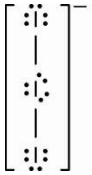
46.(B) CO_3^{2-}, NO_3^- and SO_3 all have triangular planar shape.

47.(A) I_3^- is - sp^3d hybridised

- linear shape



Total number of lone pair of electron = 9

48.(A) KCl exist as K^+ and Cl^-

49.(B) H_2^{2-} does not exist as Bond order is zero

Electronic configuration of H_2^{2-} : $\sigma_{1s}^2 \sigma^{*2}_{1s}$

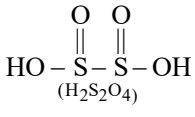
$$B.O = \frac{2-2}{2} = 0$$

50.(C) By MOT

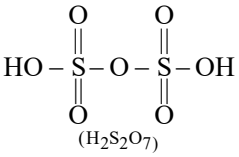
O_2

$\sigma 1s^2 \;\; \sigma^* 1s^2 \;\; \sigma 2s^2 \;\; \sigma^* 2s^2 \;\; \sigma 2pz^2 \;\; \pi 2px^2 = \pi 2py^2 \;\; \pi^* 2px^1 = \pi^* 2py^1$

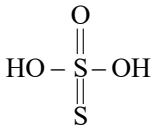
51.(B)



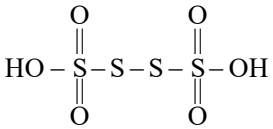
$(H_2S_2O_4)$



$(H_2S_2O_7)$



$(H_2S_2O_3)$



$(H_2S_4O_6)$

52.(A) For C_2, $Z_2 = 12$

$BO = 2.5$

$\therefore$ For C_2^-, $Z_2 = 13$

$BO_{C_2^-} = 2.5$ (filling in BMO)

$BO_{O_2^-} = 2.5$ (filling in ABMO)

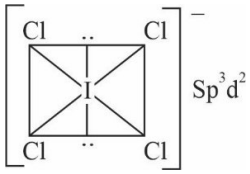
$BO_{NO^-} = 2.0$

$BO_{F_2^-} = 0.5$

53.(C) $(SiO_4)^{4-}$, orthosilicates

54.(A) Due to formation of $p\pi - d\pi$ back bonding. $N(SiH_3)$ is Sp^2 hybridized. Hence it is planar and less basic than $N(CH_3)_3$.

55.(A) CO is diamagnetic according to molecular orbital theory.

56.(A) 

$ICl_2^- \rightarrow sp^3d$; $BrF_2^- \rightarrow sp^3d$; $IF_6^- \rightarrow sp^3d^3$

57.(A) $C_2^{-2} \longrightarrow \sigma 1s^2, \sigma^* 1s^2, \sigma 2s^2, \sigma^* 2s^2, \left[\pi 2Px^2 = \pi 2Py^2\right] \sigma 2Pz^2$

$$\text{Bond order} = \frac{10-4}{2} = 3(\text{diamagnetic})$$

$$N_2^{-2} \rightarrow \sigma 1s^2, \sigma^* 1s^2, \sigma 2s^2, \sigma^* 2s^2, \left[\pi 2P_x^2 = \pi 2P_y^2\right] \sigma 2P_z^2 \left[\pi^* 2P_x^1 = \pi^* 2P_y^1\right]$$

$$B.O = \frac{10-6}{2} = 2(\text{Paramagnetic})$$

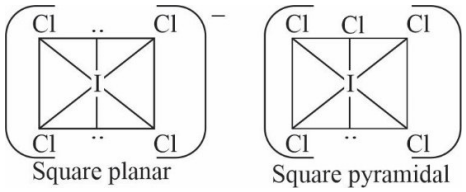
$$O_2^{-2} \rightarrow \sigma 1s^2, \sigma^* 1s^2, \sigma 2s^2, \sigma^* 2s^2, \sigma 2P_z^2 \left[\pi 2P_x^2 = \pi 2P_y^2\right] \left[\pi^* 2P_x^2 = \pi^* 2P_y^2\right]$$

$$B.O = \frac{10-8}{2} = 1(\text{Diamagnetic})$$

$$O_2 \rightarrow \sigma 1s^2, \sigma^* 1s^2, \sigma 2s^2, \sigma^* 2s^2, \sigma 2P_z^2 \left[\pi 2P_x^2 = \pi 2P_y^2\right] \left[\pi^* 2P_x^1 = \pi^* 2P_y^1\right]$$

$$B.O = \frac{10-6}{2} = 2(\text{Paramagnetic})$$

$$B.O \propto \frac{1}{BL}$$

58.(B) 

59.(A) Molecular electronic configuration according to MOT:

$Li_2^+ : \sigma_{1s}^2 \sigma_{1s}^{*2} \sigma_{2s}^1$; Bond order = 1/2

$Li_2^- : \sigma_{1s}^2 \sigma_{1s}^{*2} \sigma_{2s}^2 \sigma_{2s}^{*1}$; Bond order = 1/2

60.(A)

	Magnetic nature
$NO \rightarrow NO^+$ B.O $\Rightarrow$ $2.5 \rightarrow 3$	Paramagnetic $\rightarrow$ Diamagnetic
$N_2 \rightarrow N_2^+$ B.O. $\Rightarrow$ $3 \rightarrow 2.5$ $O_2 \rightarrow O_2^{2-}$ B.O. $\Rightarrow$ $2 \rightarrow 1$] B.O. $\downarrow$	
$O_2 \rightarrow O_2^+$ B.O. $\Rightarrow$ $2 \rightarrow 2.5$	Paramagnetic $\rightarrow$ Paramagnetic

So, $NO \rightarrow NO^+$ is correct answer