ?



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117. Why ICl_3 is more reactive than I_2 ?



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118. ICI_7 does not exist while IF_7 exists. Why ?



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119. Boiling point of HCl is lower than HF.

Explain why ?



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120. Why are halogens coloured ?



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



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122. Although electron gain enthalpy of fluorine is less negative as compared to chlorine, fluorine is a stronger oxidising agent than chlorine. Why?



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123. 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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124. Why is fluorine a very reactive halogen ?



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



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126. Write the balanced chemical equation for the reaction of Cl_2 with hot and conc. NaOH. Is this reaction disproportionation reaction ? Justify.



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127. Write the balanced chemical equations for the reaction of Cl_2 with, cold and dil. NaOH.



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128. Write the balanced chemical equation for the reaction of Cl_2 with hot and conc. NaOH. Is this

reaction

disproportionation reaction ? Justify.



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129. Draw structure of BrF_3 .



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130. Give the shape of ClF_3 .



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



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132. Arrange $HClO_4$, $HClO_3$, $HClO_2$, $HClO$ in order of oxidising power. Give reason.



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133. Arrange the following in order of property indicated for each set :

F_2, Cl_2, Br_2, I_2 -increasing bond dissociation enthalpy.



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134. Arrange the following in order of property indicated for each set :

HF, HCl, HBr, HI - increasing acid strength.



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



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



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137. Noble gases have low boiling points.

Explain.



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138. Why elements of Group 18 are less reactive or

inert ?



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



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140. Why electron gain enthalpies of noble gases are large positive ?



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141. Why noble gases have very high values of ionisation enthalpies ?



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142. Give the preparation, hybridisation and structure of XeF_4 (Xenon Tetrafluoride)



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143. Draw the structure of $XeOF_2$



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144. Hydrolysis of XeF_6 is a redox reaction.



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



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146. Draw the structure of XeF_2 , XeF_4 and XeF_6 .



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147. How are XeO_3 and $XeOF_4$ prepared?



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148. Discuss the shapes of XeO_3 and $XeOF_4$ on the

basis of VSEPR theory.



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149. List the uses of noble gases.



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



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



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