CHEMISTRY

101. Two type FXF angles are present in which of the following molecules?
(X = S, Xe, C)
(1) SF_4 (2) XeF_4
(3) SF_6 (4) CF_4

102. In which pair of species, both species do have the similar geometry?
(1) CO_2, SO_2 (2) NH_3, BH_3
(3) CO_3^{2-}, SO_3^{2-} (4) SO_4^{2-}, ClO_4^-

103. In which of the following pair both molecules do not possess same type of hybridization?
(1) CH_4 and H_2O
(2) PCl_5 and SF_4
(3) SF_6 and XeF_4
(4) BCl_3 and NCl_3

104. (i) H–C–H angle in CH_4
(ii) Cl–B–Cl angle in BCl_3
(iii) F–I–F angle in IF_7 in a plane
(iv) I–I–I angle in I_3^-
Increasing order of above bond angles is
(1) (i) < (ii) < (iii) < (iv)
(2) (ii) < (i) < (iii) < (iv)
(3) (iii) < (i) < (ii) < (iv)
(4) (iv) < (ii) < (i) < (iii)

105. In XeF_6, oxidation state and state of hybridization of Xe and shape of the molecule are respectively.
(1) +6, sp^3d^3, distorted octahedral
(2) +4, sp^3d^2, square planar
(3) +6, sp^3, pyramidal
(4) +6, sp^3d^2 square pyramidal

106. Which of the following species is non-linear?
(1) ICl_2^- (2) I_3^-
(3) N_3^- (4) ClO_2^-

107. The state of hybridization of S in SF_4 is
(1) sp^3 and has a lone pair of electron
(2) sp^2 and has a tetrahedral geometry
(3) sp^3d and has a trigonal bipyramidal geometry
(4) sp^3d^2 and has a octahedral geometry

108. The bond angle and % of d-character in SF_6 are
(1) 120°, 20% (2) 90°, 33%
(3) 109°, 25% (4) 90°, 25%

109. The shape of XeF_4 molecule and hybridization of xenon in it are
(1) tetrahedral and sp^3
(2) square planar and dsp^3
(3) square planar and sp^3d^2
(4) octahedral and sp^3d^2

110. In which of the following species, all the three types of hybrid carbons are present?
(1) $CH_2 = C = CH_2$
(2) $CH_3 - CH = CH - CH_2^+$
(3) $CH_3 - C \equiv C - CH_2^+$
(4) $CH_3 - CH = CH - CH_2^-$