

Class : XI<sup>th</sup>  
Date :

Subject : CHEMISTRY  
DPP No. : 10

## Topic :- Chemical Bonding and Molecular Structure

- The hybrid state of S in  $\text{SO}_3$  is similar to that of  
a) C in  $\text{C}_2\text{H}_2$                       b) C in  $\text{C}_2\text{H}_4$                       c) C in  $\text{CH}_4$                       d) C in  $\text{CO}_2$
- The hydration energy of  $\text{Mg}^{2+}$  is larger than that of:  
a)  $\text{Al}^{3+}$                       b)  $\text{Na}^+$                       c)  $\text{Be}^{2+}$                       d) None of these
- Number of lone pair (s) in  $\text{XeOF}_4$  is/are  
a) 0                      b) 1                      c) 2                      d) 3
- Van der Waals' forces between molecules depend upon:  
a) Number of electrons      b) Charge on nucleus      c) Radius of atoms      d) All of these
- $\text{XeF}_6$  is:  
a) Octahedral  
b) Pentagonal pyramidal  
c) Planar  
d) Tetrahedral
- The bond order in NO is 2.5 while that in  $\text{NO}^+$  is 3. Which of the following statements is true for these two species?  
a) Bond length in  $\text{NO}^+$  is greater than in NO  
b) Bond length in NO is greater than in  $\text{NO}^+$   
c) Bond length in  $\text{NO}^+$  is equal to than in NO  
d) Bond length is unpredictable
- An atom with atomic number 20 is most likely to combine chemically with the atom whose atomic number is:  
a) 11                      b) 16                      c) 18                      d) 10
- Which has the largest distance between the carbon hydrogen atom?  
a) Ethane                      b) Ethene                      c) Ethyne                      d) Benzene

9. Length of hydrogen bond ranges from  $2.5\text{\AA}$  to:  
 a)  $3.0\text{\AA}$                       b)  $2.75\text{\AA}$                       c)  $2.6\text{\AA}$                       d)  $3.2\text{\AA}$
10. If  $\text{H}-\text{X}$  bond length is  $2.00\text{\AA}$  and  $\text{H}-\text{X}$  bond has dipole moment  $5.12 \times 10^{-30}\text{ C-m}$ , the percentage of ionic character in the molecule will be  
 a) 10%                      b) 16%                      c) 18%                      d) 20%
11. Which molecule is planar?  
 a)  $\text{NH}_3$                       b)  $\text{CH}_4$                       c)  $\text{C}_2\text{H}_4$                       d)  $\text{SiCl}_4$
12. From the molecular orbital theory, one can show that the bond order in  $\text{F}_2$  molecule as  
 a) 2                      b) 1                      c) 3                      d) 4
13. Two ice cubes are pressed over each other until they unite to form one block. Which one of the following forces dominates for holding them together?  
 a) Dipole-dipole interaction                      b) Van der Waals' forces  
 c) Hydrogen bond formation                      d) Covalent attraction
14. Maximum number of covalent bonds between two like atoms can be:  
 a) Three                      b) Two                      c) Four                      d) One
15. When sodium and chlorine react, energy is:  
 a) Released and ionic bond is formed  
 b) Released and covalent bond is formed  
 c) Absorbed and covalent bond is formed  
 d) Absorbed and ionic bond is formed
16. The maximum possible number of hydrogen bonds is a  $\text{H}_2\text{O}$  molecule can participate is  
 a) 1                      b) 2                      c) 3                      d) 4
17. The element having lowest ionisation energy among the following is:  
 a)  $1s^2, 2s^2 2p^3$                       b)  $1s^2, 2s^2 2p^6, 3s^1$                       c)  $1s^2, 2s^2 2p^6$                       d)  $1s^2, 2s^2 2p^5$
18. Bond energies in  $\text{NO}$ ,  $\text{NO}^+$  and  $\text{NO}^-$  are such as  
 a)  $\text{NO}^- > \text{NO} > \text{NO}^+$                       b)  $\text{NO} > \text{NO}^- > \text{NO}^+$                       c)  $\text{NO}^+ > \text{NO} > \text{NO}^-$                       d)  $\text{NO}^+ > \text{NO}^- > \text{NO}$
19. Two type  $\text{FXF}$  angles are present in which of the following molecules? ( $\text{X}=\text{S}, \text{Xe}, \text{C}$ )  
 a)  $\text{SF}_4$                       b)  $\text{XeF}_4$                       c)  $\text{SF}_6$                       d)  $\text{CF}_4$
20. The bond angle between two hybrid orbitals is  $105^\circ$ . The percentage of s-character of hybrid orbital is between  
 a) 50 – 55%                      b) 9 – 12%                      c) 22 – 23%                      d) 11 – 12%

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