Hybridisation

100. The bond angle is minimum in

(a) H_2Te (b) H_2Se

(c) H_2O (d) H_2S

101. The correct order of hybridization of the central atom in the following species NH_3 $[PtCl_4]^{2-}$, PCl_5 and BCl_3 is

(a) dsp^2, dsp^3, sp^2 and sp^3

(b) sp^3, dsp^2, dsp^3, sp^2

(c) dsp^2, sp^2, sp^3, dsp^3

(d) dsp^2, sp^3, sp^2, dsp^3

102. Which of the following pairs has same structure

(a) PH_3 and BCl_3

(b) SO_2 and NH_3

(c) PCl_5 and SF_6

(d) NH_4^+ and SO_4^{2-}

103. The smallest bond angle is found in

(a) IF_7 (b) CH_4

(c) BeF_2 (d) BF_3

104. Which of the following is not linear

(a) CO_2

(b) ClO_2

(c) I_3^-

(d) None of these

105. Which of the following is not tetrahedral

(a) SCl_4 (b) SO_4^{2-}

(c) $Ni(CO)_4$ (d) $NiCl_4^{2-}$

106. As the *s*-character of hybridisation orbital increases, the bond angle

(a) Increases

(b) Decreases

(c) Becomes zero

(d) Does not change

107. The shape of IF_7 molecule is

(a) Octahedral

(b) Pentagonal bipyramidal

(c) Trigonal bipyramidal

(d) Tetrahedral

108. A completely filled *d* orbital (d^{10})

(a) Spherically symmetrical

(b) Has octahedral symmetry

(c) Has tetrahedral symmetry

(d) Depends on the atom

109. Which has sp^3 hybridization of central atom

(a) PCl_3 (b) SO_3

(c) BF_3 (d) NO_3^-

110. In which of the following species is the interatomic bond angle is $109^o28'$

(a) $NH_3, (BF_4)^{-1}$

(b) $(NH_4)^+, BF_3$

(c) NH_3, BF_4

(d) $(NH_2)^{-1}, BF_3$

111. A square planar complex is formed by hybridisation of which atomic orbitals

(a) s, p_x, p_y, d_{yz}

(b) $s, p_x, p_y, d_{x^2-y^2}$

(c) s, p_x, p_y, d_{z^2}

(d) s, p_y, p_z, d_{xy}

112. In benzene, all the six $C-C$ bonds have the same length because of

(a) Tautomerism

(b) sp^2hybridisation

(c) Isomerism

(d) Inductive effect

114. The bond energies of $H-H$ and $Cl-Cl$ are 430 *kJ* mol^{-1} and 242 *kJ* mol^{-1} respectively, ΔH_t for *HCl* is 91 *kJ mol*$^{-1}$. The bond energy of *HCl* will be

(a) 427 *kJ* (b) 766 *kJ*

(c) 285 *kJ* (d) 245 *Kj*

115. Which of the following has dsp^2hybridization

(a) $NiCl_4^{2-}$ (b) SCl_4

(c) NH_4^+ (d) $PtCl_4^{2-}$

116. Which one of the following is a planar molecule

(a) NH_3 (b) H_3O^+

(c) BCl_3 (d) PCl_3

117. Which one of the following is a correct set with respect to molecule, hybridisation and shape

(a) $BeCl_2$, sp^2, linear

(b) $BeCl_2$, sp^2, triangular planar

(c) BCl_3, sp^2, triangular planar

(d) BCl_3, sp^3, tetrahedral

118. Which of the following compounds doesn't have linear structure

(a) CO_2 (b) SO_2

(c) $BeCl_2$ (d) C_2H_2

119. Which of the following bonds require the largest amount of bond energy to dissociate the atom concerned

(a) $H-H$ bond in H_2

(b) $C-C$ bond in CH_4

(c) $N \equiv N$ bond in N_2

(d) $O = O$ bond in O_2

(e) $C-C$ bond in ethane

120. The percentage *s*-character of the hybrid orbitals in methane, ethene and ethyne are respectively

(a) 25, 33, 50 (b) 25, 50, 75

(c) 50, 75, 100 (d) 10, 20, 40