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SET 1 –

1. The octet rule is based on the tendency of atoms to have ___ electrons in their outer shell.
   a) 6 b) 8 c) 10 d) 12

2. Which of the following elements does not obey the octet rule?
   a) Ne b) C c) H d) O

3. Lewis symbol for oxygen has how many valence electrons?
   a) 4 b) 6 c) 2 d) 8

4. Which noble gas configuration is achieved by Na^+ ion?
   a) He b) Ne c) Ar d) Kr

5. Ionic bond is formed due to –
   a) transfer of electrons
   b) sharing of electrons
   c) overlap of orbitals
   d) exchange of protons

6. The bond in NaCl is –
   a) ionic b) covalent c) metallic d) coordinate

7. Which pair forms an ionic bond most easily?
   a) Na and Cl b) C and O c) H and O d) N and H

8. Lattice energy depends on –
   a) charge and size of ions
   b) temperature
   c) volume
   d) none

9. Lattice energy increases with –
   a) increasing ionic charge and decreasing ionic radius
   b) decreasing charge
   c) increasing radius
   d) none

10. Which compound has maximum lattice energy?
    a) NaCl b) MgO c) CaO d) KCl

11. Ionic compounds are generally –
    a) soluble in water
    b) insoluble in water
    c) gaseous

d) none

12. Ionic compounds conduct electricity in –
    a) molten or aqueous state
    b) solid state
    c) gaseous state
    d) all states

13. Formation of NaCl from Na and Cl is –
    a) exothermic
    b) endothermic
    c) neutral
    d) reversible

14. The energy released when one mole of an ionic compound is formed from gaseous ions is called –
    a) lattice energy
    b) ionisation energy
    c) electron affinity
    d) bond energy

15. The energy required to remove an electron from a gaseous atom is –
    a) ionisation enthalpy
    b) electron affinity
    c) lattice energy
    d) bond enthalpy

16. Electron gain enthalpy is generally –
    a) negative
    b) positive
    c) zero
    d) depends

17. The formation of an ionic bond is favoured by –
    a) low ionisation enthalpy and high electron affinity
    b) high ionisation enthalpy
    c) high atomic radius
    d) low lattice energy

18. Polarisation is the distortion of –
    a) electron cloud of anion by cation
    b) nucleus
    c) cation by anion
    d) none

19. Greater polarising power is shown by –
    a) small and highly charged cations

b) large cations
c) large anions
d) neutral atoms

20. Fajan's rule helps to predict –
a) covalent character in ionic bond
b) ionic character in covalent bond
c) metallic character
d) molecular weight

21. Covalent bond is formed by –
a) sharing of electrons
b) transfer of electrons
c) both
d) none

22. Number of covalent bonds in N_2 molecule –
a) 3 b) 2 c) 1 d) 4

23. In H_2O molecule, oxygen forms –
a) 2 single covalent bonds
b) 1 double bond
c) 3 single bonds
d) 1 triple bond

24. Coordinate bond is formed by –
a) one atom donating lone pair
b) both atoms sharing equally
c) transfer of proton
d) none

25. Example of coordinate bond –
a) NH_4^+
b) Cl_2
c) NaCl
d) H_2

26. The bond in CO molecule is –
a) one sigma and two pi bonds
b) two sigma and one pi bond
c) one sigma and one pi bond
d) three sigma bonds

27. Bond length is –
a) average distance between nuclei of bonded atoms
b) radius of atom
c) van der Waals distance

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d) none

28. The order of bond length in N_2, O_2, F_2 is –
    a) $N_2 < O_2 < F_2$
    b) $F_2 < O_2 < N_2$
    c) $O_2 < N_2 < F_2$
    d) $N_2 = F_2 < O_2$

29. Bond energy is –
    a) energy required to break one mole of bonds
    b) energy released in bond formation
    c) equal to ionisation energy
    d) none

30. Bond order of N_2 molecule =
    a) 3 b) 2 c) 1 d) 4

31. Greater the bond order, –
    a) smaller the bond length and greater the bond energy
    b) greater the bond length
    c) lesser stability
    d) none

32. Covalency of nitrogen in NH_3 is –
    a) 3 b) 4 c) 2 d) 5

33. Hybridisation in $BeCl_2$ is –
    a) sp b) sp^2 c) sp^3 d) dsp^2

34. Shape of $BeCl_2$ is –
    a) linear b) bent c) tetrahedral d) trigonal

35. Hybridisation in BF_3 is –
    a) sp^2 b) sp^3 c) sp d) dsp^2

36. Geometry of BF_3 is –
    a) trigonal planar b) tetrahedral c) linear d) pyramidal

37. Hybridisation in CH_4 is –
    a) sp^3 b) sp^2 c) sp d) dsp^3

38. Shape of CH_4 molecule –
    a) tetrahedral
    b) linear
    c) trigonal planar
    d) square planar

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39. Hybridisation of carbon in C_2H_2 –
    a) sp
    b) sp^2
    c) sp^3
    d) dsp^2

40. Geometry of NH_3 molecule –
    a) trigonal pyramidal
    b) tetrahedral
    c) trigonal planar
    d) linear

41. Lone pairs on oxygen in H_2O molecule –
    a) 2 b) 1 c) 3 d) 4

42. Geometry of H_2O –
    a) bent
    b) linear
    c) tetrahedral
    d) square planar

43. VSEPR theory is used to predict –
    a) shape of molecules
    b) colour
    c) magnetism
    d) ionisation

44. The repulsion strength order among electron pairs –
    a) lone pair–lone pair > lone pair–bond pair > bond pair–bond pair
    b) bond pair–bond pair > lone pair–bond pair > lone pair–lone pair
    c) all equal
    d) none

45. SF_6 has hybridisation –
    a) sp^3d^2
    b) sp^3
    c) sp^3d
    d) dsp^2

46. Shape of SF_6 molecule –
    a) octahedral
    b) trigonal bipyramidal
    c) tetrahedral
    d) square planar

47. Number of sigma and pi bonds in ethene (C_2H_4) –
    a) 5σ and 1π

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b) 6σ and 2π
c) 4σ and 2π
d) 3σ and 1π

48. Which has highest bond order?
a) N_2 b) O_2 c) F_2 d) He_2

49. H-bonding occurs in –
a) HF b) H_2S c) HCl d) HI

50. Hydrogen bond is –
a) electrostatic attraction between H and electronegative atom
b) covalent bond
c) ionic bond
d) coordinate bond

✅ Answer Key – Set 1

1-b	2-c	3-b	4-b	5-a	6-a	7-a	8-a	9-a	10-b
11-a	12-a	13-a	14-a	15-a	16-a	17-a	18-a	19-a	20-a
21-a	22-a	23-a	24-a	25-a	26-a	27-a	28-a	29-a	30-a
31-a	32-a	33-a	34-a	35-a	36-a	37-a	38-a	39-a	40-a
41-a	42-a	43-a	44-a	45-a	46-a	47-a	48-a	49-a	50-a