

Arjuna JEE 2.0 2026

Chemistry

Chemical Bonding and Molecular Structure

DPP: 7

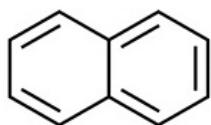
Total Duration-35 Mins.

Q1 Carbon atoms in $C_2(CN)_4$ are:

- (A) sp -hybridized
 (B) sp^2 -hybridized
 (C) sp and sp^2 -hybridized
 (D) sp , sp^2 and sp^3 -hybridized

Q2 Among the following which species has same number of σ and π -bond?

- (A) C_7H_8
 (B) $C_2(CN)_4$
 (C) C_2H_4
 (D) $HC \equiv CH$

Q3 Number of π -bonds in naphthalene is

- (A) 6
 (B) 3
 (C) 4
 (D) 5

Q4 Which one of the following is the correct set with respect to molecule, hybridization and shape?

- (A) $BeCl_2$, sp^2 , linear
 (B) $BeCl_2$, sp^2 , triangular planar
 (C) BCl_3 , sp^2 , triangular planar
 (D) BCl_3 , sp^3 , tetrahedral

Q5 The hybridization of central iodine atom in IF_5 , I_3^- and I_3^+ are respectively

- (A) sp^3d^2 , sp^3d , sp^3
 (B) sp^3d , sp^3d , sp^3
 (C) sp^3d^2 , sp^3d^2 , sp^3
 (D) sp^3d , sp^3d^2 , sp^3

Q6 Position of fluorine in PCl_3F_2

- (A) Both at equatorial position

(B) Both at axial position

(C) 1 at equatorial and 1 at axial position

(D) Cannot be predicted

Q7 In sp^3d hybridization with 2 lone pairs, the lone pairs are placed at position and shape of the molecule is

- (A) Equatorial, trigonal bipyramidal
 (B) Axial, trigonal bipyramidal
 (C) Equatorial, Bent-T
 (D) Axial, Trigonal planar

Q8 %s character in equatorial orbital in TBP is

- (A) 50%
 (B) 25%
 (C) 33.33%
 (D) 0%

Q9 Bond angle in PH_3 is

- (A) Close to 109.28°
 (B) Same as NH_3
 (C) Close to 90°
 (D) Close to 120°

Q10 Hybridisation of PBr_5 in the solid state is

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

Q11 Each carbon in carbon suboxide is

- (A) sp^2 -hybridized
 (B) sp^3 -hybridized
 (C) sp -hybridized
 (D) sp^3 -hybridized but linked with one coordinate bond

Q12 For BF_3 molecule which of the following is true?

- (A) B-atom is sp^2 hybridised
 (B)



There is a $p\pi - p\pi$ back bonding in this molecule

- (C) Observed B-F bond length is found to be less than the expected bond length
- (D) All of these

Q13 Respective order of strength of back-bonding in boron trihalides is

- (A) $\text{BF}_3 < \text{BCl}_3 < \text{BBr}_3$
- (B) $\text{BF}_3 > \text{BCl}_3 > \text{BBr}_3$
- (C) $\text{BBr}_3 > \text{BCl}_3 > \text{BF}_3$
- (D) $\text{BF}_3 < \text{BCl}_3 < \text{BBr}_3$



Answer Key

Q1 (C)
Q2 (B)
Q3 (D)
Q4 (C)
Q5 (A)
Q6 (B)
Q7 (C)

Q8 (C)
Q9 (C)
Q10 (A)
Q11 (C)
Q12 (D)
Q13 (B)



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