

Chapter 4

Chemical Bonding and Molecular Structure

- Which of the following pairs of compounds is isoelectronic and isostructural?
(a) TeI_2 , XeF_2 (b) IBr_2^- , XeF_2
(c) IF_3 , XeF_2 (d) BeCl_2 , XeF_2
(NEET 2017)
- The species, having bond angles of 120° is
(a) ClF_3 (b) NCl_3 (c) BCl_3 (d) PH_3
(NEET 2017)
- Which one of the following pairs of species have the same bond order?
(a) O_2 , NO^+ (b) CN^- , CO
(c) N_2 , O_2^- (d) CO , NO
(NEET 2017)
- Which one of the following compounds shows the presence of intramolecular hydrogen bond?
(a) H_2O_2 (b) HCN
(c) Cellulose
(d) Concentrated acetic acid
(NEET-II 2016)
- The hybridizations of atomic orbitals of nitrogen in NO_2^+ , NO_3^- and NH_4^+ respectively are
(a) sp , sp^3 and sp^2 (b) sp^2 , sp^3 and sp
(c) sp , sp^2 and sp^3 (d) sp^2 , sp and sp^3
(NEET-II 2016)
- Which of the following pairs of ions is isoelectronic and isostructural?
(a) CO_3^{2-} , NO_3^- (b) ClO_3^- , CO_3^{2-}
(c) SO_3^{2-} , NO_3^- (d) ClO_3^- , SO_3^{2-}
(NEET-II 2016)
- The correct geometry and hybridization for XeF_4 are
(a) octahedral, sp^3d^2
(b) trigonal bipyramidal, sp^3d
(c) planar triangle, sp^3d^3
(d) square planar, sp^3d^2 . (NEET-II 2016)
- Among the following, which one is a wrong statement?
(a) PH_5 and BiCl_5 do not exist.
(b) $p\pi-d\pi$ bonds are present in SO_2 .
(c) SeF_4 and CH_4 have same shape.
(d) I_3^+ has bent geometry. (NEET-II 2016)
- Consider the molecules CH_4 , NH_3 and H_2O . Which of the given statements is false?
(a) The $\text{H}-\text{O}-\text{H}$ bond angle in H_2O is smaller than the $\text{H}-\text{N}-\text{H}$ bond angle in NH_3 .
(b) The $\text{H}-\text{C}-\text{H}$ bond angle in CH_4 is larger than the $\text{H}-\text{N}-\text{H}$ bond angle in NH_3 .
(c) The $\text{H}-\text{C}-\text{H}$ bond angle in CH_4 , the $\text{H}-\text{N}-\text{H}$ bond angle in NH_3 , and the $\text{H}-\text{O}-\text{H}$ bond angle in H_2O are all greater than 90° .
(d) The $\text{H}-\text{O}-\text{H}$ bond angle in H_2O is larger than the $\text{H}-\text{C}-\text{H}$ bond angle in CH_4 .
(NEET-I 2016)
- Predict the correct order among the following :
(a) bond pair - bond pair > lone pair - bond pair > lone pair - lone pair
(b) lone pair - bond pair > bond pair - bond pair > lone pair - lone pair
(c) lone pair - lone pair > lone pair - bond pair > bond pair - bond pair
(d) lone pair - lone pair > bond pair - bond pair > lone pair - bond pair
(NEET-I 2016)
- In which of the following pairs, both the species are not isostructural?
(a) Diamond, Silicon carbide
(b) NH_3 , PH_3
(c) XeF_4 , XeO_4
(d) SiCl_4 , PCl_4^+ (2015)
- Decreasing order of stability of O_2 , O_2^- , O_2^+ and O_2^{2-} is
(a) $\text{O}_2^{2-} > \text{O}_2^- > \text{O}_2 > \text{O}_2^+$
(b) $\text{O}_2 > \text{O}_2^+ > \text{O}_2^{2-} > \text{O}_2^-$
(c) $\text{O}_2^- > \text{O}_2^{2-} > \text{O}_2^+ > \text{O}_2$
(d) $\text{O}_2^+ > \text{O}_2 > \text{O}_2^- > \text{O}_2^{2-}$ (2015)
- Which of the following pairs of ions are isoelectronic and isostructural?
(a) SO_3^{2-} , NO_3^- (b) ClO_3^- , SO_3^{2-}
(c) CO_3^{2-} , SO_3^{2-} (d) ClO_3^- , CO_3^{2-}
(2015, Cancelled)

Chemical Bonding and Molecular Structure

14. The correct bond order in the following species is
 (a) $O_2^+ < O_2^- < O_2^{2+}$ (b) $O_2^- < O_2^+ < O_2^{2+}$
 (c) $O_2^{2+} < O_2^+ < O_2^-$ (d) $O_2^{2+} < O_2^- < O_2^+$
 (2015, Cancelled)
15. Which of the following options represents the correct bond order?
 (a) $O_2^- > O_2 < O_2^+$ (b) $O_2^- < O_2 > O_2^+$
 (c) $O_2^- > O_2 > O_2^+$ (d) $O_2^- < O_2 < O_2^+$
 (2015, Cancelled)
16. Maximum bond angle at nitrogen is present in which of the following?
 (a) NO_2^+ (b) NO_3^- (c) NO_2 (d) NO_2^-
 (2015, Cancelled)
17. Which of the following molecules has the maximum dipole moment?
 (a) CO_2 (b) CH_4 (c) NH_3 (d) NF_3
 (2014)
18. Which one of the following species has plane triangular shape?
 (a) N_3 (b) NO_3^- (c) NO_2^- (d) CO_2
 (2014)
19. Which of the following is electron-deficient?
 (a) $(BH_3)_2$ (b) PH_3
 (c) $(CH_3)_2$ (d) $(SiH_3)_2$
 (NEET 2013)
20. XeF_2 is isostructural with
 (a) $SbCl_3$ (b) $BaCl_2$ (c) TeF_2 (d) ICl_2^-
 (NEET 2013)
21. Which of the following is a polar molecule?
 (a) SiF_4 (b) XeF_4 (c) BF_3 (d) SF_4
 (NEET 2013)
22. Which of the following is paramagnetic?
 (a) CN^- (b) NO^+ (c) CO (d) O_2^-
 (NEET 2013)
23. Dipole-induced dipole interactions are present in which of the following pairs
 (a) HCl and He atoms
 (b) SiF_4 and He atoms
 (c) H_2O and alcohol
 (d) Cl_2 and CCl_4
 (NEET 2013)
24. The pair of species that has the same bond order in the following is
 (a) CO, NO^+ (b) NO^-, CN^-
 (c) O_2, N_2 (d) O_2, B_2
 (Karnataka NEET 2013)
25. The outer orbitals of C in ethene molecule can be considered to be hybridized to give three equivalent sp^2 orbitals. The total number of sigma (σ) and pi (π) bonds in ethene molecule is
 (a) 3 sigma (σ) and 2 pi (π) bonds
 (b) 4 sigma (σ) and 1 pi (π) bonds
 (c) 5 sigma (σ) and 1 pi (π) bonds
 (d) 1 sigma (σ) and 2 pi (π) bonds.
 (Karnataka NEET 2013)
26. In which of the following pair both the species have sp^3 hybridization?
 (a) SiF_4, BeH_2 (b) NF_3, H_2O
 (c) NF_3, BF_3 (d) H_2S, BF_3
 (Karnataka NEET 2013)
27. In which of the following ionization processes the bond energy increases and the magnetic behaviour changes from paramagnetic to diamagnetic.
 (a) $O_2 \rightarrow O_2^+$ (b) $C_2 \rightarrow C_2^+$
 (c) $NO \rightarrow NO^+$ (d) $N_2 \rightarrow N_2^+$
 (Karnataka NEET 2013)
28. Which one of the following pairs is isostructural (i.e., having the same shape and hybridization)?
 (a) $[BCl_3]$ and $[BrCl_3]$ (b) $[NH_3]$ and $[NO_3^-]$
 (c) $[NF_3]$ and $[BF_3]$ (d) $[BF_4^-]$ and $[NH_4^+]$
 (2012)
29. Bond order of 1.5 is shown by
 (a) O_2^+ (b) O_2^- (c) O_2^{2-} (d) O_2
 (2012)
30. Which of the following species contains three bond pairs and one lone pair around the central atom?
 (a) H_2O (b) BF_3 (c) NH_2^- (d) PCl_3
 (2012)
31. The pair of species with the same bond order is
 (a) O_2^{2-}, B_2 (b) O_2^+, NO^+
 (c) NO, CO (d) N_2, O_2
 (2012)
32. During change of O_2 to O_2^- ion, the electron adds on which one of the following orbitals?
 (a) π^* orbital (b) π orbital
 (c) σ^* orbital (d) σ orbital
 (Mains 2012)
33. Four diatomic species are listed below. Identify the correct order in which the bond order is increasing in them

- (a) $\text{NO} < \text{O}_2^- < \text{C}_2^{2-} < \text{He}_2^+$
 (b) $\text{O}_2^- < \text{NO} < \text{C}_2^{2-} < \text{He}_2^+$
 (c) $\text{C}_2^{2-} < \text{He}_2^+ < \text{O}_2^- < \text{NO}$
 (d) $\text{He}_2^+ < \text{O}_2^- < \text{NO} < \text{C}_2^{2-}$

(Mains 2012, 2008)

34. Which of the following has the minimum bond length?

- (a) O_2^+ (b) O_2^- (c) O_2^{2-} (d) O_2

(2011)

35. Which of the two ions from the list given below that have the geometry that is explained by the same hybridization of orbitals, NO_2^- , NO_3^- , NH_2^- , NH_4^+ , SCN^- ?

- (a) NO_2^- and NO_3^- (b) NH_4^+ and NO_3^-
 (c) SCN^- and NH_2^- (d) NO_2^- and NH_2^-

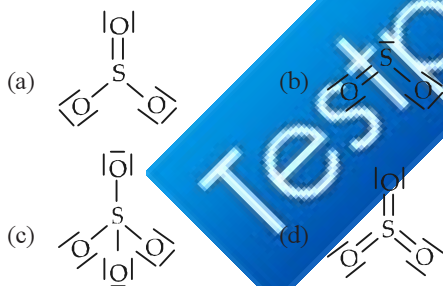
(2011)

36. The correct order of increasing bond length of C - H, C - O, C - C and C=C is

- (a) $\text{C} - \text{H} < \text{C} = \text{C} < \text{C} - \text{O} < \text{C} - \text{C}$
 (b) $\text{C} - \text{C} < \text{C} = \text{C} < \text{C} - \text{O} < \text{C} - \text{H}$
 (c) $\text{C} - \text{O} < \text{C} - \text{H} < \text{C} - \text{C} < \text{C} = \text{C}$
 (d) $\text{C} - \text{H} < \text{C} - \text{O} < \text{C} - \text{C} < \text{C} = \text{C}$

(2011)

37. Which of the following structures is the most preferred and hence of lowest energy for SO_3 ?



(Mains 2011)

38. The pairs of species of oxygen and their magnetic behaviour are noted below. Which of the following presents the correct description?

- (a) O_2^- , O_2^{2-} - Both diamagnetic
 (b) O_2^+ , O_2^- - Both paramagnetic
 (c) O_2^+ , O_2 - Both paramagnetic
 (d) O , O_2^{2-} - Both paramagnetic

(2011)

39. In which of the following pairs of molecules/ions, the central atoms have sp^2 hybridisation?

- (a) NO_2^- and NH_3 (b) BF_3 and NO_2^-
 (c) NH_2^- and H_2O (d) BF_3 and NH_2^-

(2010)

40. Which one of the following species does not exist under normal conditions?

- (a) Be_2^+ (b) Be_2 (c) B_2 (d) Li_2

(2010)

41. In which one of the following species the central atom has the type of hybridization which is not the same as that present in the other three?

- (a) SF_4 (b) I_3^-

- (c) SbCl_5^{2-} (d) PCl_5

(2010)

42. In which of the following molecules the central atom does not have sp^3 hybridization?

- (a) CH_4 (b) SF_4 (c) BF_4^- (d) NH_4^+

(Mains 2010)

43. Some of the properties of the two species, NO_3^- and H_3O^+ are described below. Which one of them is correct?

- (a) Dissimilar in hybridization for the central atom with different structures.

- (b) Isostructural with same hybridization for the central atom.

- (c) Isostructural with different hybridization for the central atom.

- (d) Similar in hybridization for the central atom with different structures. (Mains 2010)

44. What is the dominant intermolecular force or bond that must be overcome in converting liquid CH_3OH to a gas?

- (a) Dipole-dipole interaction

- (b) Covalent bonds

- (c) London dispersion force

- (d) Hydrogen bonding (2009)

45. According to MO theory which of the lists ranks the nitrogen species in terms of increasing bond order?

- (a) $\text{N}_2^{2-} < \text{N}_2^- < \text{N}_2$ (b) $\text{N}_2 < \text{N}_2^{2-} < \text{N}_2^-$

- (c) $\text{N}_2^- < \text{N}_2^{2-} < \text{N}_2$ (d) $\text{N}_2^- < \text{N}_2 < \text{N}_2^{2-}$

(2009)

46. In which of the following molecules/ions BF_3 , NO_2^- , NH_2^- and H_2O , the central atom is sp^2 hybridised?

- (a) NH_2^- and H_2O (b) NO_2^- and H_2O

- (c) BF_3 and NO_2^- (d) NO_2^- and NH_2^-

(2009)

47. The correct order of increasing bond angles in the following triatomic species is

- (a) $\text{NO}_2^+ < \text{NO}_2 < \text{NO}_2^-$

Chemical Bonding and Molecular Structure

- (b) $\text{NO}_2^+ < \text{NO}_2^- < \text{NO}_2$
 (c) $\text{NO}_2^- < \text{NO}_2^+ < \text{NO}_2$
 (d) $\text{NO}_2^- < \text{NO}_2 < \text{NO}_2^+$ (2008)
48. In which of the following pairs, the two species are isostructural?
 (a) SO_3^{2-} and NO_3^- (b) BF_3 and NF_3
 (c) BrO_3^- and XeO_3 (d) SF_4 and XeF_4 (2007)
49. The correct order of C – O bond length among CO , CO_3^{2-} , CO_2 is
 (a) $\text{CO} < \text{CO}_3^{2-} < \text{CO}_2$
 (b) $\text{CO}_3^{2-} < \text{CO}_2 < \text{CO}$
 (c) $\text{CO} < \text{CO}_2 < \text{CO}_3^{2-}$
 (d) $\text{CO}_2 < \text{CO}_3^{2-} < \text{CO}$ (2007)
50. Which of the following is not a correct statement?
 (a) Multiple bonds are always shorter than corresponding single bonds.
 (b) The electron-deficient molecules can act as Lewis acids.
 (c) The canonical structures have no real existence.
 (d) Every AB_5 molecule does in fact have square pyramid structure. (2006)
51. Which of the following species has a linear shape?
 (a) O_3 (b) NO_2^- (c) SO_2 (d) NO_2^+ (2006)
52. Which of the following is not isostructural with SiCl_4 ?
 (a) NH_4^+ (b) SCl_4 (c) SO_4^{2-} (d) PO_4^{3-} (2006)
53. Which of the following molecules has trigonal planar geometry?
 (a) BF_3 (b) NH_3 (c) PCl_3 (d) IF_3 (2005)
54. The correct order in which the O – O bond length increases in the following is
 (a) $\text{O}_2 < \text{H}_2\text{O}_2 < \text{O}_3$ (b) $\text{O}_3 < \text{H}_2\text{O}_2 < \text{O}_2$
 (c) $\text{H}_2\text{O}_2 < \text{O}_2 < \text{O}_3$ (d) $\text{O}_2 < \text{O}_3 < \text{H}_2\text{O}_2$ (2005)
55. The surface tension of which of the following liquid is maximum?
 (a) $\text{C}_2\text{H}_5\text{OH}$ (b) CH_3OH
 (c) H_2O (d) C_6H_6 (2005)
56. Among the following, the pair in which the two species are not isostructural is
 (a) SiF_4 and SF_4 (b) IO_3^- and XeO_3
 (c) BH_4^- and NH_4^+ (d) PF_6^- and SF_6 . (2004)
57. In a regular octahedral molecule, MX_6 the number of $X - M - X$ bonds at 180° is
 (a) three (b) two (c) six (d) four. (2004)
58. H_2O is dipolar, whereas BeF_2 is not. It is because
 (a) the electronegativity of F is greater than that of O
 (b) H_2O involves hydrogen bonding whereas BeF_2 is a discrete molecule
 (c) H_2O is linear and BeF_2 is angular
 (d) H_2O is angular and BeF_2 is linear. (2004)
59. In BrF_3 molecule, the lone pairs occupy equatorial positions to minimize
 (a) lone pair - bond pair repulsion only
 (b) bond pair - bond pair repulsion only
 (c) lone pair - lone pair repulsion and lone pair - bond pair repulsion
 (d) lone pair - lone pair repulsion only. (2004)
60. Which one of the following statements is not correct for sigma- and pi- bonds formed between two carbon atoms?
 (a) Sigma-bond is stronger than a pi-bond.
 (b) Bond energies of sigma- and pi-bonds are of the order of 264 kJ/mol and 347 kJ/mol, respectively.
 (c) Free rotation of atoms about a sigma-bond is allowed but not in case of a pi-bond.
 (d) Sigma-bond determines the direction between carbon atoms but a pi-bond has no primary effect in this regard. (2003)
61. Which of the following has $p\pi - d\pi$ bonding?
 (a) NO_3^- (b) SO_3^{2-} (c) BO_3^{3-} (d) CO_3^{2-} (2002)
62. In NO_3^- ion number of bond pair and lone pair of electrons on nitrogen atom are
 (a) 2, 2 (b) 3, 1 (c) 1, 3 (d) 4, 0. (2002)
63. Which of the following is isoelectronic?
 (a) CO_2 , NO_2 (b) NO_2^- , CO_2
 (c) CN^- , CO (d) SO_2 , CO_2 (2002)

64. Which of the following two are isostructural?
 (a) XeF_2 , IF_2^- (b) NH_3 , BF_3
 (c) CO_3^{2-} , SO_3^{2-} (d) PCl_5 , ICl_5
 (2001)
65. In which of the following bond angle is maximum?
 (a) NH_3 (b) NH_4^+ (c) PCl_3 (d) SCl_2
 (2001)
66. Nitrogen forms N_2 , but phosphorus does not form P_2 , however, it converts P_4 , reason is
 (a) triple bond present between phosphorus atom
 (b) $p\pi - p\pi$ bonding is weak
 (c) $p\pi - p\pi$ bonding is strong
 (d) multiple bonds form easily. (2001)
67. In $X-H \cdots Y$, X and Y both are electronegative elements. Then
 (a) electron density on X will increase and on H will decrease
 (b) in both electron density will increase
 (c) in both electron density will decrease
 (d) on X electron density will decrease and on H increases. (2001)
68. $d\pi - p\pi$ bond present in
 (a) CO_3^{2-} (b) PO_4^{3-} (c) NO_3^- (d) NO_2
 (2000)
69. Right order of dissociation energy N_2 and N_2^+ is
 (a) $\text{N}_2 > \text{N}_2^+$ (b) $\text{N}_2 = \text{N}_2^+$
 (c) $\text{N}_2^+ > \text{N}_2$ (d) none. (2000)
70. Which species does not exhibit paramagnetism?
 (a) N_2^+ (b) O_2^- (c) CO (d) NO
 (2000)
71. The number of anti-bonding electron pairs in O_2^{2-} molecular ion on the basis of molecular orbital theory is (Atomic number of O is 8)
 (a) 3 (b) 2 (c) 5 (d) 4
 (1998)
72. In PO_4^{3-} ion, the formal charge on each oxygen atom and $\text{P}-\text{O}$ bond order respectively are
 (a) -0.75 , 1.25 (b) -0.75 , 1.0
 (c) -0.75 , 0.6 (d) -3 , 1.25 (1998)
73. N_2 and O_2 are converted into monocations, N_2^+ and O_2^+ respectively. Which is wrong?
 (a) In O_2 paramagnetism decreases.
 (b) N_2^+ becomes diamagnetic.
 (c) In N_2 , the $\text{N}-\text{N}$ bond weakens.
 (d) In O_2 , the $\text{O}-\text{O}$ bond order increases.
 (1997)
74. N_2 and O_2 are converted into monoanions N_2^- and O_2^- respectively, which of the following statements is wrong?
 (a) In O_2 , bond length increases.
 (b) N_2^- becomes diamagnetic.
 (c) In N_2 , then $\text{N}-\text{N}$ bond weakens.
 (d) In O_2 , the $\text{O}-\text{O}$ bond order increases.
 (1997)
75. The bond length between hybridised carbon atom and other carbon atom is minimum in
 (a) propene (b) propyne
 (c) propane (d) butane. (1996)
76. Which of the following has sp^2 -hybridisation?
 (a) BeCl_2 (b) S_2H_2 (c) C_2H_6 (d) C_2H_4
 (1996)
77. Which of the following species is paramagnetic?
 (a) CO (b) CN^- (c) O_2^{2-} (d) NO
 (1995)
78. The correct order of the $\text{O}-\text{O}$ bond length in O_2 , H_2O_2 and O_3 is
 (a) $\text{O}_2 > \text{H}_2\text{O}_2 > \text{O}_3$ (b) $\text{H}_2\text{O}_2 > \text{O}_3 > \text{O}_2$
 (c) $\text{O}_2 > \text{O}_3 > \text{H}_2\text{O}_2$ (d) $\text{O}_3 > \text{H}_2\text{O}_2 > \text{O}_2$
 (1995)
79. The ground state electronic configuration of valence shell electrons in nitrogen molecule (N_2) is written as $KK, \sigma 2s^2, \sigma^* 2s^2, \pi 2p_x^2 = \pi 2p_y^2, \sigma 2p_z^2$. Hence the bond order in nitrogen molecule is
 (a) 2 (b) 3 (c) 0 (d) 1
 (1995)
80. Which of the following molecules has the highest bond order?
 (a) O_2^- (b) O_2 (c) O_2^+ (d) O_2^{2-}
 (1994)
81. Which of the following molecule does not possess a permanent dipole moment?
 (a) CS_2 (b) SO_3 (c) H_2S (d) SO_2
 (1994)
82. The table shown below gives the bond dissociation energies (E_{diss}) for single covalent bonds of carbon (C) atoms with element A ,

Chemical Bonding and Molecular Structure

B, C and D. Which element has the smallest atoms?

Bond	E_{diss} (kJ mol ⁻¹)
C-A	240
C-B	328
C-C	276
C-D	485

- (a) C (b) D (c) A (d) B (1994)
83. Among the following which compound will show the highest lattice energy?
(a) KF (b) NaF (c) CsF (d) RbF (1993)
84. Which one of the following is the correct order of interactions?
(a) Covalent < hydrogen bonding < van der Waals' < dipole-dipole
(b) van der Waals' < hydrogen bonding < dipole < covalent
(c) van der Waals' < dipole-dipole < hydrogen bonding < covalent
(d) Dipole-dipole < van der Waals' < hydrogen bonding < covalent. (1993)
85. Which one of the following has the shortest carbon carbon bond length?
(a) Benzene (b) Ethene (c) Ethyne (d) Ethane (1992)
86. Which structure is linear?
(a) SO₂ (b) CO₂ (c) CO₃²⁻ (d) SO₄²⁻ (1992)
87. Strongest hydrogen bond is shown by
(a) water (b) ammonia (c) hydrogen fluoride (d) hydrogen sulphide. (1992)
88. In compound X, all the bond angles are exactly 109°28', X is
(a) chloromethane (b) carbon tetrachloride (c) iodoform (d) chloroform. (1991)
89. Among LiCl, BeCl₂, BCl₃ and CCl₄, the covalent bond character follows the order
(a) BeCl₂ > BCl₃ > CCl₄ < LiCl

- (b) BeCl₂ < BCl₃ < CCl₄ < LiCl
(c) LiCl < BeCl₂ < BCl₃ < CCl₄
(d) LiCl > BeCl₂ > BCl₃ > CCl₄ (1990)

90. The complex ion [Co(NH₃)₆]³⁺ is formed by sp³d² hybridisation. Hence the ion should possess
(a) octahedral geometry (b) tetrahedral geometry (c) square planar geometry (d) tetragonal geometry. (1990)
91. Which statement is NOT correct?
(a) A sigma bond is weaker than a pi bond.
(b) A sigma bond is stronger than a pi bond.
(c) A double bond is stronger than a single bond.
(d) A double bond is shorter than a single bond. (1990)
92. Which one shows maximum hydrogen bonding?
(a) H₂O (b) H₂Se (c) H₂S (d) HF (1990)
93. Linear combination of two hybridized orbitals belonging to two atoms and each having one electron leads to the formation of
(a) sigma bond (b) double bond (c) co-ordinate covalent bond (d) pi bond. (1990)
94. Which one of the following formulae does not correctly represent the bonding capacities of the two atoms involved?
(a) $\left[\begin{array}{c} \text{H} \\ | \\ \text{H}-\text{P}-\text{H} \\ | \\ \text{H} \end{array} \right]^+$ (b) $\text{F}-\text{O}-\text{F}$
(c) $\text{O} \leftarrow \text{N} \begin{array}{l} \text{=} \text{O} \\ \diagdown \text{O}-\text{H} \end{array}$
(d) $\text{H}-\text{C}=\text{C} \begin{array}{l} \text{=} \text{O} \\ \diagdown \text{O}-\text{H} \end{array}$ (1990)
95. Which of the following molecule does not have a linear arrangement of atoms?
(a) H₂S (b) C₂H₂ (c) Be₂ (d) CO₂ (1989)
96. Which of the following does not apply to metallic bond?
(a) Overlapping valence orbitals (b) Mobile valence electrons

- (c) Delocalized electrons
(d) Highly directed bonds (1989)
97. In which one of the following molecules the central atom can be said to adopt sp^2 hybridization?
(a) BeF_2 (b) BF_3 (c) C_2H_2 (d) NH_3 (1989)
98. H_2O has a net dipole moment while BeF_2 has zero dipole moment because
(a) H_2O molecule is linear while BeF_2 is bent
(b) BeF_2 molecule is linear while H_2O is bent
(c) fluorine has more electronegativity than oxygen
- (d) beryllium has more electronegativity than oxygen. (1989)
99. The angle between the overlapping of one s -orbital and one p -orbital is
(a) 180° (b) 120°
(c) $109^\circ 28'$ (d) $120^\circ, 60^\circ$ (1988)
100. Equilateral shape has
(a) sp hybridisation
(b) sp^2 hybridisation
(c) sp^3 hybridisation
(d) dsp^3 hybridisation. (1988)



Answer Key

1. (None) 2. (c) 3. (b) 4. (c) 5. (c) 6. (a,d) 7. (a) 8. (c) 9. (d)
 10. (c) 11. (c) 12. (d) 13. (b) 14. (b) 15. (d) 16. (a) 17. (c) 18. (b) 19. (a)
 20. (d) 21. (d) 22. (d) 23. (a) 24. (a) 25. (c) 26. (b) 27. (c) 28. (d) 29. (b)
 30. (d) 31. (a) 32. (a) 33. (d) 34. (a) 35. (a) 36. (a) 37. (d) 38. (c) 39. (b)
 40. (b) 41. (c) 42. (b) 43. (a) 44. (d) 45. (a) 46. (c) 47. (d) 48. (c) 49. (c)
 50. (d) 51. (d) 52. (b) 53. (a) 54. (d) 55. (c) 56. (a) 57. (a) 58. (d) 59. (d)
 60. (b) 61. (b) 62. (d) 63. (c) 64. (a) 65. (b) 66. (b) 67. (a) 68. (b) 69. (a)
 70. (c) 71. (d) 72. (a) 73. (b) 74. (d) 75. (b) 76. (d) 77. (d) 78. (b) 79. (b)
 80. (c) 81. (a) 82. (b) 83. (b) 84. (b) 85. (c) 86. (b) 87. (c) 88. (b) 89. (c)
 90. (a) 91. (a) 92. (a) 93. (a) 94. (d) 95. (a) 96. (d) 97. (b) 98. (b) 99. (a)
 100. (b)
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