

JEE MAIN : CHAPTER WISE TEST PAPER-4

SUBJECT :- CHEMISTRY

DATE.....

CLASS :- 11th

NAME.....

CHAPTER :- CHEMICAL BONDING

SECTION.....

(SECTION-A)

1. Which forms a crystal of NaCl ?
 (A) NaCl molecules (B) Na⁺ and Cl⁻ ions
 (C) Na and Cl atoms (D) None of these
2. Two elements have electronegativity of 1.2 and 3.0. Bond formed between them would be :
 (A) ionic (B) polar covalent
 (C) co-ordinate (D) metallic
3. Correct order of covalent character of alkaline earth metal chloride is
 (A) BeCl₂ < MgCl₂ < CaCl₂ < SrCl₂
 (B) BeCl₂ < CaCl₂ < SrCl₂ < MgCl₂
 (C) BeCl₂ > MgCl₂ > CaCl₂ > SrCl₂
 (D) SrCl₂ > BeCl₂ > CaCl₂ > MgCl₂
4. The maximum covalency of representative elements (having zero formal charge) is equal to (excluding 1st and 2nd period) :
 (A) the number of unpaired p-electrons
 (B) the number of paired d-electrons
 (C) the number of unpaired s and p-electrons
 (D) the actual number of s and p-electrons in the outermost shell.
5. The types of bond present in N₂O₅ are :
 (A) only covalent
 (B) only ionic
 (C) ionic and covalent
 (D) covalent & coordinate
6. Which one in the following is not the resonating structure of CO₂ :
 (A) O ≡ C = O (B) O = C = O
 (C) ⁻O - C ≡ O⁺ (D) ⁺O ≡ C - O⁻
7. Number and type of bonds between two carbon atoms in CaC₂ are :
 (A) one sigma (σ) and one pi (π) bond
 (B) one σ and two π bonds
 (C) one σ and one and a half π bond
 (D) one σ bond
8. Indicate the wrong statement according to Valence bond theory :
 (A) A sigma bond is stronger than π - bond
 (B) p-orbitals always have only sidewise overlapping
 (C) s-orbitals never form π - bonds
 (D) There can be only one sigma bond between two atoms
9. Match list I with List II and select the correct answer using the codes given below the lists.
- | List I
(Compound) | List II
(Shape) |
|----------------------|-----------------------|
| (A) CS ₂ | 1. Bent |
| (B) SO ₂ | 2. Linear |
| (C) BF ₃ | 3. Trigonal planer |
| (D) NH ₃ | 4. Tetrahedral |
| | 5. Trigonal pyramidal |
- Code :

	(A)	(B)	(C)	(D)
(A)	2	1	3	5
(B)	1	2	3	5
(C)	2	1	5	4
(D)	1	2	5	4
10. The pair having similar geometry is :
 (A) BF₃, NH₃ (B) BF₃, AlF₃
 (C) BeF₂, H₂O (D) BCl₃, PCl₃
11. Choose the molecules in which hybridisation occurs in the ground state ?
 (a) BCl₃ (b) NH₃ (c) PCl₃ (d) BeF₂
 The correct answer is :
 (A) a, b, d (B) a, b, c
 (C) b, c (D) c, d
12. In C—C bond C₂H₆ undergoes heterolytic fission, the hybridisation of two resulting carbon atoms is :
 (A) sp² both (B) sp³ both
 (C) sp², sp³ (D) sp, sp²
13. The hybridization in PF₃ is :
 (A) sp³ (B) sp²
 (C) dsp³ (D) d²sp³
14. For BF₃ molecule which of the following is true ?
 (A) B-atom is sp² hybridised.
 (B) There is a pπ-pπ back bonding in this molecule.
 (C) Observed B-F bond length is found to be less than the expected bond length.
 (D) All of these
15. Which one of the following can not exist on the basis of molecular orbital theory ?
 (A) H₂⁺ (B) He₂⁺ (C) C₂ (D) He₂

16. Among the following species, which has the minimum bond length ?
 (A) B₂ (B) C₂ (C) F₂ (D) O₂⁻
17. Which of the following species is paramagnetic ?
 (A) NO⁻ (B) O₂²⁻ (C) CN⁻ (D) CO
18. Of the following molecules, the one, which has permanent dipole moment, is :
 (A) SiF₄ (B) BF₃ (C) PF₃ (D) PF₅
19. Which one of the following does not have intermolecular H-bonding ?
 (A) H₂O (B) o-nitro phenol
 (C) HF (D) CH₃COOH
20. Which of the following bonds/forces is weakest ?
 (A) Covalent bond (B) Ionic bond
 (C) Metallic bond (D) London force

(SECTION-B)

21. Number of antibonding electrons in N₂ is :
22. Oxidising power of chlorine in a aqueous solution can be determined by the parameters indicated below:

$$\frac{1}{2} \text{Cl}_2(\text{g}) \xrightarrow{1/2 \Delta_{\text{diss}}\text{H}^\circ} \text{Cl}(\text{g}) \xrightarrow{\Delta_{\text{eg}}\text{H}^\circ} \text{Cl}^-(\text{g}) \xrightarrow{\Delta_{\text{hyd}}\text{H}^\circ} \text{Cl}^-(\text{aq})$$
 The magnitude of energy (in kJ/mol) released in the conversion of $\frac{1}{2} \text{Cl}_2(\text{g})$ to Cl⁻(aq) (using data $\Delta_{\text{diss}}\text{H}^\circ \text{Cl}_2 = 240 \text{ kJ/mol}$, $\Delta_{\text{eg}}\text{H}^\circ \text{Cl} = -349 \text{ kJ/mol}$, $\Delta_{\text{hyd}}\text{H}^\circ \text{Cl}^- = -381 \text{ kJ/mol}$) will be
23. The given molecule is
 CF₂ = C = C = C = CH-CH₃
 Find the number of maximum atoms which may lie in the same plane.
24. Find the sum of the number of P = O, P - O - P linkages in P₅O₁₆⁻⁷ ion.
25. Calculate the minimum and maximum number of P-O linkages of identical length in P₄O₁₀.
(If the answer is 3 and 18, then represent as 318)
26. The given molecule is
 CF₂ = C = C = C = CH₂
 Find the maximum number of nodal plane of π-bonds those are lying in the plane perpendicular to the molecular plane.
27. The ratio of number of σ-bonds to π-bonds in C₂(CN)₄ molecule is _____.
28. Using the following species how many ionic compounds can be made. (Only one cation and one anion is to be chosen at a time)
 NH₄⁺, SO₄²⁻, Cl⁻, Mg²⁺, Al³⁺, NO₃⁻
29. The ratio of lone pairs on the surrounding atoms to that of central atom of XeO₂F₂ is _____.
30. Find the number of planes "containing maximum number of atoms and in which at least two atoms are same", in the molecule of CH₃Cl.