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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^3d; linear
B.	XeF_2	II.	sp^3; pyramidal
C.	$XeOF_4$	III.	sp^3d^3; distorted octahedral
D.	XeF_6	IV.	sp^3d^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 BF_3 is planar and electron deficient compound. Hybridization and number of electrons around the central atom, respectively are : [NEET (UG) 2021]

(1) sp^2 and 8 (2) sp^3 and 4 (3) sp^3 and 6 (4) sp^2 and 6

Scan or tap for the full solution

Q.3 The hybridizations of atomic orbitals of nitrogen in NO_2^+, NO_3^- and NH_4^+ respectively are [NEET 2016 (Phase 2)]

(1) sp, sp^3 and sp^2 (2) sp^2, sp^3 and sp
(3) sp, sp^2 and sp^3 (4) sp^2, sp and sp^3

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Q.4 The correct geometry and hybridization for XeF_4 are [NEET 2016 (Phase 2)]

(1) octahedral, sp^3d^2
(2) trigonal bipyramidal, sp^3d
(3) planar triangle, sp^3d^3
(4) square planar, sp^3d^2

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Q.5 In which of the following pair both the species have sp^3 hybridization ? [NEET 2013 (Karnataka)]

(1) SiF_4, BeH_2 (2) NF_3, H_2O
(3) NF_3, BF_3 (4) H_2S, BF_3

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Q.6 Which one of the following pairs is isostructural (i.e., having the same shape and hybridization) ? [AIPMT 2012 (Prelims)]

(1) [BCl_3 and $BrCl_3$] (2) [NH_3 and NO_3^-]
(3) [NF_3 and BF_3] (4) [BF_4^- and NH_4^+]

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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, NO_2^-, NO_3^-, NH_2^-, NH_4^+, SCN^-? [AIPMT 2011 (Prelims)]

(1) NO_2^- and NO_3^- (2) NH_4^+ and NO_3^-
(3) SCN^- and NH_2^- (4) NO_2^- and NH_2^-

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

(1) $CH_3–CH=CH–CH_3$
(2) $CH_3–C\equiv C–CH_3$
(3) $CH_2=CH–CH_2–C\equiv CH$
(4) $CH_3–CH_2–CH_2–CH_3$

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Q.9 In which of the following molecules the central atom does not have sp^3 hybridization? [AIPMT 2010 (Mains)]

(1) CH_4 (2) SF_4 (3) BF_4^- (4) NH_4^+

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Q.10 Some of the properties of the two species, NO_3^- and H_3O^+ 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.

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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^-

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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

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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**									