Ionic Bond, Latice Energy,

Characteristic of Ionic Compounds

1. The electro negativities of two elements are 1.2 and 4.0. The bond formed between them is likely

1. Ionic 2. Covalent 3. Dative 4. Metallic

2. Ionic nature of compound is highest when elements of the following groups combine

1. I A and VII A 2. II A and VI A 3. III A and V A 4. IA and VIA

3. An Electrovalent compound is formed by the combination of

1. P and S 2. K and F_2

3. H_2 and O_2 4. B and Cl_2

4. Which of the following can favours the formation of cation?

1. Low ionization potential 2. High electron affinity

3. High electro negativity 4.High ionization potential

5. Most stable ionic compound among the following is

1) Li_2O 2) MgO 3) Cs_2O 4) KI

6. Ion having pseudo inert gas configuration in the following

1. Zn^{+2} 2. Cu^{+} 3. Ag^{+} 4. All of these

7. Most ionic Sodium halide is

1. NaF 2. NaBr 3. NaCl 4. NaI

8. Most favourable conditions for i onic bond formation are

1. Low charge on ions, large cation and small anion

2. High charge on ions, small cation and large anion

3. High charge on ions, large cation and small anion

4. Low charge on ions, small cation and large anion

9. From the data given below for NaCl, the electron affinity of chlorine [-E_a] is

ΔH_f **= - 98.2 K.Cal / mole**

S_{Na} **= 36 K.Cal / mole**

I_{Na} **= 118.5 K.Cal / mole**

$\frac{1}{2}D_{Cl_2}$ **= 29 K.Cal / mole**

U_{Nacl} = - 184.2 K.Cal / mole

1. -97.5 K.Cal / mole 2. -108 K.Cal / mole

3. -75 K.Cal / mole 4. -128 K.Cal

10. The crystal structure of Cesium Chloride is

1. Body centered cubic 2. Face centered cubic

3. Tetrahedral 4. Octahedral

11. Number of ion pairs in CsCl unit cell is

1. 1 2. 2 3. 4 4. 8

12. The co-ordination number of the cation in the face centred cubic lattice is

1. 4 2. 8 3. 3 4. 6

13. The positions of Cl^- ions in NaCl structure are

1. Corners of the cube

2. Edge centres of the cube

3. Corners as well as centres of the faces of the cube

4. Centres of faces of the cube

14. The position of Cs^+ ion in CsCl structure is

1. At the corners of the cube and body centre of the cube.
2. At the centre of each face of the cube
3. At the body centre of the cube
4. At the edge centre of the cube

15. Co-ordination number of cation is maximum in

1. NaCl 2. ZnO
3. CsCl 4.KCl

16. (A): Generally Ionic compounds have high melting points.

(R): In ionic compounds Inter ionic forces are weak.

1) Both (A) and (R) are true and (R) is the correct explanation of (A).
2) Both (A) and (R) are true and (R) is not the correct explanation of (A).
3) (A) is true but (R) is false.
4) (A) is false but (R) is true.

17. (A): NaCl is bad conductor in the solid state.

(R): And ions are not free in the solid state.

1) Both (A) and (R) are true and (R) is the correct explanation of (A).
2) Both (A) and (R) are true and (R) is not the correct explanation of (A).
3) (A) is true but (R) is false.
4) (A) is false but (R) is true.

18. Ionic compounds do not exhibit space isomerism because

1. They are crystalline solids 2. Ionic bond is non-directional

3. Their solids are non- electrolytes 4. They have high lattice energy

19. Number of ion pairs present in the unit cell of NaCl is

1. 2 2. 4 3. 6 4. 8

20. Which of the following conducts electricity?

1. Crystalline NaCl 2. Fused NaCl 3. Molten sulphur 4. Diamond

21. Born- Haber cycle is based on

1) Faradays law 2) Gay-Lussacs law 3) Bohr's model 4) Hess's law

22. Lattice energy of NaCl is 'X'. If the ionic size of is equal to that of and is equal to, then lattice enegry associated with crystal AB is

1) X 2) 2X 3) 8X 4) 4X

23. The mass of one unit cell of NaCl is

1) 234 amu 2) 234 gm 3) 58.5 amu 4) 58.5 gm

24. Born Haber cycle may be used

1. To find out electron affinity of non-metal atoms
2. To find out lattice energy of the ionic compounds
3. To find out electronegativity of non-metal atoms
4. Both 1 and 2

25. Ionic compounds like AgCl, and are insoluble in water. This is because,

1) Ionic compounds are insoluble in water.

2) The dielectric constant of water is low.

3) These molecules have high hydration energy than lattice energy.

4) These molecules have high lattice energy than hydration energy.

26. If Na^+ ion is larger than Mg^{2+} ion, and S^{2-} ion is larger than Cl^- ion, which of the following will has higher lattice energy

1. NaCl 2. Na_2S 3. $MgCl_2$ 4. MgS

27. The number of unit cells present in 58.5gm of NaCl crystal is

1. 6. 023 2. 1.5 3. 6. 023 4. 3. 0115

28. Stability of ionic compound is influenced by

1. Electronegativity
2. Lattice energy
3. Sublimation energy
4. High melting temperature

29. The best ionic compound among the following is

1. Aluminium oxide 2. Aluminium fluoride
3. Aluminium carbide 4.Aluminium Chloride

30. Which of the following is not correct regarding the properties of ionic compounds?

1. Ionic compounds have high melting and boiling points.
2. Their reaction velocity in aqueous medium is very high.
3. Ionic compounds in their molten and aqueous solutions do not conduct electricity.
4. They are highly soluble in polar solvents.

31. The polarising power is maximum for which of the following ion

1. Mg^{+2} 2. K^+ 3. Cs+ 4. Al^{3+}

32. Ionic reactions are

1. Fast 2. Slow 3. Very slow 4. Moderately slow

33. The correct order of increasing Ionic character is

1) $BeCl_2 < MgCl_2 < CaCl_2 < BaCl_2$

2) $BeCl_2 < MgCl_2 < BaCl_2 < CaCl_2$

3) $BeCl_2 < BaCl_2 < MgCl_2 < CaCl_2$

4) $BaCl_2 < CaCl_2 < MgCl_2 < BeCl_2$

34. The compound having least lattice energy is

1. Potassium iodide 2. Sodium bromide

3. Sodium iodide 4. Potassium bromide

35. Anhydrous is covalent but hydrated is ionic because

1) Dissolves in 2) Has planar structure

3) IE of Al is low 4) Hydration energy of Al compensates the IE

36. Match the electrovalencies of respective cations in the given compounds

List – I	List – II
A) $MgCl_2$	**1) 1**
B) $AlCl_3$	**2) 3**
C) Na_2SO4	**3) 4**
D) $SnCl_4$	**4) 2**
	5) 5

1) A - 2; B - 3; C - 1; D – 4 2) A - 4; B - 5; C - 1; D - 3

3) A - 4; B - 2; C - 1; D - 3 4) A - 4; B - 3; C - 2; D - 5

37. Which of the following is more ionic?

1) AgF 2) AgCl 3) AgBr 4) AgI

38. In the equation used for calculation of lattice energy. 'A' represents

1) Boltzman constant 2) Madelung constant

3) Born exponent 4) Arrhenius constant

KEY

1) 1 2) 1 3) 2 4) 1 5) 2 6) 4 7) 1 8) 1 9) 1 10) 1

11) 1 12) 4 13) 3 14) 3 15) 3 16) 3 17)1 18) 2 19) 2 20) 2

21) 4 22) 4 23) 1 24) 4 25)4 26) 4 27) 2 28) 2 29) 2 30) 3

31) 4 32) 1 33) 1 34)4 35) 4 36) 3 37) 1 38) 2