| Date Planned : __ / __ / __ | Daily Tutorial Sheet - 4 | Expected Duration : 90 Min |
|---|---|---|
| Actual Date of Attempt : __ / __ / __ | JEE Advanced (Archive) | Exact Duration :_____ |

**46.** Explain the difference in the nature of bonding in LiF and LiI. **(1996)**

**47.** Among the following species, identify the isostructural pairs. $NF_3$, $NO_3^-$, $BF_3$, $H_3O^+$, $N_3H$ **(1996)**

**(A)** $\left[NF_3, NO_3^-\right]$ and $\left[BF_3, H_3O^+\right]$ **(B)** $\left[NF_3, N_3H\right]$ and $\left[NO_3^-, BF_3\right]$

**(C)** $\left[NF_3, H_3O^+\right]$ and $\left[NO_3^-, BF_3\right]$ **(D)** $\left[NF_3, H_3O^+\right]$ and $\left[N_3H, BF_3\right]$

**48.** Which one of the following molecules is planar? **(1996)**

**(A)** $NF_3$ **(B)** $NCl_3$ **(C)** $PH_3$ **(D)** $BF_3$

**49.** The number and type of bonds between two carbon atoms in $C_2$ are: **(1996)**

**(A)** one sigma ($\sigma$) and one pi ($\pi$) bonds **(B)** two pi ($\pi$) bonds

**(C)** one sigma ($\sigma$) and one half pi ($\pi$) bonds **(D)** one sigma ($\sigma$) bond

**50.** When $N_2$ goes to $N_2^+$, the $N-N$ bond distance _____, and when $O_2$ goes to $O_2^+$ the $O-O$ bond distance_____. **(1996)**

**51.** Among $N_2O$, $SO_2$, $I_3^+$ and $I_3^-$, the linear species are_____ and _____. **(1997)**

**52.** Which one of the following compound has $sp^2$ – hybridization? **(1997)**

**(A)** $CO_2$ **(B)** $SO_2$ **(C)** $N_2O$ **(D)** CO

**53.** Among $KO_2$, $AlO_2^-$, $BaO_2$ and $NO_2^+$, unpaired electron is present in: **(1997)**

**(A)** $NO_2^+$ and $BaO_2$ **(B)** $KO_2$ and $AlO_2^-$

**(C)** only $KO_2$ **(D)** only $BaO_2$

**54.** The cyanide ion $CN^-$ and $N_2$ are isoelectronic, but in contrast to $CN^-$, $N_2$ is chemically inert because of:

**(A)** low bond energy **(1997)**

**(B)** absence of bond polarity

**(C)** unsymmetrical electron distribution

**(D)** presence of more number of electron in bonding orbitals

**55.** Which contains both polar and non-polar bonds? **(1997)**

**(A)** $NH_4Cl$ **(B)** HCN **(C)** $H_2O_2$ **(D)** $CH_4$

**56.** **Statement I:** LiCl is predominantly a covalent compound. **(1998)**

**Statement II:** Electonegativity difference between Li and Cl is too small.

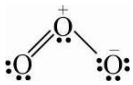
**(A)** Both Statement I and Statement II are correct; Statement II is the correct explanation of Statement I

**(B)** Both Statement I and Statement II are correct; Statement II is not the correct explanation of Statement I

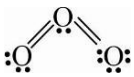
**(C)** Statement I is correct; Statement II is the incorrect

**(D)** Statement I is incorrect; Statement II is the correct

**57.** **Statement I:** The electronic structure of $O_3$ is : **(1998)**



**Statement II:** structure is not allowed because octet around O cannot be expanded.



**(A)** Both Statement I and Statement II are correct; Statement II is the correct explanation of Statement I

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**58.** Interpret the non-linear shape of $H_2S$ molecule and non-planar shape of $PCl_3$ using valence shell electron pair repulsion (VSEPR) theory. (Atomic number: H = I, P = 15, S = 16, Cl = 17) **(1998)**

**59.** Using the VSEPR theory, identify the type of hybridisation and draw the structure of $OF_2$. What are the oxidation states of O and F? **(1998)**

**60.** The geometry and the type of hybrid orbital present about the central atom in $BF_3$ is: **(1998)**

**(A)** linear, sp **(B)** trigonal planar, $sp^2$

**(C)** tetrahedral, $sp^3$ **(D)** pyramidal, $sp^3$