Chemistry - 12th Class Chemistry Chapter 1 Short Questions Preparation

Q1. Why melting and boiling points of elements belonging to groups VA-VIIA are lower?

Ans 1: Melting and boiling points of elements belonging to groups VA-VIIA are lower because elements of these groups exist as small,covalent molecules,rather than as three dimensional lattice having very weak intermolecular forces between them.Consequently,their melting and boiling points are extremely low.

Q2. Ionization energy of Al^{3+} is greater than Mg^{2+}.Give the reason.

Ans 1: By moving from left to right in a period,the outer shell remains the same,while the nuclear charge increases effectively that makes the removal of an electron difficult and hence the value of ionization energy increases.Similarly the size of Al is smaller than Mg so Al^{3+} it has greater ionization energy than Mg^{2+}.

Q3. Describe 7^{th} period of modern periodic table.

Ans 1: This period is incomplete.This contains only two normal elements Fr and Ra,ten transition elements and fourteen inner transition elements.The inner transition elements of this period are called Actinides,as they starts after Ac(Actinium).The actinides are also shown at the bottom of the periodic table under the Lanthanides. Due to their scarcity,the inner transition elements are also called Rare Earth Elements.

Q4. How do member of group V!-A(except oxygen) show+4 and +6 oxidation state?

Ans 1: Elements of group VI-Aexcept oxygen show covalency of +2,+4 and +6,+2 oxidation shown due to 2 unpaired electrons in the p orbitals.+4 oxidation state is shown when 1 electron from p-orbital is promoted to the next vacant d-orbital,while +6 oxidation state is shown when another electron from s-orbital is also promoted to the next vacant d-orbital.

Q5. Write a note on blocks in periodic table.

Ans 1: **Blocks in periodic table**:Elements in the periodic table can be classified into four blocks,this classification is based upon the valence orbital of the elements involved in chemical bonding.According to this classification,Elements of IA and IIA subgroup are called s-block elements.The elements for IIA to VIIIA subgroup are known as p-block elements as their valence electrons are present in p orbital.Similarly in transition elements,electrons are in d orbital are responsible for their valency hence they are called d-block elements.For Lanthanides and Actinides valence electrons are present in f orbital hence these elements are f-block elements.

Q6. How melting and boiling points varied in a period?

Ans 1: Across the short periods,the melting and boiling points of elements increase with the number of valance electrons up to group IVA and then decrease up to the noble gases.The melting points of group IA element are low because each atom in them provides only one electron to for a bond with other atom.Melting points of group IIA elements are considerable higher than those of group IA elements because each atom in them provides two binding electrons.An important change occurs when we move from group IVA to group VA,VIA,VIIA as the lighter elements of these group exist as small covalent molecules.Rather than as three dimensional lattices.

Q7. Why the oxidation state of noble gases is usually zero?

Ans 1: Group VIII A elements,which are also called zero group elements usually show zero oxidation state because there is no vacancy in their outer most shell to accommodate more electrons.

Q8. Define electron affinity.Give its trend in periodic table.

Ans 1: **Electron affinity:**Energy released or absorbed,when an electron is added to a gaseous atom to form a negative ion is called electron affinity.

Ans 2: **Trend of electron affinity in periodic table**:Electron affinity generally increases with increasing atomic number within a period and decreases from lighter to heavier elements in a given group of the periodic table.

Q9. What is lanthanide contraction?

Ans 1: **Lanthanide contraction**:The atomic number increases from left to right,the atomic radius decreases,This gradual decrease in the radius is due to increase in positive charge in the nucleus.As the positive charge increases,the negatively the outer most shell becomes gradually smaller.This effect is quite remarkable in the elements of longer periods in which d and f subshells are involved.For example the gradual reduction in the size of Lanthanides is significant and called Lanthanide Contraction.

Q10. The oxidation state vary in a period,but remain almost constant in a group.Give reason.

Ans 1: The number of electrons in outermost shells goes on changing in periods from left to the right,So oxidation states go on changing.The number of electrons in the outermost shells remains the same in a group,so the oxidation states remains the same.Anyhow,the process of unpairing of electrons may happen in a group and oxidation states may change.