DPP No: 09

SYLLABUS : Periodic Table & Chemical Bonding

1. Which of the following molecule/ion has higher numbr of e^- in A.B.M.O. ?

(A) O_2^+ (B) O_2^{2-}

(C) O_2^{2+} (D) All have equal number of unpaired e^-

2. Which of the following species is paramagnetic ?

(A) NO^- (B) O_2^{2-} (C) CN^- (D) CO

3. Which of the following ions is diamagnetic ?

(A) N_2^+ (B) O_2^- (C) Be_2^+ (D) NO^+

4. The following molecules / species have been arranged in the order of their increasing bond orders, Identify the correct order.

(I) O_2 ; (II) O_2^- ; (III) O_2^{2-} ; (IV) O_2^+

(A) I I I < I I < I < IV (B) IV < I I I < I I < I (C) I I I < I I < IV < I (D) I I < I I I < I < IV

5. Which one is paramagnetic from the following

(A) O_2^- (B) NO (C) Both (A) and (B) (D) CN^-

6. Which of the following orders is correct in respect of bond dissociation energy ?

(A) $N_2^+ > N_2^-$ (B) $O_2^+ > O_3$ (C) $NO^+ > NO$ (D) All of these

7. S_1 : The HOMO in F_2^- is $p^*2p_x = p^*2p_y$ molecular orbitals.

S_2 : Bond order of O_2^- is more then O_2^+ .

S_3 : NO^+ is more stable than N_2^+

S_4 : C_2 is more stable than C_2^+

State, in order, whether S_1, S_2, S_3, S_4 are true or false

(A) FFFT (B) FTTT (C) FTFT (D) FFTT

8. What is the value of 1D in SI units?

(A) 3.336×10^{-30} (B) 33.36×10^{-30} (C) 333.6×10^{-30} (D) None of these

9. The geometry of H_2S and its dipole moment are :

(A) angular and non zero (B) angular and zero

(C) linear and non zero (D) linear and zero

10. Arrange the following types of interactions in order of increasing stability (covalent, van der Waals' force, hydrogen bonding) :

(A) Hydrogen bonding < covalent < van der Waals' force

(B) Covalent < hydrogen bonding < van der Waals' force

(C) Hydrogen < van der Waals' force < covalent bonding

(D) van der Waals' force < hydrogen bonding < covalent

11. Which of the following factor is responsible for van der Waals forces ?

(A) Instantaneous dipole-induced dipole interaction.

(B) Dipole-induced dipole interaction and ion-induced dipole interaction.

(C) Dipole-dipole interaction and ion-induced dipole interaction.

(D) All of these.

12. Which of the following bonds/forces is weakest ?

(A) Covalent bond (B) Ionic bond (C) Hydrogen bond (D) London force

13. In which of the following compound, intra–molecular H–bonding is not observed :

(A) O – hydroxy benzyaldehyde (B) O – nitrophenol

(C) Chloral hydrate (D) Boric acid

14. Amongst NH_3, PH_3, AsH_3 and SbH_3 the one with highest boiling point is :

(A) NH_3 because of lower molecular weight

(B) SbH_3 because of higher molecular weight

(C) PH_3 because of H-bonding

(D) AsH_3 because of lower molecular weight

15. The correct order of boiling point is :

(A) $H_2O < H_2S < H_2Se < H_2Te$ (B) $H_2O > H_2Se > H_2Te > H_2S$

(C) $H_2O > H_2S > H_2Se > H_2Te$ (D) $H_2O > H_2Te > H_2Se > H_2S$

16. Which of the following compounds has the highest boiling point

(A) HCl (B) HBr (C) H_2SO_4 (D) HNO_3

17. Which of the following is in order of increasing covalent character ?

(A) $CCl_4 < BeCl_2 < BCl_3 < LiCl$ (B) $LiCl < CCl_4 < BeCl_2 < BCl_3$

(C) $LiCl < BeCl_2 < BCl_3 < CCl_4$ (D) $LiCl < BeCl_2 < CCl_4 < BCl_3$

18. The lattice energy order for lithium halide is :

(A) LiF > LiCl > LiBr > LiI (B) LiCl > LiF > LiBr > LiI

(C) LiBr > LiCl > LiF > LiI (D) LiI > LiBr > LiCl > LiF

19. Which of the following combination of ion will have highest polarisation ?

(A) Fe^{2+}, Br^- (B) Ni^{4+}, Br^- (C) Ni^{2+}, Br^- (D) Fe, Br^-

20. Select the incorrect order ?

(A) Thermal stability : $LiNO_3 < NaNO_3 < KNO_3$

(B) Solubility : $LiNO_3 < NaNO_3 < KNO_3$

(C) Thermal stability : $Be(OH)_2 < Ca(OH)_2 < Sr(OH)_2$

(D) Solubility : $Be(OH)_2 < Ca(OH)_2 < Sr(OH)_2$

21. The correct order of decreasing polarizability of ion is :

(A) Cl^-, Br^-, I^-, F^- (B) F^-, I^-, Br^-, Cl^- (C) I^-, Br^-, Cl^-, F^- (D) F^-, Cl^-, Br^-, I^-

22. $SnCl_4$ is a covalent liquid because :

(A) electron clouds of the Cl^- ions are weakly polarized to envelop the cation.

(B) electron clouds of the Cl^- ions are strongly polarized to envelop the cation.

(C) its molecules are attracted to one another by strong van der Waals forces.

(D) Sn shows inert pair effect.

23. The order of basic character of given oxides is :

(A) $Na_2O > MgO > CuO > SiO_2$ (B) $MgO > SiO_2 > CuO > Na_2O$

(C) $SiO_2 > MgO > CuO > Na_2O$ (D) $CuO > Na_2O > MgO > SiO_2$

24. Which of the following is a neutral oxide?

(A) NO (B) NO_2 (C) N_2O_3 (D) N_2O_5

25. Amphoteric behaviour is shown by the oxides of :

(A) Al and Ca (B) Pb and Ba (C) Cr and Mg (D) Sn and Zn

ANSWER KEY

1.	**(B)**	**2.**	**(A)**	**3.**	**(D)**	**4.**	**(A)**	**5.**	**(C)**	**6.**	**(D)**	**7.**	**(D)**
8.	**(A)**	**9.**	**(A)**	**10.**	**(D)**	**12.**	**(D)**	**12.**	**(D)**	**13.**	**(D)**	**14.**	**(B)**
15.	**(D)**	**16.**	**(C)**	**17.**	**(C)**	**18.**	**(A)**	**19.**	**(B)**	**20.**	**(B)**	**21.**	**(C)**
22.	**(B)**	**23.**	**(A)**	**24.**	**(A)**	**25.**	**(D)**						