**Karan Arora**  **R.L. Institute M: 9416974837**

**Max Time : 1 hr** **CHEMICAL BONDING Max Marks : 32**

**CODE : A**

1. Predict the correct order among the following.

a) lone pair-lone pair > bond pair-bond pair > lone pair-bond pair

b) bond pair-bond pair > lone pair-bond pair > lone pair-lone pair

c) lone pair-bond pair > bond pair-bond pair > lone pair-lone pair

d) lone pair-lone pair > lone pair-bond pair > bond pair-bond pair

1. Consider the molecules CH4 , NH3 and H2O. Which of the given statements is false ?

a) The H – O – H bond angle in H2O is larger than the H – C – H bond angle in CH4 .

b) The H – O – H bond angle in H2O is smaller than the H – N – H bond angle in NH3 .

c) The H – C – H bond angle in CH4 is larger than the H – N – H bond angle in NH3 .

d) The H – C – H bond angle in CH4 , the H – N – H bond angle in NH3 and the H – O – H bond angle in H2O are all greater than 90˚.

1. Which of the following compounds shows the presence of intramolecular hydrogen bond ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) H2O2 | b) HCN | c) Cellulose | d) Conc. Acetic acid |

1. Which of the following species contains equal number of and - bonds ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) | b) XeO4 | c) (CN)2 | d) CH2(CN)2 |

1. Consider the state of hybridisation of carbon atoms, find out the molecule among the following which is linear

|  |  |
| --- | --- |
| a) CH3 C C CH3 | b) CH2 CH CH2 C CH |
| c) CH3 CH2 CH2 CH3 | d) CH3 CH CH CH3 |

1. Which of the following is least likely to behave as Lewis base ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) NH3 | b) BF3 | c) OH – | d) H2O |

1. The angular shape of ozone molecule (O3) consists of

|  |  |  |  |
| --- | --- | --- | --- |
| a) 1 & 2 -bonds | b) 2 & 2 -bonds | c) 1 & 1 -bonds | d) 2 & 1 -bonds |

1. The correct order of C – O bond length among CO , , CO2 is

|  |  |  |  |
| --- | --- | --- | --- |
| a) CO2 < < CO | b) CO < < CO2 | c) < CO2 < CO | d) CO < CO2 < |

1. The number of unpaired electrons in a paramagnetic diatomic molecule of an element with At. No = 16 is ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) 2 | b) 3 | c) 4 | d) 1 |

1. The correct sequence of increasing covalent character is represented by

|  |  |  |  |
| --- | --- | --- | --- |
| a) LiCl < NaCl < BeCl2 | b) BeCl2 < NaCl < LiCl | c) NaCl < LiCl < BeCl2 | d) BeCl2 < LiCl < NaCl |

1. In an octahedral structure, the pair of d orbitals involved in d2sp3 hybridisation is

|  |  |  |  |
| --- | --- | --- | --- |
| a) dx2-y2, dz2 | b) dxz , dx2-y2 | c) dz2 , dxz | d) dxy , dyz |

1. In a regular octahedral molecule ,MX6 the number of X – M – X bonds at 180˚ is

|  |  |  |  |
| --- | --- | --- | --- |
| a) 3 | b) 2 | c) 6 | d) 4 |

1. Among the following, the pair in which the two species are not isostructural, is

|  |  |  |  |
| --- | --- | --- | --- |
| a) SiF4 & SF4 | b) & XeO3 | c) & | d) & SF6 |

1. Which of the following statement is not correct for sigma and pi-bonds formed between two carbon atoms ?

a) Free rotation of atoms about a sigma bond is allowed but not in case of a pi-bond

b) Sigma bond determines the direction between carbon atoms but a pi-bond has no primary effect in this regard

c) Sigma bond is stronger than a pi-bond

d) Bond energies of sigma and pi-bonds are of the order of 264 KJ/mol and 347 KJ/mol , respectively

1. In ion number of bond pair and lone pair of electrons on nitrogen atom are

|  |  |  |  |
| --- | --- | --- | --- |
| a) 2 , 2 | b) 3 , 1 | c) 1 , 3 | d) 4 , 0 |

1. Main axis of a diatomic molecule is z molecular orbital, px and py overlaps to form which of the following orbitals ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) -molecular orbital | b) -molecular orbital | c) -molecular orbital | d) No bond will form |

1. In X – H - - - Y, X and Y both are electronegative elements, then

a) electron density on X will increase and on H will decrease

b) In both electron density will increase

c) In both electron density will decrease

d) On X electron density will decrease and on H increase

1. In which of the following, bond angle is maximum ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) NH3 | b) | c) PCl3 | d) SCl2 |

1. A compound contains atom of three elements A, B and C. If the oxidation number of A is +2 , B is +5 and that of C is -2, the possible formula of the compound is

|  |  |  |  |
| --- | --- | --- | --- |
| a) A2(BC3)2 | b) A3(BC4)2 | c) A3(B4C)2 | d) ABC2 |

1. Which of the following is planar ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) XeF4 | b) XeO4 | c) XeO3F | d) XeO3F2 |

1. The type of hybridisation of boron in diborane is

|  |  |  |  |
| --- | --- | --- | --- |
| a) sp hybridisation | b) sp2 hybridisation | c) sp3 hybridisation | d) sp3d2 hybridisation |

1. In ion, the formal charge on each oxygen atom and P – O bond order respectively are

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

1. The number of antibonding electron pairs in molecular ion on the basis of molecular orbital theory is (at. no. of O = 8)

|  |  |  |  |
| --- | --- | --- | --- |
| a) 5 | b) 2 | c) 4 | d) 6 |

1. The molecule which does not exhibit dipole moment is

|  |  |  |  |
| --- | --- | --- | --- |
| a) NH3 | b) CHCl3 | c) H2O | d) CCl4 |

1. For two ionic solids CaO and KI, identify the wrong statement among the following.

a) Lattice energy of CaO is much larger than that of KI

b) KI is soluble in benzene

c) KI has lower melting point

d) CaO has higher melting point

1. The correct order of the O – O bond length in O2 , H2O2 and O3 is

|  |  |  |  |
| --- | --- | --- | --- |
| a) O2 > O3 > H2O2 | b) O3 > H2O2 > O2 | c) O2 > H2O2 > O3 | d) H2O2 > O3 > O2 |

1. Which of the following pair will form most stable ionic bond?

|  |  |  |  |
| --- | --- | --- | --- |
| a) Na & Cl | b) Mg & F | c) Li & F | d) Na & F |

1. Which of the following does not have a tetrahedral structure ?

|  |  |  |  |
| --- | --- | --- | --- |
| a) | b) BH3 | c) | d) H2O |

1. The weakest among the following types of bond is

|  |  |  |  |
| --- | --- | --- | --- |
| a) ionic | b) covalent | c) metallic | d) H-bond |

1. Mark the incorrect statement in the following.

a) The bond order in the species O2 , , decreases as > O2 > .

b) The bond energy in a diatomic molecule always increases when an electron is lost

c) Electrons in antibonding MO contribute to repulsion between two atoms

d) With increase in bond order, bond length decreases and bond strength increases

1. Equilateral shape has

|  |  |  |  |
| --- | --- | --- | --- |
| a) sp hybridisation | b) sp2 hybridisation | c) sp3 hybridisation | d) dsp2 hybridisation |

1. The angle between the overlapping of one s-orbital and one p-orbital is

|  |  |  |  |
| --- | --- | --- | --- |
| a) 180˚ | b) 120˚ | c) 109˚28ˊ | d) 120˚60ˊ |

**Karan Arora**  **R.L. Institute M: 9416974837**

**Max Time : 1 hr** **CHEMICAL BONDING Max Marks : 32**

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|  |  |  |  |
| --- | --- | --- | --- |
| a) Na & Cl | b) Mg & F | c) Li & F | d) Na & F |

**Answers**

**Chemical Bonding [CLASS = 11th ]**

|  |  |
| --- | --- |
| **CODE : A** | **CODE : B** |
| 1. d | 1. a |
| 2. a | 2. a |
| 3. c | 3. c |
| 4. b | 4. d |
| 5. a | 5. a |
| 6. b | 6. b |
| 7. d | 7. b |
| 8. d | 8. a |
| 9. a | 9. d |
| 10. c | 10. c |
| 11. a | 11. b |
| 12. a | 12. a |
| 13. a | 13. a |
| 14. d | 14. c |
| 15. d | 15. d |
| 16. a | 16. a |
| 17. a | 17. b |
| 18. b | 18. b |
| 19. b | 19. a |
| 20. a | 20. d |
| 21. c | 21. b |
| 22. c | 22. b |
| 23. c | 23. b |
| 24. d | 24. d |
| 25. b | 25. a |
| 26. d | 26. c |
| 27. b | 27. d |
| 28. b | 28. d |
| 29. d | 29. a |
| 30. b | 30. c |
| 31. b | 31. d |
| 32. a | 32. b |