NEET'25

CHEMISTRY

CHEMICAL BONDING AND MOLECULAR STRUCTURE

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PART 3

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$AlCl_3$ is covalent while AlF_3 is ionic. This fact can be justified on the basis of

(1) Valence bond theory (2) Crystal structure

(3) Lattice energy (4) Fajan rules

Highest melting point would be of

(1) $AlCl_3$

(2) LiCl

(3) NaCl

(4) $BeCl_2$

As compared to covalent compounds electrovalent compounds generally possess

(1) High m.p. and high b.p.

(2) Low m.p. and low b.p.

(3) Low m.p. and high b.p.

(4) high m.p. and low b.p.

The most covalent halide is:-

(1) AlF_3

(2) $AlCl_3$

(3) $AlBr_3$

(4) AlI_3

Which of the compound is least soluble in water

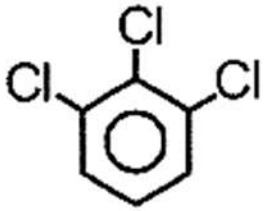
(1) AgF

(2) AgCl

(3) AgBr

(4) AgI

Which of the following would have maximum dipole moment?

(1) 

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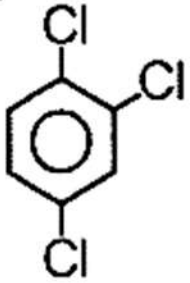
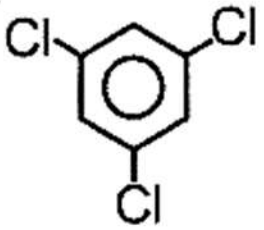
(3) 

(4) 

BeF_2 has zero dipole moment where as H_2O has a dipole moment because :-

(1) Water is linear

(2) H_2O is bent

(3) F is more electronegative than O

(4) Hydrogen bonding is present in H_2O

The dipole moment of NH_3 is:-

(1) Less than dipole moment of NCl_3

(2) Higher than dipole moment of NCl_3

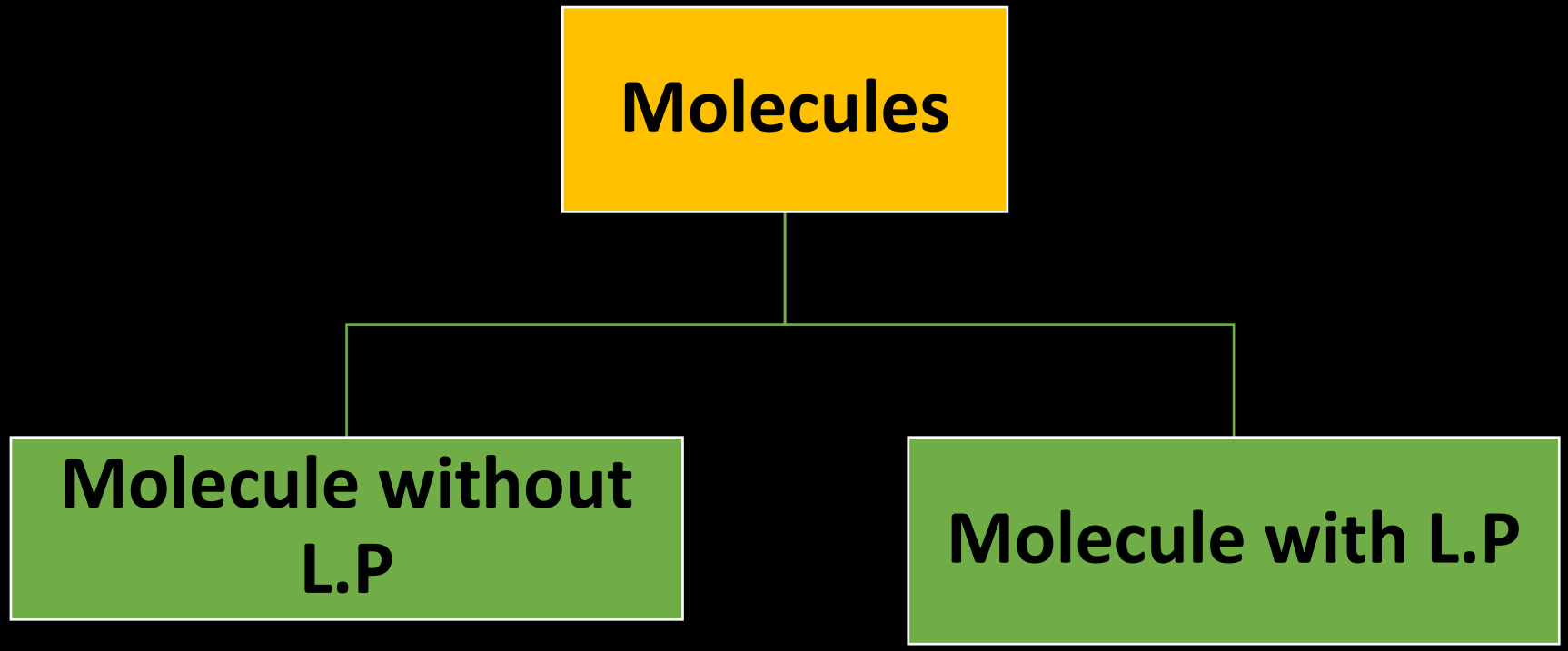
(3) Equal to the dipole moment of NCl_3

(4) None of these

Valence shell electron pair repulsion theory (VSEPR)

Sidgwick & Powell

Nyholm &Gillespie-


Molecules
Molecule without L.P
Molecule with L.P

Molecules without lone pair

Molecule type	Geometry	Bond angle
AB_2		
AB_3		

Molecule type	Geometry	Bond angle
AB_4		
AB_5		

Molecule type	Geometry	Bond angle
AB_6		
AB_7		

Molecules with lone pair

Molecule type		Geometry
AB_2L_1		
AB_2L_2		

Molecule type		Geometry
AB_2L_3		
AB_3L_1		

Molecule type		Geometry
AB_3L_2		
AB_4L_1		

Molecule type		Geometry
AB_6L_1		
AB_5L_1		

Molecule type		Geometry
AB_4L_2		

Incorrect about PCl_5 molecules is :-

(1) Three P–Cl bond lie in equatorial plane

(2) Two P–Cl bond lie in axial plane

(3) Axial bond pairs suffer more repulsive interaction from the equatorial bond pair

(4) Equatorial bonds are longer than the axial bonds

Number of 120° bond angles present in BF_3 is

(1) 4

(2) 5

(3) 2

(4) 3

The shape of ClF_3 molecule is

(1) See-saw

(2) Bent T-shape

(3) Bent (V-shaped)

(4) Trigonal planar

Shape of XeF_4 is

(1) Spherical

(2) Trigonal bipyramidal

(3) Square planar

(4) Tetrahedral

Bond angle in water molecules is 104.5° instead of 109°28′ mainly because of

(1) Lone pair-bond pair repulsion

(2) Bond pair-lone pair repulsion

(3) Lone pair-lone pair repulsion

(4) Bond pair-bond pair repulsion

In a regular octahedral molecule of SF_6 the number of F–S–F bonds at 180° is

(1) Four

(2) Three

(3) Two

(4) Six

Which of the following has least bond angle?

(1) CH_4

(2) BF_3

(3) H_2O

(4) NH_3

Shape of a molecule having 4 bond pairs and two lone pairs of electrons, will be :-

(1) Square planar
(2) Tetra hedral
(3) Linear
(4) Octa hedral

Which of the following having a square planar structure is

(1) NH_4^+

(2) BF_4^-

(3) XeF_4

(4) CCl_4

Select the correct matching :

List I	List II
A : XeF_4	1. Pyramidal
B : XeF_6	2. T-shape
C : XeO_3	3. Distorted octahedral
D : $XeOF_2$	4. Square planar

	A	B	C	D
(1)	4	3	1	2
(2)	1	2	3	4
(3)	2	1	3	4
(4)	4	1	3	2