INORGANIC CHEMISTRY

DPP
DAILY PRACTICE PROBLEMS

DPP No. 11

Total Marks : 31

Max. Time : 34 min.

Topic : Chemical Bonding

Type of Questions		M.M., Min.
Single choice Objective ('–1' negative marking) Q.1 to Q.5	(3 marks, 3 min.)	[15, 15]
Multiple choice objective ('–1' negative marking) Q.6	(4 marks, 4 min.)	[4, 4]
Subjective Questions ('–1' negative marking) Q.7	(4 marks, 5 min.)	[4, 5]
Match the Following (no negative marking) Q.8	(8 marks, 10 min.)	[8, 10]

1. Hybridization of orbitals of carbon in CH_4 is necessary to explain which of the following :

(A) Equality of strength of all C-H bonds (B) Methane is non-polar

(C) Tetravalency of Carbon (D) Carbon has complete octet

2. In which of the following, 'N' atom is sp^2 hybridised :

(A) NH_3 (B) NH_4^+ (C) NH_2^- (D) NOCl

3. The hybridization of carbon atoms in $C_2 - C_3$ single bond of $\overset{4}{H}\overset{}{C} \equiv \overset{3}{C} - \overset{2}{C}H = \overset{1}{C}H_2$ is :

(A) $sp^3 - sp^3$ (B) $sp^2 - sp$ (C) $sp - sp^2$ (D) $sp^3 - sp$

4. In C_3O_2, the hybridization state of Carbon is :

(A) sp (B) sp^2 (C) sp^3 (D) Both sp and sp^2

5. Shape of NH_3 is very similar to :

(A) BF_3 (B) CH_3^- (C) SO_3 (D) $CH_3^{\oplus}$

6.* Which starred carbon atom in the following molecules show sp^2 hybridisation :

(A) $CH_3\overset{*}{C}HO$ (B) $CH_3\overset{*}{C}OCl$ (C) $(\overset{*}{C}H_3)_3N \rightarrow O$ (D) $CH_3COCH_2\overset{*}{C}OOC_2H_5$

7. In how many of the following species, the central atoms have two lone pairs of electrons ?

XeF_4 XeF_5^- F_2SeO_2

XeF_3^+ $XeOF_4$ $ClOF_3$

ICl_4^- SCl_2 OSF_4

8. Match the following :

Column (I) **Species**	**Column (II)** **Characteristics of central atom**
(A) IBr_2^-	(p) sp^3d^2, 2 lone pairs
(B) XeF_5^-	(q) sp^3d, 1 lone pair
(C) ICl_4^-	(r) sp^3d^3, 1 lone pair
(D) IF_6^-	(s) sp^3d^3, 2 lone pair
	(t) sp^3d, 3 lone pairs

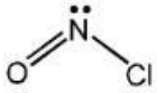
Answer Key

DPP No. # 11

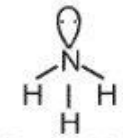
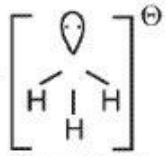
1.	(A)	**2.**	(D)	**3.**	(B)	**4.**	(A)	**5.**	(B)
6.*	(ABD)	**7.**	5	**8.**	(A – t) ; (B – s) ; (C – p) ; (D – r).				

Hints & Solutions

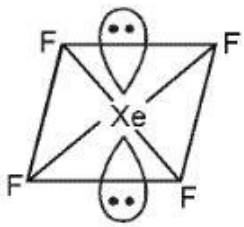
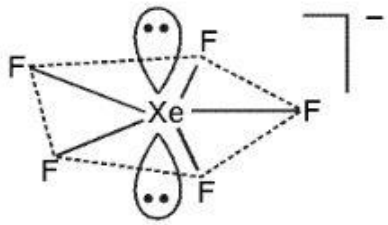
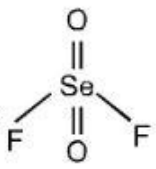
DPP No. # 11

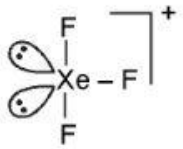
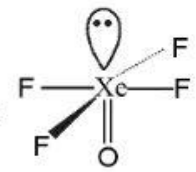
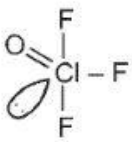
2.  'N' atom is sp^2.

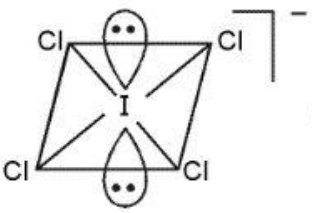
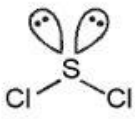
4. O = C = C = C = O

5. $NH_3 \equiv$  Pyramidal & $CH_3^{\ominus} \equiv$  Pyramidal

6.* Hybridisation of C in CH_3^- is sp^3.

7. XeF_4  XeF_5^-  F_2SeO_2 

XeF_3^+  $XeOF_4$  $ClOF_3$ 

ICl_4^-  SCl_2  OSF_4 

8. (A – t) ; (B – s) ; (C – p) ; (D – r).