

# CLASS XI CHE CH: 4

## SET 4 –

1. The number of valence electrons in carbon atom is –  
a) 4 b) 6 c) 2 d) 8
2. Which element can form the maximum number of covalent bonds?  
a) Carbon b) Nitrogen c) Oxygen d) Fluorine
3. A coordinate covalent bond is also called –  
a) Dative bond b) Ionic bond c) Metallic bond d) Hydrogen bond
4. In a coordinate bond, both electrons come from –  
a) same atom b) different atoms c) nucleus d) bond pair
5. Coordinate bond is represented by –  
a) an arrow ( $\rightarrow$ ) b) double dash ( $=$ ) c) dotted line d) wavy line
6. Which of the following contains a coordinate bond?  
a)  $\text{NH}_4^+$  b)  $\text{H}_2\text{O}$  c)  $\text{HCl}$  d)  $\text{CH}_4$
7. In  $\text{NH}_4^+$  ion, the donor atom is –  
a) Nitrogen b) Hydrogen c) Oxygen d) Carbon
8. Coordinate bonds are found in –  
a) complex compounds b) ionic compounds c) metallic compounds d) none
9. Polar covalent bond arises due to –  
a) difference in electronegativity of bonded atoms  
b) identical atoms  
c) same electronegativity  
d) none
10. The molecule with a polar covalent bond is –  
a)  $\text{HCl}$  b)  $\text{O}_2$  c)  $\text{Cl}_2$  d)  $\text{N}_2$
11. Non-polar covalent bonds exist between –  
a) identical atoms b) different atoms c) ions d) metals
12. Polar molecules have –  
a) non-zero dipole moment b) zero dipole moment c) equal charge distribution d) none
13. Non-polar molecules have –  
a) zero dipole moment b) high dipole moment c) partial charges d) none

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14. The dipole moment of  $\text{CO}_2$  molecule is –  
a) zero b) non-zero c) 1 D d) 3 D
15. The dipole moment of  $\text{H}_2\text{O}$  molecule is –  
a) 1.84 D b) 0 D c) 2.5 D d) 4 D
16. The dipole moment of  $\text{NH}_3$  is –  
a) 1.46 D b) 0 D c) 3.5 D d) 2.0 D
17. Which molecule is non-polar despite having polar bonds?  
a)  $\text{CO}_2$  b)  $\text{H}_2\text{O}$  c)  $\text{NH}_3$  d) HF
18. Which of the following is linear and non-polar?  
a)  $\text{BeCl}_2$  b)  $\text{H}_2\text{O}$  c)  $\text{SO}_2$  d)  $\text{NH}_3$
19. Which molecule is angular and polar?  
a)  $\text{H}_2\text{O}$  b)  $\text{CO}_2$  c)  $\text{BeCl}_2$  d)  $\text{XeF}_2$
20. The molecule having zero dipole moment is –  
a)  $\text{BF}_3$  b)  $\text{H}_2\text{O}$  c)  $\text{NH}_3$  d) HF
21. Which of the following molecules has highest polarity?  
a) HF b) HCl c) HBr d) HI
22. Hydrogen bond is a –  
a) weak electrostatic attraction between H and electronegative atom  
b) strong covalent bond  
c) ionic bond  
d) coordinate bond
23. Hydrogen bond is stronger than –  
a) van der Waals forces b) covalent bond c) ionic bond d) none
24. Hydrogen bond is weaker than –  
a) covalent bond b) van der Waals forces c) ionic bond d) none
25. Which of the following molecules shows intermolecular H-bonding?  
a)  $\text{H}_2\text{O}$  b)  $\text{NH}_3$  c) HF d) all of these
26. Which of the following shows intramolecular hydrogen bonding?  
a) o-nitrophenol b) m-nitrophenol c) p-nitrophenol d) phenol
27. Hydrogen bonding increases –  
a) boiling point b) volatility c) molecular mass d) density

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28. Due to hydrogen bonding, water has –  
a) higher boiling point   b) lower boiling point   c) low viscosity   d) none
29. Ice floats on water due to –  
a) hydrogen bonding creating open structure  
b) density of ice > water  
c) molecular mass difference  
d) none
30. Which of the following contains both ionic and covalent bonds?  
a) NaOH   b)  $\text{NH}_4\text{Cl}$    c)  $\text{H}_2\text{O}$    d)  $\text{CH}_4$
31. The molecule with coordinate as well as covalent bonds –  
a)  $\text{NH}_4^+$    b) NaCl   c)  $\text{CH}_4$    d)  $\text{H}_2$
32. Which of the following is diamagnetic?  
a)  $\text{N}_2$    b)  $\text{O}_2$    c)  $\text{O}_2^-$    d)  $\text{B}_2$
33. Which of the following species is paramagnetic?  
a)  $\text{O}_2$    b)  $\text{CO}_2$    c)  $\text{N}_2$    d)  $\text{CH}_4$
34. Which molecule violates the octet rule by having less than 8 electrons?  
a)  $\text{BeCl}_2$    b)  $\text{CH}_4$    c)  $\text{NH}_3$    d)  $\text{H}_2\text{O}$
35. Which molecule violates the octet rule by having more than 8 electrons?  
a)  $\text{SF}_6$    b)  $\text{CH}_4$    c)  $\text{H}_2\text{O}$    d)  $\text{NH}_3$
36. Which molecule has incomplete octet?  
a)  $\text{BF}_3$    b)  $\text{NH}_3$    c)  $\text{H}_2\text{O}$    d)  $\text{CH}_4$
37. Which molecule has expanded octet?  
a)  $\text{SF}_6$    b)  $\text{CH}_4$    c)  $\text{H}_2\text{O}$    d)  $\text{CO}_2$
38. Which molecule has odd number of electrons?  
a) NO   b)  $\text{N}_2$    c)  $\text{CO}_2$    d)  $\text{CH}_4$
39. The central atom in  $\text{SF}_6$  is –  
a)  $\text{sp}^3\text{d}^2$  hybridised  
b)  $\text{sp}^3$  hybridised  
c)  $\text{sp}^2$  hybridised  
d)  $\text{dsp}^3$  hybridised
40. The shape of  $\text{SF}_6$  molecule is –  
a) octahedral  
b) trigonal bipyramidal  
c) square planar

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- d) linear
41.  $\text{PCl}_5$  has hybridisation –  
a)  $\text{sp}^3\text{d}$   
b)  $\text{sp}^3$   
c)  $\text{sp}^3\text{d}^2$   
d)  $\text{sp}^2$
42. The shape of  $\text{PCl}_5$  molecule is –  
a) trigonal bipyramidal  
b) tetrahedral  
c) octahedral  
d) linear
43.  $\text{XeF}_2$  molecule is –  
a) linear  
b) bent  
c) trigonal  
d) square planar
44. The hybridisation of Xe in  $\text{XeF}_2$  is –  
a)  $\text{sp}^3\text{d}$   
b)  $\text{sp}^3$   
c)  $\text{sp}^2$   
d)  $\text{sp}^3\text{d}^2$
45. The number of lone pairs on Xe in  $\text{XeF}_2$  –  
a) 3  
b) 2  
c) 1  
d) 4
46. Which of the following molecules is planar?  
a)  $\text{BF}_3$  b)  $\text{NH}_3$  c)  $\text{H}_2\text{O}$  d)  $\text{CH}_4$
47. The shape of  $\text{NH}_3$  molecule is –  
a) trigonal pyramidal  
b) trigonal planar  
c) tetrahedral  
d) square planar
48. The bond angle decreases in the order –  
a)  $\text{CH}_4 > \text{NH}_3 > \text{H}_2\text{O}$   
b)  $\text{H}_2\text{O} > \text{NH}_3 > \text{CH}_4$   
c)  $\text{NH}_3 > \text{CH}_4 > \text{H}_2\text{O}$   
d)  $\text{CH}_4 > \text{H}_2\text{O} > \text{NH}_3$

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49. The molecule with three lone pairs on central atom –

- a)  $\text{XeF}_2$
- b)  $\text{NH}_3$
- c)  $\text{H}_2\text{O}$
- d)  $\text{SF}_6$

50. The shape of  $\text{XeF}_6$  molecule is –

- a) distorted octahedral
- b) perfect octahedral
- c) linear
- d) square planar

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## Answer Key – Set 4

1-a 2-a 3-a 4-a 5-a 6-a 7-a 8-a 9-a 10-a  
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-d 26-a 27-a 28-a 29-a 30-b  
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