**CLASS : XI SUBJECT : CHEMISTRY**

**CHAPTER: chemical bonding and molecular structure.**

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| **Sr. No.** | **Knowledge Based** | **Marks** |
| 1. | Why is NaCl a bad conductor of electricity in the solid state? |  |
| 2. | Use Lewis dot structure to show the electron transfer between the following atoms to form cations and anions:   1. Na and Cl 2. K and S 3. Ca and O 4. Al and N 5. Li and H |  |
| 3 | Define lattice enthalpy. How is it related to the stability of ionic compound? |  |
| 4 | Draw the molecular orbital diagram of O2 molecule. |  |
| 5 | What is hydrogen bond? How does it influence the physical properties of the substance?Discuss two main type of hydrogen bonding with suitable examples. |  |
| 6 | Illustrate each of the following with an example and write its electronic structure. (i) A compound with a coordinate bond (ii) A molecule with pyramidal shape |  |
| **S. No.** | **Understanding Based** |  |
| 7 | Which of the two is more hard: MgO or CaO? The internuclear distance of MgO and CaO are 2.05 and 2.40 Ǻ respectively. |  |
| 8. | What is the formal charge on various atoms in carbonate ion? |  |
| 9 | Out of O2 and N2,which one has greater bond enthalpy and why? |  |
| 10 | What is the hybrid state of each carbon in-  (i)CH2=C=CH2 (ii) CH3CH=CH2 (iii) CH3CHO (iv)CH3COOH (v) CH3CH2OH |  |
| 11 | Why dipole moment of hydrogen halide decreases from H-F to H-I? |  |
| 12 | Why is that in SF4 molecule ,the lone pair of electrons occupy equatorial position in preference to axial position.What is the shape of the molecule? |  |
| 13 | What is total number of sigma and pi bonds in the following structures-  a) C2H3Cl (b) CH2Cl2 (c) CH3CH=CH-CH=CH2 |  |
| 14 | How can you account for the fact that BF3 is non polar while NF3 is not? |  |
| 15 | Is there any difference between the two bonds which bond oxygen atoms in oxygen molecule? Point out the similarities and differences between these bonds,if any. |  |
| 16 | Sketch the bond moments and resultant dipole moments in the following molecules: H2O, PCl3, NH3, NF3 |  |
| **S. No.** | **Application** |  |
| 17. | On the basis of VSEPR theory predict the shapes of the following molecules   and ions:-  i)PH3 (ii) H3O+ (iii)BF4- (iv)BrF5 (v) IF3 |  |
| 18. | Predict which out of the following molecule will have higher dipole moment   CS2 and OCS and why? |  |
| 19 | Calculate the bond order of the following species and arrange the following species in order of increasing stability:  Li2, Li2+, Li2-. |  |
| 20 | The two O-O bond distances in ozone molecule are equal,justify. |  |
| 21 | The molecule SO2 has a dipole moment greater than zero.Is it linear or bent? Justify |  |
| 22 | Chlorine and nitrogen have same electronegativity, but chlorine does not form hydrogen bonds. Why? |  |
| **S.No.** | **Value Based** |  |
| 23 | Bonds are formed and broken due to changes around them. What value do you learn from this? |  |
| 24 | Optimum distance exists between central atom and its ligands. What leson dou you learn from this? |  |
| **S.No.** | **HOTS** |  |
| 25 | When a magnet is lower in liquid oxygen,some of dioxygen sticks to it.No such behaviour is observed with liquid nitrogen.Explain |  |
| 26 | What type of bond exist between two non-metallic elements? |  |