ChemicalGeek

Q1. An ionic compound A^+B^- is most likely to be formed from A and B when :

(1) Ionisation energy of A is low
(2) Electron affinity of B is low
(3) Electronegativity of B is low
(4) Ionisation energy of B is low

Q2. In I_3^- ,Lewis base is :

(1) I_2
(2) I^-
(3) I_2^+
(4) I_2^-

Q3. MgO is characterized by :

(1) Low melting point
(2) Low lattice energy
(3) High lattice energy
(4) High acidic nature

Q4. Solubility of NaCl ,Na_2SO_4 and Na_3PO_4 in water in increasing order is :

(1) NaCl < Na_2SO_4 < Na_3PO_4
(2) Na_3PO_4 < Na_2SO_4 < NaCl
(3) NaCl < Na_3PO_4 < Na_2SO_4
(4) Na_2SO_4 < NaCl < Na_3PO_4

Q5. Select the correct statement:

(1) Both lattice and hydration energy decreases with ionic size
(2) Lattice energy can be calculated using Born-Haber cycle
(3) If the anion is large compared to the cation, the lattice energy will remain almost constant within a particular group
(4) All are correct statements.

Q6. Covalency of carbon in the CO molecule is three because :

(1) An unexcited carbon atom has two unpaired electrons
(2) The carbon atom can be an acceptor of an electron pair
(3) The carbon atom has four valence electrons
(4) Maximum Covalency of carbon is three.

Q7. Octet rule is not followed in :

(1) CCl_4 ,N_2O_4 and N_2O_5
(2) BF_3 ,$BeCl_2$ and NO_2
(3) NaCl,$MgCl_2$ and MgO
(4) PCl_3 ,NH_3 and H_2O

Q8. Among the following the molecule with the highest dipole moment is :

(1) CH_3Cl
(2) CH_2Cl_2
(3) $CHCl_3$
(4) CCl_4

Q9. Which of the following are isoelectronic and isostructural among NO_3^- ,CO_3^{-2} ,ClO_3^- and SO_3 ?

(1) NO_3^- and CO_3^{2-}
(2) SO_3 and NO_3^-
(3) ClO_3^- and CO_3^{2-}
(4) CO_3^{2-} and SO_3

Q10. Specify the co-ordination geometry around and hybridization of N and B atoms in a 1:1 complex of BF_3 and NH_3

(1) N : tetrahedral ,sp^3 ; B : tetrahedral ,sp^3
(2) N : pyramidal ,sp^3 ; B : pyramidal ,sp^3
(3) N : pyramidal ,sp^3 ; B : planar ,sp^2
(4) N : pyramidal,sp^3 ; B : tetrahedral ,sp^3

Q11. The nodal plane in the π bond of ethene is located in :

(1) The molecular plane
(2) A plane parallel to the molecular plane
(3) A plane parallel to the molecular plane which bisects the carbon -carbon σ bond at right angle
(4) A plane perpendicular to the molecular plane which contains the carbon-carbon σ bond

Q12. The number of P-O-P bonds in cyclic metaphosphoric acid is :

(1) Zero
(2) Two
(3) Three
(4) four

Q13. The correct decreasing order of acidic strength is :

(1) $Cl_2O_7 > SO_2 > P_4O_{10}$
(2) $CO_2 > N_2O_5 > SO_3$
(3) $Na_2O > MgO > Al_2O_3$
(4) $K_2O > CaO > MgO$

Q14. The electronic configuration of an element is $1s^2\ 2s^2\ 2p^6\ 3s^2\ 3p^6\ 3d^5\ 4s^1$ .This represents its :

(1) Excited state
(2) Ground state
(3) Cationic state
(4) Anionic state

Q15. The hybridisation of atomic orbitals of nitrogen in NO_2^+ , NO_3^- and NH_4^+ are

(1) sp , sp^3 and sp^2 respectively
(2) sp ,sp^2 and sp^3 respectively
(3) sp^2 ,sp and sp^3 respectively
(4) sp^2 ,sp^3 and sp respectively

Q16. Molecular shapes of SF_4 ,CF_4 and XeF_4 are :

(1) The same with 2,0 and 1 lone pairs of electrons respectively
(2) The same with 1,1 and 1 lone pairs of electrons respectively
(3) Different with 1,0 and 2 lone pairs of electrons respectively
(4) Different with 0,1 and 2 lone pairs of electrons respectively

Q17. The common features among the species CN^- ,CO and NO^+ are :

(1) Bond order three and isoelectronic
(2) Bond order three and weak field ligands
(3) Bond order two and π acceptor
(4) Isoelectronic and weak field ligand

Q18. The number of S –S bonds in sulphur trioxide trimer (S_3O_9) is :

(1) Three
(2) Two
(3) One
(4)zero

Q19. Hybridization of the underlined atom is affected when :

(1) $\underline{C}H_3$ COOH is decarboxylated
(2) $CH_3\underline{C}OOH$ is dehydrated
(3) $CH_3\ \underline{C}H_3$ is chlorinated
(4) $\underline{C}_6H_6$ is nitrated

Q20. The cyanide ion CN^- and N_2 nitrogen molecule are isoelectronic .However ,in contrast to CN^- ,N_2 is chemically inert due to :

(1) Unsymmetrical electron distribution
(2) Low bond energy
(3) Absence of bond polarity
(4) Presence of greater number of electrons in bonding

Q21. Select the correct statement about carbonium ion CH_5^+ :

(1) This cation shares eight electrons among five bonds
(2) There is no empty orbital
(3) It is not electron deficient
(4) All are correct statements

Q22. Ratio of sigma and pie bonds is maximum in :

(1) Naphthalene
(2) tertracyano methane
(3) Enolic form of urea
(4) Equal in (1) , (2) and (3)

Q23. Select the correct statement:

(1) Melting point of SrF_2 is higher than that of PbF_2 because Sr-F bond is more ionic than the Pb-F one
(2) SrF_2 and PbF_2 have same melting point because the radii of Pb^{+2} and Sr^{+2} are very close.
(3) Both are insoluble in water
(4) Both are soluble in benzene.

Q24. Some ether is added to an aqueous mixture of LiCl ,NaCl and $AlCl_3$. which

will be extracted into ether?

(1) LiCl and NaCl
(2) LiCl and $AlCl_3$
(3) NaCl and $AlCl_3$
(4) All the three

Q25. A diatomic molecule has a dipole moment of 1.2 D . If the bond distance is 1.0 angstrom ,the fraction of an electronic charge on each atom is :

(1) 0.25
(2) 0.33
(3) 0.66
(4) 0. 90