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TARGET : NEET (UG) 2024

Course : SARANSH (Youtube Live CRASH COURSE)

I-CHEMISTRY

DPP

DAILY PRACTICE PROBLEMS

DPP NO. 2

Organic Chemistry : CHEMICAL BONDING

DPP No. : 2

1. Match the compound given in column I with the hybridization and shape given in column II and mark the correct option.

	Column-I		Column-II
(a)	XeF_6	(i)	distorted octahedral
(b)	XeO_3	(ii)	square planar
(c)	$XeOF_4$	(iii)	pyramidal
(d)	XeF_4	(iv)	square pyramidal

Code :

	(a)	(b)	(c)	(d)		(a)	(b)	(c)	(d)
(1)	(iv)	(i)	(ii)	(iii)	(2)	(i)	(iii)	(iv)	(ii)
(3)	(i)	(ii)	(iv)	(iii)	(4)	(iv)	(iii)	(i)	(ii)

2. Which one of the following compounds shows the presence of intramolecular hydrogen bond ?

(1) Concentrated acetic acid (2) H_2O_2

(3) HCN (4) Cellulose

3. The hybridizations of atomic orbitals of nitrogen in NO_2^+, NO_3^- and NH_4^+ respectively are

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

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

4. Which of the following pairs of ions is isoelectronic and isostructural ?

(1) ClO_3^-, ICl_2^- (2) CO_3^{2-}, NO_3^- (3) ClO_3^-, CO_3^{2-} (4) SO_3^{2-}, CO_3^{2-}

5. The correct geometry and hybridization for XeF_4 are -

(1) Square planar, sp^3d^2 (2) Octahedral, sp^3d^2

(3) Trigonal bipyramidal, sp^3d (4) Planar triangle, sp^3d^3

6. Among the following, which one is a wrong statement?

(1) I_3^+ has bent geometry. (2) PH_5 and $BiCl_5$ do not exist.

(3) $p\pi$-$d\pi$ bonds are present in SO_2 (4) SeF_4 and CH_4 have same shape.

7. Which of the following species is not paramagnetic?

(1) CO (2) O_2 (3) B_2 (4) NO

8. In the structure of ClF_3, the number of lone pairs of electrons on cetral atom 'Cl' is :

(1) one (2) Three (3) four (4) two

9. Consider the following species :

CN^+, CN^-, NO and CN

Which one of these will have the highest bond order?

(1) NO (2) CN (3) CN^+ (4) CN^-

10. Which of the following diatomic molecular species has only π bonds according to Molecular orbital The

(1) Be_2 (2) O_2 (3) N_2 (4) C_2

11. Match the Xenon compounds Column-I with its structure in Column-II and assign the correct code :

	Column-I		**Column-II**
(a)	XeF_4	(i)	pyramidal
(b)	XeF_6	(ii)	Square planar
(c)	$XeOF_4$	(iii)	distorted octahedral
(d)	XeO_3	(iv)	square pyramidal

	(a)	**(b)**	**(c)**	**(d)**		**(a)**	**(b)**	**(c)**	**(d)**
(1)	(iii)	(iv)	(i)	(ii)	(2)	(i)	(ii)	(iii)	(iv)
(3)	(ii)	(iii)	(iv)	(i)	(4)	(ii)	(iii)	(i)	(iv)

12. Which of the following is paramagnetic ?

(1) N_2 (2) H_2 (3) Li_2 (4) O_2

13. Which of the following is the correct order of dipole moment ?

(1) $NH_3 < BF_3 < NF_3 < H_2O$ (2) $BF_3 < NF_3 < NH_3 < H_2O$

(3) $BF_3 < NH_3 < NF_3 < H_2O$ (4) $H_2O < NF_3 < NH_3 < BF_3$

14. The number of hydrogen bonded water molecule associated with $CuSO_4.5H_2O$ is –

(1) 3 (2) 1 (3) 2 (4) 5

15. Which of the following set of molecules will have zero dipole moment ?

(1) Boron trifluoride, hydrogen fluoride, carbondioxide, 1-3-dichlorobenzene

(2) Nitrogen trifluoride, beryllium difluoride, water, 1-3-dichlorobenzene

(3) Boron trifluoride, beryllium difluoride, carbon dioxide, 1-4-dichlorobenzene

(4) Ammonia, beryllium difluoride, water, 1,4-dichlorobenzene

16. Identify a molecule which does not exist.

(1) Li_2 (2) C_2 (3) O_2 (4) He_2

17. Among the compounds shown below which one revealed a linear structure ?

(1) NO_2 (2) HOCl (3) O_3 (4) N_2O

18. Match the compounds of Xe in column I with the molecular structure in column II.

	Column-I		**Column-II**
(a)	XeF_2	(i)	Square planar
(b)	XeF_4	(ii)	Linear
(c)	XeO_3	(iii)	Square pyramidal
(d)	$XeOF_4$	(iv)	Pyramidal

(1) (a → ii); (b → i); (c → iii); (d → iv) (2) (a → ii); (b → iv); (c → iii); (d → i)

(3) (a → ii); (b → iii); (c → i); (d → iv) (4) (a → ii); (b → i); (c → iv); (d → iii)

19. Match the coordination number and type of hybridisation with distribution of hybrid orbitals in space based on Valence bond theory.

	Coordination number of and type of hybridisation		**Distribution of hybrid orbitals in space**
(a)	4, sp^2	(i)	Trigonal bipyramidal
(b)	4, dsp^2	(ii)	Octahedral
(c)	5, sp^3d	(iii)	Tetrahedral
(d)	6, d^2sp^3	(iv)	square planar

Select the correct option :

(1) (a) - (ii) ; (b) - (iii) ; (c) - (iv) ; (d) - (i) (2) (a) - (iii) ; (b) - (iv) ; (c) - (i) ; (d) - (ii)

(3) (a) - (iv) ; (b) - (i) ; (c) - (ii) ; (d) - (iii) (4) (a) - (iii) ; (b) - (i) ; (c) - (iv) ; (d) - (ii)

20. Identify the wrongly matched pair.

	Molecule	**Shape or geometry of molecule**
(1)	PCl_5	Trigonal planar
(2)	SF_6	Octahedral
(3)	$BeCl_2$	Linear
(4)	NH_3	Trigonal pyramidal

Answer Key

1.	2	**2.**	4	**3.**	4	**4.**	2	**5.**	2	**6.**	4	**7.**	1
8.	4	**9.**	4	**10.**	4	**11.**	3	**12.**	4	**13.**	2	**14.**	2
15.	3	**16.**	4	**17.**	4	**18.**	4	**19.**	2	**20.**	1		