

**SAINIK SCHOOL GOPALGANJ**

**CLASS-11**

**CHEMICAL BONDING ASSIGNMENT**

**1. C-O bond length is minimum in**

- (a)  $\text{CO}_2$
- (b)  $\text{CO}_3^{2-}$
- (c)  $\text{HCOO}^-$
- (d)  $\text{CO}$

**2. Molecules are held together in a crystal by**

- (a) hydrogen bond
- (b) electrostatic attraction
- (c) Van der Waal's attraction
- (d) dipole-dipole attraction

**3.  $\text{sp}^3\text{d}^2$  hybridization is present in  $[\text{Co}(\text{NH}_3)_6]^{3+}$ , find its geometry**

- (a) octahedral geometry
- (b) square planar geometry
- (c) tetragonal geometry
- (d) tetrahedral geometry

**4. Find the molecule with the maximum dipole moment**

- (a)  $\text{CH}_4$
- (b)  $\text{NH}_3$
- (c)  $\text{CO}_2$
- (d)  $\text{NF}_3$

**5.  $\text{MX}_6$  is a molecule with octahedral geometry. How many X – M – X bonds are at  $180^\circ$ ?**

- (a) four
- (b) two
- (c) three
- (d) six

**6. Find the pair with  $\text{sp}^2$  hybridisation of the central molecule**

- (a)  $\text{NH}_3$  and  $\text{NO}_2^-$
- (b)  $\text{BF}_3$  and  $\text{NH}_2^-$
- (c)  $\text{BF}_3$  and  $\text{NO}_2^-$
- (d)  $\text{NH}_2^-$  and  $\text{H}_2\text{O}$

**7. The formal charge and P-O bond order in  $\text{PO}_4^{3-}$  respectively are**

- (a) 0.6, -0.75
- (b) -0.75, 1.25
- (c) 1.0, -0.75
- (d) 1.25, -3

**8. Which of the molecules does not have a permanent dipole moment?**

- (a)  $\text{SO}_3$
- (b)  $\text{SO}_2$
- (c)  $\text{H}_2\text{S}$
- (d)  $\text{CS}_2$

**9.  $\text{p} \pi - \text{d} \pi$  bonding is present in which molecule**

- (a)  $\text{SO}_3^{2-}$
- (b)  $\text{CO}_3^{2-}$
- (c)  $\text{NO}_3^-$
- (d)  $\text{BO}_3^{3-}$

**10. Which one has a pyramidal shape?**

- (a)  $\text{SO}_3$
- (b)  $\text{PCl}_3$
- (c)  $\text{CO}_3^{2-}$
- (d)  $\text{NO}_3^-$

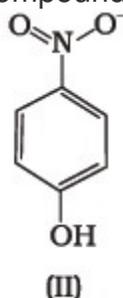
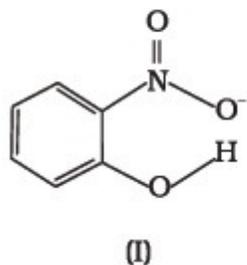
**SA type**

11. Explain the non linear shape of  $\text{H}_2\text{S}$  and non planar shape of  $\text{PCl}_3$  using valence shell electron pair repulsion theory.

12. Using molecular orbital theory, compare the bond energy and magnetic character of  $\text{O}_2^+$  and  $\text{O}_2^-$  species.

13. Explain the shape of  $\text{BrF}_5$ .

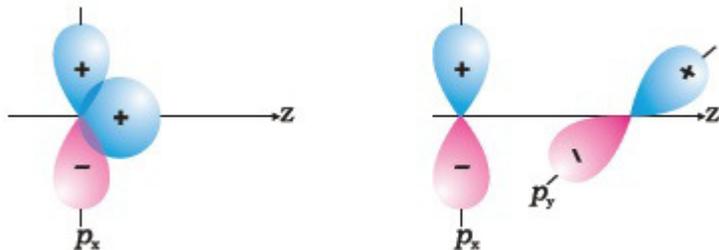
14. Structures of molecules of two compounds are given below :



(a) Which of the two compounds will have intermolecular hydrogen bonding and which compound is expected to show intramolecular hydrogen bonding.

- (b) The melting point of a compound depends on, among other things, the extent of hydrogen bonding. On this basis explain which of the above two compounds will show higher melting point.

15. Why does type of overlap given in the following figure not result in bond formation?



### SA TYPE

16. Explain why  $\text{PCl}_5$  is trigonal bipyramidal whereas  $\text{IF}_5$  is square pyramidal.

17. Why does type of overlap given in the following figure not result in bond formation

18. Show the formation of ethane molecule by the concept of hybridization.

19. Explain intermolecular and intramolecular H – bonding.

20. Give reasons for the following :

- Covalent bonds are directional bonds while ionic bonds are nondirectional.
- Water molecule has bent structure whereas carbon dioxide molecule is linear.
- Ethyne molecule is linear.