Date Planned : __ / __ / __	Daily Tutorial Sheet - 2	Expected Duration : 90 Min
Actual Date of Attempt : __ / __ / __	JEE Main (Archive)	Exact Duration :_____

16. Lattice energy of an ionic compound depends upon **(2005)**

(A) Charge on the ion and size of the ion **(B)** Packing of ions only

(C) Size of the ion only **(D)** Charge on the ion only

17. Which of the following molecules/ions does not contain unpaired electrons? **(2006)**

(A) N_2^+ **(B)** O_2 **(C)** O_2^{2-} **(D)** B_2

18. In which of the following molecules/ions are all the bonds not equal? **(2006)**

(A) XeF_4 **(B)** BF_4^- **(C)** SF_4 **(D)** SiF_4

19. The decreasing values of bond angles from $NH_3(106°)$ to $SbH_3(101°)$ down group-15 of the periodic table is due to **(2006)**

(A) decreasing lp-bp repulsion **(B)** decreasing electronegativity

(C) increasing bp-bp repulsion **(D)** increasing p-orbital character in sp^3

20. Which of the following species exhibits the diamagnetic behavior? **(2007)**

(A) NO **(B)** O_2^{2-} **(C)** O_2^+ **(D)** O_2

21. The charge/size ratio of a cation determines its polarizing power. Which one of the following sequences represents the increasing order of the polarizing power of the cationic species, $K^+, Ca^{2+}, Mg^{2+}, Be^{2+}$? **(2007)**

(A) $Ca^{2+} < Mg^{2+} < Be^{2+} < K^+$ **(B)** $Mg^{2+} < Be^{2+} < K^+ < Ca^{2+}$

(C) $Be^{2+} < K^+ < Ca^{2+} < Mg^{2+}$ **(D)** $K^+ < Ca^{2+} < Mg^{2+} < Be^{2+}$

22. In which of the following ionization processes, the bond order has increased and the magnetic behavior has changed? **(2007)**

(A) $N_2 \rightarrow N_2^+$ **(B)** $C_2 \rightarrow C_2^+$ **(C)** $NO \rightarrow NO^+$ **(D)** $O_2 \rightarrow O_2^+$

23. Which of the following hydrogen bonds is the strongest? **(2007)**

(A) $O-H---F$ **(B)** $O-H---H$ **(C)** $F-H---F$ **(D)** $O-H---O$

24. Which one of the following pairs of species have the same bond order? **(2008)**

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

25. The bond dissociation energy of $B-F$ in BF_3 is 646 KJ mol^{-1} whereas that of $C-F$ in CF_4 is $515\,kJ\,mol^{-1}$. The correct reason for higher $B-F$ bond dissociation energy as compared to that of $C-F$ is **(2008)**

(A) stronger σ bond between B and F in BF_3 as compared to that between C and F in CF_4

(B) significant $p\pi - p\pi$ interaction between B and F in BF_3 whereas there is no possibility of such interaction between C and F in CF_4

(C) lower degree of $p\pi - p\pi$ interaction between B and F in BF_3 than that between C and F in CF_4

(D) smaller size of B-atom as compared to that of C-atom.

26. Using MO theory, predict which of the following species has the shortest bond length? **(2008)**

(A) O_2^+ **(B)** O_2^- **(C)** O_2^{2-} **(D)** O_2^{2+}

27. Among the following the maximum covalent character is shown by the compound **(2011)**

(A) $FeCl_2$ **(B)** $SnCl_2$ **(C)** $AlCl_3$ **(D)** $MgCl_2$

28. The hybridization of orbitals of N atom in NO_3^-, NO_2^+ and NH_4^+ are respectively: **(2011)**

(A) sp, sp^2, sp^3 **(B)** sp^2, sp, sp^3 **(C)** sp, sp^3, sp^2 **(D)** sp^2, sp^3, sp

29. The structure of lF_7 is **(2011)**

(A) square pyramidal **(B)** trigonal bipyramidal

(C) octahedral **(D)** pentagonal bipyramidal

30. Ortho-Nitrophenol is less soluble in water than p-and m-Nitrophenols because: **(2012)**

(A) *o*-Nitrophenol is more steam volatile than its m- and p-isomers

(B) *o*-Nitrophenol shows intramolecular H-bonding

(C) *o*-Nitrophenol shows intermolecular H-bonding

(D) melting point of o-Nitrophenol is lower than those of m- and p-isomers