Hybridisation

81. The correct order towards bond angle is

(a) $sp < sp^2 < sp^3$

(b) $sp^2 < sp < sp^3$

(c) $sp^3 < sp^2 < sp$

(d) Bond angle does not depend on hybridization

82. The geometry and the type of hybrid orbital present about the central atom in $BF_3$is

(a) Linear, sp

(b) Trigonal planar, sp^2

(c) Tetrahedral, sp^3

(d) Pyramidal, sp^3

83. In graphite, electrons are

(a) Localised on every third C atom

(b) Present in antibonding orbital

(c) Localised on each C atom

(d) Spread out between the structure

84. The ammonium ion is

(a) Tetrahedral

(b) Trigonal pyramidal

(c) Square planar

(d) Square pyramidal

85. In sphybridisation, shape is

(a) Angular (b) Tetrahedral

(c) Bipyramidal (d) Linear

86. When the hybridisation state of carbon atom changes from sp^3 to sp^2 to sp, the angle between the hybridised orbitals

(a) Decreases gradually

(b) Increases gradually

(c) Decreases considerably

(d) All of these

87. The structure and hybridisation of $Si(CH_3)_4$ is

(a) Bent, sp

(b) Trigonal, sp^2

(c) Octahedral, sp^3d

(d) Tetrahedral, sp^3

88. The type of hybridisation of boron in diborane is

(a) sp - hybridisation

(b) sp^2- hybridisation

(c) sp^3- hybridisation

(d) sp^3d^2 – hybridization

89. Which compound does not possess linear geometry

(a) $CH_2 = CH_2$ (b) $HC \equiv CH$

(c) $BeCl_2$ (d) CO_2

90. Which of the following molecule does not show tetrahedral shape

(a) CCl_4 (b) $SiCl_4$

(c) SF_4 (d) CF_4

91. Pyramidal shape would be of

(a) NO_3^- (b) H_2O

(c) H_3O^+ (d) NH_4^+

92. What is the correct mode of hybridization of the central atom in the following compounds : NO_2^+, SF_4, PF_6^-

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

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

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

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

93. The hybridization in PF_3 is

(a) sp^3 (b) sp^2

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

94. Which of the following molecule is linear

(a) SO_2 (b) NO_2^+

(c) NO_2^- (d) SCl_2

95. The geometry of the molecule with sp^3d^2 hybridised central atom is

(a) Square planar

(b) Trigonal bipyramidal

(c) Octahedral

(d) Square pyramidal

96. The bond angle in PH_3 is

(a) Much less than NH_3

(b) Equal to that of NH_3

(c) Much greater than NH_3

(d) Slightly greater than NH_3

97. Which of the following has tetrahedral structure

(a) CO_3^- (b) NH_4^+

(c) $K_4[Fe(CN)_6]$ (d) None of these

98. The single, double and triple bond lengths of carbon in carbon dioxide are respectively

(a) 1.15, 1.22 and 1.10 Å

(b) 1.22, 1.15 and 1.10 Å

(c) 1.10, 1.15 and 1.22 Å

(d) 1.15, 1.10 and 1.22 Å

99. Shape of BF_3 molecule is

(a) Linear

(b) Planar

(c) Tetrahedral

(d) Square pyramidal

100. In the complex $[SbF_5]^{2-}$, sp^3d hybridization is present. Geometry of the complex is

(a) Square

(b) Square pyramidal

(c) Square bipyramidal

(d) Tetrahedral