## CLASS – XI CHEMISTRY STRUCTURE

## CHEMICAL BONDING AND MOLECULAR

- 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<sub>2</sub>, H<sub>2</sub>, O<sub>2</sub>, H<sub>2</sub>O, CCl<sub>4</sub>, CO<sub>2</sub>, CO, N<sub>2</sub>, C<sub>2</sub>H<sub>4</sub>, C<sub>2</sub>H<sub>2</sub>, O<sub>3</sub>, NF<sub>3</sub> HNO<sub>3</sub>, CO<sub>3</sub><sup>-2</sup>
- 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<sub>3</sub>.
- 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<sub>2</sub> molecule in terms of valence Bond Theory.
- Q17. Write the difference b/w  $\sigma$  &  $\pi$  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<sub>2</sub>, He<sub>2</sub>, Li<sub>2</sub>, C<sub>2</sub>, O<sub>2</sub>, B<sub>2</sub>, N<sub>2</sub>, Fe<sub>2</sub> & Ne<sub>2</sub> by using molecular orbital diagram.
- Q22. What do you mean by H-bonding? Explain its type with examples.

## CLASS – XI CHEMISTRY

PERIODIC CLASSIFICATION OF ELEMENTS

- 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<sup>+</sup>, I<sup>-</sup> (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<sup>+</sup>, Br and Br<sup>-</sup> (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.