

NEET CHEMICAL BONDING AND MOLECULAR STRUCTURE — HYBRIDISATION — PYQS

Max. Marks: 52
Questions: 13

Section A (MCQ) — 13 questions

Q.1 Match List-I with List-II

List - I		List - II	
A.	XeO ₃	I.	sp ³ d; linear
B.	XeF ₂	II.	sp ³ ; pyramidal
C.	XeOF ₄	III.	sp ³ d ³ ; distorted octahedral
D.	XeF ₆	IV.	sp ³ d ² ; square pyramidal

Choose the correct answer from the options given below : [NEET (UG) 2025]

- (1) A-IV, B-II, C-III, D-I (2) A-IV, B-II, C-I, D-III
 (3) A-II, B-I, C-IV, D-III (4) A-II, B-I, C-III, D-IV

 Scan or tap for the
full solution

Q.2 BF₃ is planar and electron deficient compound. Hybridization and number of electrons around the central atom, respectively are : [NEET (UG) 2021]

- (1) sp² and 8 (2) sp³ and 4 (3) sp³ and 6 (4) sp² and 6

 Scan or tap for the
full solution

Q.3 The hybridizations of atomic orbitals of nitrogen in NO₂⁺, NO₃⁻ and NH₄⁺ respectively are

[NEET 2016 (Phase 2)]

- (1) sp, sp³ and sp² (2) sp², sp³ and sp
 (3) sp, sp² and sp³ (4) sp², sp and sp³

 Scan or tap for the
full solution

Q.4 The correct geometry and hybridization for XeF₄ are

[NEET 2016 (Phase 2)]

- (1) octahedral, sp³d²
 (2) trigonal bipyramidal, sp³d
 (3) planar triangle, sp³d³
 (4) square planar, sp³d²

 Scan or tap for the
full solution

Q.5 In which of the following pair both the species have sp³ hybridization ? [NEET 2013 (Karnataka)]

- (1) SiF₄, BeH₂ (2) NF₃, H₂O
 (3) NF₃, BF₃ (4) H₂S, BF₃

 Scan or tap for the
full solution

Q.6 Which one of the following pairs is isostructural (i.e., having the same shape and hybridization) ?

[AIPMT 2012 (Prelims)]

- (1) [BCl₃ and BrCl₃] (2) [NH₃ and NO₃⁻]
 (3) [NF₃ and BF₃] (4) [BF₄⁻ and NH₄⁺]

 Scan or tap for the
full solution

Q.7 Which of the two ions from the list given below that have the geometry that is explained by the same hybridization of orbitals, NO₂⁻, NO₃⁻, NH₂⁻, NH₄⁺, SCN⁻? [AIPMT 2011 (Prelims)]

- (1) NO₂⁻ and NO₃⁻ (2) NH₄⁺ and NO₃⁻
 (3) SCN⁻ and NH₂⁻ (4) NO₂⁻ and NH₂⁻

 Scan or tap for the
full solution

Q.8 Considering the state of hybridization of carbon atoms, find out the molecule among the following which is linear ? [AIPMT 2011 (Prelims)]

- (1) CH₃-CH=CH-CH₃
 (2) CH₃-C≡C-CH₃
 (3) CH₂=CH-CH₂-C≡CH
 (4) CH₃-CH₂-CH₂-CH₃

 Scan or tap for the
full solution

Q.9 In which of the following molecules the central atom does not have sp³ hybridization? [AIPMT 2010 (Mains)]

- (1) CH₄ (2) SF₄ (3) BF₄⁻ (4) NH₄⁺

 Scan or tap for the
full solution

Q.10 Some of the properties of the two species, NO₃⁻ and H₃O⁺ are described below. Which one of them is correct? [AIPMT 2010 (Mains)]

- (1) Dissimilar in hybridization for the central atom with different structures.
- (2) Isostructural with same hybridization for the central atom.
- (3) Isostructural with different hybridization for the central atom.
- (4) Similar in hybridization for the central atom with different structures.

Scan or tap for the full solution



Q.11 In which of the following pairs of molecules/ ions, the central atoms have sp^2 hybridisation ?

[AIPMT 2010 (Prelims)]

- (1) NO_2^- and NH_3 (2) BF_3 and NO_2^-
 (3) NH_2^- and H_2O (4) BF_3 and NH_2^-

Scan or tap for the full solution



Q.12 In which one of the following species the central atom has the type of hybridization which is not the same as that present in the other three ?

[AIPMT 2010 (Prelims)]

- (1) SF_4 (2) I_3^- (3) SbCl_5^{2-} (4) PCl_5

Scan or tap for the full solution



Q.13 In which of the following molecules/ions BF_3 , NO_2^- , NH_2^- and H_2O , the central atom is sp^2 hybridised?

[AIPMT 2009]

- (1) NH_2^- and H_2O (2) NO_2^- and H_2O
 (3) BF_3 and NO_2^- (4) NO_2^- and NH_2^-

Scan or tap for the full solution



ANSWER KEY

Ques.	1	2	3	4	5	6	7	8	9	10	11
Ans.	3	4	3	1	2	4	1	2	2	1	2
Ques.	12	13									
Ans.	3	3									