INORGANIC CHEMISTRY

DPP
DAILY PRACTICE PROBLEMS

DPP No. 24

Total Marks : 28

Max. Time : 30 min.

Topic : Chemical Bonding

Type of Questions		M.M., Min.
Single choice Objective ('–1' negative marking) Q.1 to Q.4	(3 marks, 3 min.)	[12, 12]
Multiple choice objective ('–1' negative marking) Q.5 to Q.6	(4 marks, 4 min.)	[8, 8]
Subjective Questions ('–1' negative marking) Q.7 to Q.8	(4 marks, 5 min.)	[8, 10]

1. Among the following compounds the one that is polar and has central atom with sp^3 hybridisation is

(A) H_2CO_3 (B) SiF_4 (C) BF_3 (D) $HClO_2$

2. Which of the following compounds are electron deficient ?

(A) B_2H_6 (B) BF_4^- (C) $BeCl_2(s)$ (D) Al_2Cl_6

3. Identify incorrect order of bond angles

(A) Cl_2O > F_2O and F_2O < H_2O

(B) AsI_3 > $AsBr_3$ > $AsCl_3$

(C) NO_2^+ > NO_2^-

(D) $H_b\hat{B}H_b$ > $H_t\hat{B}H_t$; where H_t is terminal Hydrogen of B_2H_6 and H_b is the bridging Hydrogen of B_2H_6

4. **Statement-1 :** LiCl is predominantly a covalent compound.

Statement-2 : Electronegativity difference between Li and Cl is too small.

(A) Statement-1 is True, Statement-2 is True; Statement-2 is a correct explanation for Statement-1.

(B) Statement-1 is True, Statement-2 is True; Statement-2 is NOT a correct explanation for Statement-1

(C) Statement-1 is True, Statement-2 is False

(D) Statement-1 is False, Statement-2 is True

5.* The correct set/s of order is/are

(A) LiCl < $BeCl_2$ < BCl_3 < CCl_4 (Covalent character)

(B) $Be(OH)_2$ < $Mg(OH)_2$ < $Ca(OH)_2$ < $Sr(OH)_2$ < $Ba(OH)_2$ (water solubility)

(C) XeF_4 < H_2O < NH_3 < BF_3 (bond angle)

(D) sp^3 < sp^2 < sp (% s–character)

6.* On the basis of MOT which is **correct** :

(A) The bond order for C_2 molecule is two and both bonds are π-bonds

(B) The LUMO in this molecule is σ2p anti bonding type of molecular orbital

(C) The HOMO in this molecule are π type of antibonding molecular orbital containing total 4 electrons

(D) None of the above is correct

7. ICl_3 is an orange colored solid that dimerizes in solid state as I_2Cl_6. Based on VSEPR theory, number of 90 degree Cl – I – Cl bond angles is ..... in the dimeric species.

Neglect any minor deviations from ideal bond angle.

8. Sum of antibonding π electrons (π^* electrons) in species O_2, O_2^- and O_2^{2-} are .

Get More Learning Materials Here : CLICK HERE www.studentbro.in

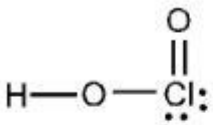
Answer Key

DPP No. # 24

1.	(D)	**2.**	(A)	**3.**	(D)	**4.**	(C)
5.*	(ABCD)	**6.***	(AB)	**7.**	8	**8.**	9

Hints & Solutions

DPP No. # 24

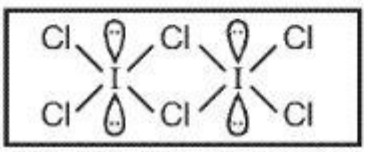
1.  ; Cl is sp^3 and molecule is polar Cl , sp^3 संकरित है और अणु ध्रुवीय है

6.* Electronic configuration of C_2 molecule will be

$$\sigma_{1s^2}\ ,\ \sigma^*_{1s^2}\ ,\ \sigma_{2s^2}\ ,\ \sigma^*_{2s^2}\ ,\ \pi_{2P_x^2}\ ,\ \pi_{2P_y^2}\ ,\ \sigma_{2P_z}\ ,$$

so, B.O. = 2 (both bonds are π bonds)
LUMO = σ_{2P}
HOMO = π_{2P}

7. **08**
I_2Cl_6 is a planar molecule.



8.

Species		**Number of π^* electrons**
O_2		2
O_2^-		3
O_2^{2-}		4
Total	=	**9 electrons**

Get More Learning Materials Here : CLICK HERE www.studentbro.in