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T.D.C. Part-I (Hons)

 **UNIT:III S-BLOCK ELEMENTS**

**Diagonal Relationship**

Some elements of certain groups in the second period resemble with the certain elements of the next higher group in the third period. This is called diagonal relationship. Thus lithium resembles magnesium (Mg), beryllium (Be) resembles aluminum (Al) and boron (B) resembles silicon (Si).

**Diagonal relationship of Be and Al .**

Be and Al show diagonal relationship because of the following reasons :

1.Polarizing power of Be+2 and Al+3 are similar magnitude.

2.The standard oxidation potential of Be and Mg are quite close to each other Be resemble Al in the following respects.

1.Be and Al both react with strong alkalies liberating hydrogen and forming beryllate and aluminate ions

Be + 2OH- → BeO- - + H2

2Al + 2OH- + 2H2O → 2AlO- + 3H2

2. Oxide and hydroxide of both the metal are amphoteric in nature.

BeO + 2HCl → BeCl2 + H2O

Be(OH)2 + 2HCl → BeCl2 + H2O

Al2O3 + 2NaOH → 2NaAlO2 + H2O

Al(OH)3 + 3HCl → AlCl3 + 3 H2O

3. Both are hard.

4.Their oxidation potential are of the same order.

5.Their chloride are formed by similar methods-

BeO + C + Cl2 = BeCl2 + CO

Al2O3 + 3C + 3Cl2 = 2 AlCl3 + CO

**Hydride.**

Ans: The salts of alkali metals are the foremost ionic salts known. Although lithium is an alkaline metal yet its compounds., particularly halides, are slightly covalent in nature. This is often because the Li\* ion has small size and has maximum tendency to withdraw the electrons towards itself from the negative ion.

**Solvation and Complexing tendencies**

Solvation describes the interaction of solvent with dissolved molecules. Ionized and uncharged molecules interact strongly with solvent, and therefore the strength and nature of this interaction influence many properties of the solute, including solubility, reactivity, and color, also as influencing the properties of the solvent like the viscosity and density. within the process of solvation, ions are surrounded by a concentric shell of solvent. Solvation is that the process of reorganizing solvent and solute molecules into solvation complexes. Solvation involves bond formation, hydrogen bonding, and van der Waals forces. Solvation of a solute by water is named hydration.