Saitech Informatics

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CHEMICAL BONDING

Class 11 - Chemistry

Time Allowed: 1 hour and 30 minutes **Maximum Marks: 45**

1. Why ethyl alcohol is completely miscible with water? **[1]**
2. The H - S - H bond angle in H_2S is 93.2° whereas the H - O - H bond angle in H_2O is 104.5°, why? **[1]**
3. What type of bond is formed when atoms have high difference of electronegativity? **[1]**
4. What is the valence bond approach for the formation of a covalent bond? **[1]**
5. Define bond order. **[1]**
6. How many σ and π - bonds are present in C_2H_4 (ethene)? **[1]**
7. Define a chemical bond. **[1]**
8. Why are bonding molecular orbitals more stable than antibonding molecular orbitals? **[1]**
9. Predict the geometry of XeF_4 molecule. **[1]**
10. Why is dipole moment of CO_2, BF_3, CCl_4 is zero? **[1]**
11. The dipole moment of a molecule AB is 0.54 D and the bond distance is 1.41 $\overset{o}{A}$. Calculate the fractional change δ on A and B atom in AB molecule (electronic charge, e = 4.8×10^{-10} esu. **[3]**
12. Write the significance/applications of dipole moment. **[3]**
13. What are the main postulates of valence shell Electron pair repulsion (VSEPR) theory? **[3]**
14. Explain with the help of suitable example polar covalent bond. **[3]**
15. Discuss the hybridisation of Be in gaseous state and solid state. **[3]**
16. Write the Lewis structure of the nitrite ion, NO_2^-. **[5]**
17. i. What factors the formation of the ionic bond. Explain with examples. **[5]**
    ii. Arrange the following in increasing order of ionic character and also give the reason.
    NaCl, $CaCl_2$, $MgCl_2$, MgO.
18. Discuss the orbital structures of the following molecules on the basis of hybridization. **[5]**
    i. BH_3
    ii. C_2H_2
    iii. BeF_2
19. i. Discuss the concept of hybridisation. What are its different types in a C-atom? **[5]**
    ii. What is the types of hybridisation of carbon atoms marked with star?
    a. $\overset{*}{C}H_2 = CH - \overset{O}{\overset{\|}{C}}{}^{*} - O - H$
    b. $CH_3 - \overset{*}{C}H_2 - OH$
    c. $CH_3 - CH_2 - \overset{O}{\overset{\|}{C}}{}^{*} - H$

d. $\overset{*}{C}H_3 = CH = CH - CH_3$

e. $CH_3 - \overset{*}{C} \equiv CH$