Date Planned : __ / __ / __	Daily Tutorial Sheet - 4	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	Level - 1	Exact Duration :_____

46. Which of the following hybrid orbitals has the highest value of electronegativity?

(A) sp^3 **(B)** sp^2 **(C)** sp **(D)** sp^3d

47. By hybridization, we mean hybridization of :

(A) orbitals **(B)** electrons

(C) both orbitals and electrons **(D)** None of these

48. Which of the following statements is incorrect?

(A) A sigma bond has no free rotation around its axis.

(B) Two p orbitals always overlap laterally.

(C) There can be more than one sigma bond between two atoms.

(D) All of these

49. CaC_2 molecule has

(A) one σ bond and one π bond between the two carbon atoms

(B) one σ bond and two π bonds between the two carbon atoms

(C) one σ bond and one and a half π bonds between the two carbon atoms

(D) one σ bond between the two carbon atoms

50. What would be the hybridization state of the two resulting carbon atoms after the C – C bond in C_2H_6 undergoes heterolytic fission?

(A) sp^2 both **(B)** sp^3 both **(C)** sp^2 and sp^3 **(D)** sp and sp^2

51. Which of the following molecules has a square pyramidal structure ?

(A) XeO_2F_2 **(B)** $XeOF_2$ **(C)** XeO_3F_2 **(D)** $XeOF_4$

52. In the solid state, N_2O_5 exists as $[NO_2]^+[NO_3]^-$. The hybridizations around the N atoms in NO_2^+ and NO_3^- are, respectively :

(A) sp and sp^2 **(B)** sp and sp^3

(C) sp^2 and sp^3 **(D)** sp and sp

53. Which of the following will have the molecular shape of a trigonal bipyramid?

(A) PF_3Cl_2 **(B)** IF_5 **(C)** BrF_5 **(D)** SbF_5^{2-}

54. Molecular shapes of SF_4, CF_4 and XeF_4 are:

(A) the same, with 2, 0 and 1 lone pair of electrons respectively

(B) the same, with 1, 1 and 1 lone pair of electrons respectively

(C) different with 0, 1 and 2 lone pair of electrons

(D) different with 1, 0 and 2 lone pair of electrons respectively

55. The strength of bonds by overlapping of atomic orbitals is in the order

(A) 2s–2s > 2s – 2p > 2p– 2p **(B)** 2s–2p < 2s – 2s < 2p–2p

(C) 2s–2s < 2s – 2p <2p – 2p **(D)** 2p –2p < 2s – 2s < 2s – 2p

56. Which of the following molecules or ions is not linear?

(A) $BeCl_2$ **(B)** I_3^- **(C)** CS_2 **(D)** ICl_2^+

57. In carbon-hydrogen-oxygen compounds :

(A) all O – to – H bonds are π bonds **(B)** all C – to – H bonds are σ bonds

(C) all C – to – H bonds are π bonds **(D)** all C – to – C bonds are π bonds

58. The shape of XeO_2F_2 molecule is:

(A) trigonal bipyramidal **(B)** square planar

(C) tetrahedral **(D)** see-saw

59. Which of the following ions has resonating structure ?

(A) SO_3^{2-} **(B)** PO_4^{3-} **(C)** SO_4^{2-} **(D)** All of these

60. Covalency of carbon in the CO molecule is three because

(A) an unexcited carbon atom has two unpaired electrons

(B) the carbon atom can be an acceptor of an electron pair

(C) the carbon atom has four valence electrons

(D) maximum covalency of carbon is three