CLASS – XI   CHEMISTRY   **CHEMICAL BONDING AND MOLECULAR STRUCTURE**

Q1.   What is a chemical bond? Explain it with reference to Kossel Lewis approach?

Q2.   Write the Lewis dot symbols of the following elements: -   Mg, Na, B, O, N, Cl, F

Q3.   What is an ionic bond? Explain the formation of NaCl & CaF_2.

Q4.   What is octet rule? Point out its limitations.

Q5.   Is the octet rule applicable in all cases? If not, give eg(s) of exceptions of this rule.

Q6.   What is covalent bond? Write the lewis structure of the following:-

Cl_2, H_2, O_2, H_2O, CCl_4, CO_2, CO, N_2, C_2H_4, C_2H_2, O_3, NF_3 HNO_3, CO_3^{-2}

Q7.   What are the factors that influence the formation of an ionic bond?

Q8.   Explain the followings (a) Lattice Enthalpy (b) Bond length (c) Bond angel (d) Bond Enthalpy (e) Bond Order

Q9.   Explain resonance. How is it related with stability of the molecule?

Q10.   What do you mean by Dipole moment? Give its units.

Q11.   Give reason: (a) The Dipole moment of BeF^2 is zero. (b) The Dipole moment of BF_3 is also zero.

Q12.   Why dipole moment of NH3 is greater than that of NF_3.

Q13.   Discuss Fajans rules of partial covalent character of Ionic bonds.

Q14.   Explain VSEPR theory. Give various assumption of VSEPR theory.

Q15.   On the basis of VSEPR theory, discuss the shape of BF_3 & SF_6.

Q16.   Explain the formation of H_2 molecule in terms of valence Bond Theory.

Q17.   Write the difference b/w σ & π bond.

Q18.   What is hybridization? Write the salient features & important conditions for hybridization.

Q19.   Explain the following types of hybridization with examples:- (i) CP   (ii) SP^2 (ii) SP^3 (iv) SP^3d (v) SP^3d^2

Q20.   Explain the salient features of Molecular ORBITAL Theory.

Q21.   What is meant by the term bond order? Calculate the bond order of :- H_2, He_2, Li_2, C_2, O_2, B_2, N_2, Fe_2 & Ne_2 by using molecular orbital diagram.

Q22.   What do you mean by H-bonding?   Explain its type with examples.

Q1.   Who gave Law of Trade?

Q2.   Name the scientists who first arranged then known elements in order of increasing atomic weights.

Q3.   Name the scientist who got Davy medal in 1887 by the Royal Society London and why?

Q4.   Explain Leather Mayer's contribution in classification of elements.

Q5.   What do you understand by periodicity for the elements?

Q6.   Why it is not possible to measure the absolute value of the atomic radius of an element?

Q7.   Based upon the nature of Bonding, what are the different forms of atomic radii?

Q8   Define each of one of atomic radii with example and compare them?

Q9.   Explain variation of Atomic radii a long a period and down the group.

Q10.   Out of Li^+, Be^{+2} and B^{+3}, which has the smallest ionic radius & why?

Q11.   Which of the following are iso-electronic in nature?

     (i) O^{2-} (ii) Na   (iii) F   (iv) S^{2-} (v) Mg^{2+} (vi) Al + 3

Q12.   Select the species with smallest size in the following:-   (a) I, I^+, I^- (b) N, O, P   (c) F, Cl, Br

Q13.   Among the elements with At No. 9, 12, 36 identify the element which is (a) highly electronegative (b) an inert gas in nature (c) highly electropositive in nature.

Q14.   Arrange the following in increasing order of the property indicate:-

  (i) F, Cl, Br and I (negative electron gain enthalpy)   (ii) Mg^{+2}, O^{2-}, Na^+, F^-, and N^{3-} (ionic size).

  (iii) Mg, Al, Si and Na (Ionization Enthalpy)   (iv) Br^+, Br and Br^- (size)   (v)GN,   O   and   F (Ionization Enthalpy)

Q15.   Would you expect the Ionization Enthalpies of 2 isotopes of same element to be same or different? Justify your answer?

Q16.   Write the general e-configuration of S, P, d and f-block elements?

Q17.   Argon (Atomic mass = 39.94) has been placed before Potassium (At mass 39.10) in the Periodic table. Why?

Q18.   Explain (a) why do Ionization enthalpies decrease down a gp.

(b)   Why do Ionization Enthalpies increase as we move along the period?

Q19.   From each set, choose the element with largest Ionization enthalpy and explain your answer:-

    (a) F, O, N   (b) Mg, P, Ar   (c) B, Al, Ba

Q20.   Predict the position of the element in the periodic table satisfying the configuration $(n-1) d^1 ns^2$ for n=4.