XII UNIT 8

The d and f-Block Elements

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CHEMISTRY MANTRA

105 Dilbagh Nagar Extension Jalandhar

Unit 8
The d & f block elements

Q.1 What are transition metals. Why are they called so?
Answer: The transition elements are those elements which have incomplete d-orbital in their ground state or common oxidation state. They are so called because they are in between s and p block elements,
Q.2 Zn, Cd and Hg are not regarded as transition metals. Why?
Answer: In the electronic configuration of Zn, Cd and Hg the d-orbitals are completely filled in the ground state as well as in their common oxidation state. So, they are not regarded as transition metals.
Q.3 What is the lowest common oxidation state of transition metals?
Answer: Lowest common oxidation state of transition metals is +2.
Q.4 In which compound transition metals show very low oxidation states?
Answer: Compounds having ligand capable of acceptor character in addition to the bonding e.g. CO, NO, etc. show very low oxidation state.
Q.5 Define diamagnetism and par magnetism.
Answer: Substances which are attracted by applied magnetic field are called paramagnetic substances and this property is called paramagnetism while, substances which are repelled by applied magnetic field are called diamagnetic substances and this property is called diamagnetism.
Q.6 What is ferromagnetic substance? Give one example.
Answer: A substance which is attracted very strongly by applied magnetic field is called ferromagnetic substance e.g. Iron, Cobalt, nickel, etc.
Q.7 Which catalyst is used in Haber's process?
Answer: Finely divided iron is used as catalyst in Haber's process.
Q.8 In which reaction Ni is used as a catalyst?
Answer: Ni is used as catalyst in catalytic hydrogenation,
Q.9 What are interstitial compounds?
Answer: Interstitial compounds are those compounds which are formed when small atoms like H, C and N are trapped in the crystal lattice of metals.
Q.10 Name the catalyst which catalyses reaction between iodide and per sulphate ions.
Answer: Iron (III) acts as catalyst in the reaction between iodide and persulphate ions.
Q.11 What is an alloy ?
Answer: An alloy is a homogeneous mixture of two or more metals. e.g. Brass (Cu-Zn)
Q.12 Name an alloy of transition metals with non-transition metals.
Answer: (i) Bronze (copper-tin)
Q.13 Which transition metal of 3d series exhibits the largest number of oxidation states and why?
Answer: Manganese: It has maximum number of unpaired electron.
Q.14 What are inner transition metals ?

Answer: Those elements in which last electron goes in -orbital are called inner transition metal.

Q.15 What are lanthanoids?

Answer: Those -block elements whose last electron goes in 4subshell are called lanthanoids.

Q.16 What are actinoids?

Answer: Those -block elements whose last electron goes in 5 sub-shell are called actinoids.

Q.17 How many orbitals are incomplete in inner transition elements?

Answer: Three orbitals are incomplete in inner transition metals.

Q.18 What is lanthanoid contraction?

Answer: The gradual decrease in atomic radii or ionic radii from lanthanum to lutetium is called lanthanoid contraction.

Q.19 The radii of transition metals of 2nd series and 3rd series are very similar why?

Answer: Due to lanthanoid contraction they have same charge ratio.

Q.20 Atomic radii of Zr (160 pm) are identical with the radii of Hf (159 pm) Why?

Answer: Due to lanthanoid contraction.