Arjuna 2.0 JEE 2026

T.F.T. - 14 | **Chemical Bonding** | **By ATS Sir**

1. In which of the following cases, the strength of back bonding is maximum :-
(A) PF_3 (B) BF_3
(C) $(H_3Si)_3N$ (D) $(SiH_3)_2O$

2. Choose the incorrect statement from the following-
(A) Bond angles are not affected in BF_3 due to back bonding
(B) Bond angles are affected in PF_3 due to back bonding
(C) Bond angles are not affected in $B(OMe)_3$ due to back bonding
(D) None of these

3. In which of the following cases, the direction of back bonding is from central atom to surrounding atom.
(A) PCl_3 (B) PF_3
(C) OCl_2 (D) $:CCl_2$

4. Statement 1 : The B-F bond length in BF_3 is not identical with that in BF_4^-.
Statement 2 : Back bonding is involved in BF_4^- but not in BF_3.
(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.

5. Which of the following molecule(s) is/are having $p\pi$-$p\pi$ back bonding
(A) BF_3 (B) BeF_2
(C) $B_3N_3H_6$ (D) BCl_3

6. Which of the following statement is/are correct for CCl_3^- and $:CCl_2$
(A) Back bonding in both cases from Cl to C-atom
(B) Back bonding in both cases from C to Cl-atom
(C) Back bonding in CCl_3^- from C to Cl but reverse in $:CCl_2$
(D) Direction of back bonding is just opposite in two cases

7. Which of the following statements is/are not correct?
(A) Presence of 1.p. on the central atom distorts the shape of the molecule always.
(B) Back bonding causes the increase in bond angle in PF_3 as well as BF_3.
(C) Back bonding causes the decrease in bond length always.
(D) Back bonding causes the change of hybridisation of central atom always.

8. Choose the correct statements.
(A) CH_3NCS molecule is linear
(B) SiH_3NCS molecule is linear
(C) GeH_3NCS molecule is bent
(D) $P(SiH_3)$ molecule is pyramidal

9. Which of the following statement(s) is/are incorrect about $O(SiH_3)_2$ molecule
(A Shape of the molecule is T.B.P.
(B) Molecule is non-polar
(C) Back bonding takes place in molecule from Si to O atom
(D) Back bonding takes place in molecule from O to Si atom

10. In which of the following cases, the strength of back bonding is maximum :-
(A) $:CCl_2$ (B) $:CF_2$
(C) PF_3 (D) $(CH_3)_2O$

11. In which of the following cases the increase in bond angle is not due to back bonding.
(A) COC angle in CH_3OCH_3
(B) SiNSi angle in $N(SiH_3)_3$
(C) FBF angle in BF_3
(D) FPF angle in PF_3

12. Which of the following molecule has large extent of back bonding :-
(A) $O(SiH_3)_2$
(B) OCl_2
(C) Both has same extent of back bonding
(D) None of these

13. The geometry with respect to the central atom of the following molecules are :

$N(SiH_3)_3$: Me_3N ; $(SiH_3)_3P$

(A) planar, pyramidal, planar

(B) planar, pyramidal, pyramidal

(C) pyramidal, pyramidal, pyramidal

(D) pyramidal, planar, pyramidal

14. Which of following the molecule (s) has/have back bonding -

(A) $N(SiH_3)_3$ (B) BF_3

(C) OCl_2 (D) BF_4^-

15. Find the molecule(s) in which bond angle is changed due to back bonding w.r.t. central atom -

(A) NH_3 (B) BF_3

(C) $(SiH_3)_2O$ (D) OCl_2

Answer Key

1. (B)
2. (C)
3. (C)
4. (C)
5. (A, B, C, D)
6. (C, D)
7. (A, B, D)
8. (B, C, D)
9. (A, B, C)
10. (B)
11. (A)
12. (A)
13. (B)
14. (A, B, C)
15. (C, D)

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