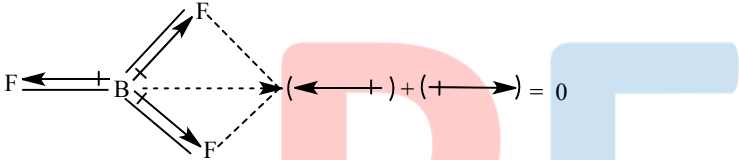


Topic :- Chemical Bonding and Molecular Structure

- 1 (c)
In O^{2-} effective nuclear charge is minimum due to more number of electrons and thus the size of O^{2-} is maximum.
- 2 (b)
The zero dipole moment of BF_3 molecule is due to its symmetrical (triangular planar) structure.

- 4 (b)
Bond dissociation energy order:

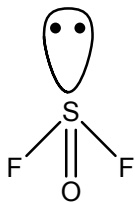
Cl_2	>	Br_2	>	F_2	>	I_2
242.6		192.8		158.8		151.1 in $kJ\ mol^{-1}$
- 5 (b)
 CH_3OH shows H—bonding in liquid state.
- 6 (b)
They have high electron density.
- 7 (c)
A coordinate bond is a dative covalent bond in which two atoms form bond and one of them provides both electrons.

$$X: + Y \rightarrow X:Y \text{ or } X \rightarrow Y$$
- 8 (b)
C – C bond length in sp^2 hybrid molecule is = 1.39\AA
- 9 (d)
More is electronegativity differences, more is ionic character.
- 10 (a)
Cation are always smaller than their parent atoms:
 $Al^{3+} < Al^{2+} < Al^+ < Al.$
- 11 (a)
We know that the C – C bond length = 1.54\AA , C = C bond length = 1.34\AA and C \equiv C bond length = 1.20\AA . Since propyne has triple bond; therefore, it has minimum bond length.

12 (c)
Ionic compounds conduct current in molten state.

13 (d)
Metals are good conductor of electricity because they contain free electrons.

14 (d)
OSF₂ has pyramidal shape



15 (d)
Non-polar species exert van der Waals' forces among themselves.

16 (b)
It has 3σ-and 1π-bond.

17 (c)
Cl⁻ has 1s², 2s²2p⁶, 3s²3p⁶ configuration.

18 (c)
Per cent ionic character is given by % of ionic character.

$$= 16(X_A - X_B) + 3.5(X_A - X_B)^2$$

From the above relation, it is clear that as soon as $(X_A - X_B)$ increases, % ionic character will also increase.

Therefore, curve C shows a correct path.

19 (d)
 $7\text{Cl} = 1s^2, 2s^2, 2p^6, 3s^2, 3p_x^2, 3p_y^2, 3p_z^1$
 $\text{Cl} = 1s^2, 2s^2, 2p^6, 3s^1, 3p_x^1, 3p_y^1, 3p_z^1, 3d^1, 3d^1, 3d^1$
(3rd excited state)

Chlorine atom, in its third excited state, reacts with fluorine to form ClF₇. Its shape is pentagonal bipyramidal.

20 (c)
Anion (O⁻) repels the test electron because of same charge.

ANSWER-KEY										
Q.	1	2	3	4	5	6	7	8	9	10
A.	C	B	C	B	B	B	C	B	D	A
Q.	11	12	13	14	15	16	17	18	19	20
A.	A	C	D	D	D	B	C	C	D	C

PE