

## DPP-06

1. A : tetracyanomethane B : carbondioxide C : benzene D : 1,3-buta-di-ene Ratio of  $\sigma$  and  $\pi$  bonds is in order :  
(A)  $A = B < C < D$  (B)  $A = B < D < C$  (C)  $A = B = C = D$  (D)  $C < D < A < B$
2. The geometry of ammonia molecule can be best described as  
(A) nitrogen at one vertex of a regular tetrahedron, the other three vertices being occupied by the three hydrogens  
(B) nitrogen at the centre of the tetrahedron, three of the vertices being occupied by three hydrogens  
(C) nitrogen at the centre of an equilateral triangle, three corners being occupied by three hydrogens  
(D) nitrogen at the junction of a T, three open ends being occupied by three hydrogens.
3. Find the molecule which is planar and polar.  
(A)  $B_3 N_3 H_6$  (B)  $F_2 C = C = C = C F_2$  (C)  $Br F_2 Cl$  (D)  $F_2 C = C = C F_2$
4. Find out the incorrect order of the dipole moment among the following pair of compound  
(A)  $NH_3 > NF_3$  (B) p-dichloro benzene > o-dichloro benzene  
(C)  $CH_3 Cl > CH_2 Cl_2$  (D)  $SiF_4 < SF_4$
5. **Statement-1** : Dipole moment of  $H_2O$  is more than that of  $OF_2$ .  
**Statement-2** : In  $H_2O$ , the resultant bond dipole of O – H bond and the resultant lone pair moment are in opposite direction.  
(A) Statement-1 is true, statement-2 is true and statement-2 is correct explanation for statement-1.  
(B) Statement-1 is true, statement-2 is true and statement-2 is NOT the correct explanation for statement-1.  
(C) Statement-1 is true, statement-2 is false.  
(D) Statement-1 is false, statement-2 is true.
6. **Statement-1** : Allene is a non polar molecule.  
**Statement-2** : Allene is non planar molecule.  
(A) Statement-1 is true, statement-2 is true and statement-2 is correct explanation for statement-1.  
(B) Statement-1 is true, statement-2 is true and statement-2 is NOT the correct explanation for statement-1.  
(C) Statement-1 is true, statement-2 is false.  
(D) Statement-1 is false, statement-2 is true.

**(Inorganic Chemistry) Chemical Bonding-1****More than may be correct**

7. Which of the following statements is correct in the context of the allene molecule,  $C_3H_4$  ?
- (A) The central carbon atom is  $sp$  hybridized  
(B) The terminal carbon atoms are  $sp^2$  hybridized  
(C) The planes containing the  $CH_2$  groups are mutually perpendicular to permit the formation of two separate  $\pi$ -bonds.  
(D)  $C_3H_4$  is a planar molecule
8. Structure of  $Na_2[B_4O_5(OH)_4] \cdot 8H_2O$  contains
- (A) Two triangular and two tetrahedral units of boron  
(B) Three triangular and one tetrahedral units of boron  
(C) Five B-O-B linkages  
(D) One peroxy linkage
- 9.
- | Column-I                               | Column-II     |
|--|---------------|
| (A) 2 lone pairs on central atom       | (P) $XeF_5^-$ |
| (B) Zero dipole moment                 | (Q) $NF_3$    |
| (C) Planar                             | (R) $ICl_3$   |
| (D) All adjacent bond angles are equal | (S) $XeF_4$   |
10. Prove that dipole moment of  $C_6H_5Cl$  and  $m - C_6H_4Cl_2$  are same.

## ANSWER KEY

## DPP-6

1. A    2. B    3. C    4. B    5. C    6. B    7. ABC  
8. AC    9. (A) P, R, S; (B) P, S; (C) P, R, S; (D) P, Q, R, S

A