

SAINIK SCHOOL GOPALGANJ

CLASS-11

CHEMICAL BONDING ASSIGNMENT

1. C-O bond length is minimum in

- (a) CO_2
- (b) CO_3^{2-}
- (c) HCOO^-
- (d) 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. sp^3d^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) CH_4
- (b) NH_3
- (c) CO_2
- (d) NF_3

5. MX_6 is a molecule with octahedral geometry. How many X – M – X bonds are at 180° ?

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

6. Find the pair with sp^2 hybridisation of the central molecule

- (a) NH_3 and NO_2^-
- (b) BF_3 and NH_2^-
- (c) BF_3 and NO_2^-
- (d) NH_2^- and H_2O

7. The formal charge and P-O bond order in 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) SO_3
- (b) SO_2
- (c) H_2S
- (d) CS_2

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

- (a) SO_3^{2-}
- (b) CO_3^{2-}
- (c) NO_3^-
- (d) BO_3^{3-}

10. Which one has a pyramidal shape?

- (a) SO_3
- (b) PCl_3
- (c) CO_3^{2-}
- (d) NO_3^-

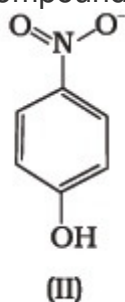
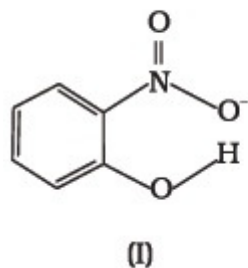
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11. Explain the non linear shape of H_2S and non planar shape of PCl_3 using valence shell electron pair repulsion theory.

12. Using molecular orbital theory, compare the bond energy and magnetic character of O_2^+ and O_2^- species.

13. Explain the shape of BrF_5 .

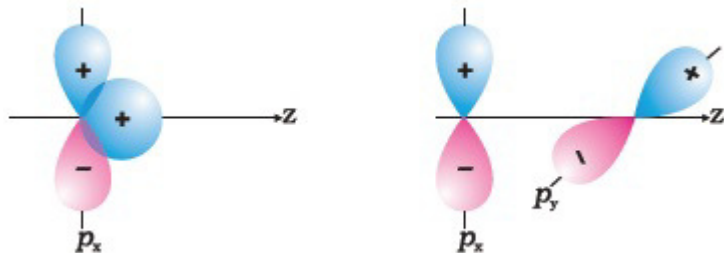
14. Structures of molecules of two compounds are given below :



(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?



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16. Explain why PCl_5 is trigonal bipyramidal whereas 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.