

M.H. Khan D2(H) 22.4.20

Topic - d/f-block, transition character.

d and f-block.

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Date
Page

D-block :- when last e- enter into d-subshell and having general electronic configuration $(n-1)d^{1-10} ns^2$ that is 1 to 10 e- are present in last d-subshell and 1 to 2 e- present in last s-subshell
eg:- $Cr_{24} - 1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^5$

when atomic no. greater than 10 then write 3d 4s but for less than 10 we write 4s 3d but in both case firstly fill e- in 4s than into 3d with obey stability order.
(Full filled > Half filled > unfilled)

- d-block element show variable oxidation no. and variable valency due to presence of vacant d-orbital.

- Maximum oxidation number for d-block = no. of unpaired e- in last d-subshell + no. of e- in last s-subshell.

minimum oxidation no. for d-block = no. of e- in last s-subshell.
eg:- $Cs - [Xe] 3d^5 4s^1$

Maximum oxidation no. = 5+1=6

Minimum oxidation no. = 1
Range of O. No. = +1 to +6

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Date _____
Page _____

+1, +2, +3, +4, +5, +6
↓ ← → ↓
R.A. both O.A + R.A. O.A.

Reducing agent

- Oxidation :- ↑ in O.N. or ↓ in e^- no. in product side.

Addition of more electronegative atom (E.N. greater than 2.5) and removal of less electronegative atom (E.N. less than 2.5)

- Reduction :- ↓ in O.N. or ↑ in e^- no. in product side.

Addition of less E.N. atom (E.N. less than 2.5) and removal of more electro-

negative atom (E.N. greater than 2.5)

- Oxidising agent :- Those substance which oxidise to other and reduce itself, when C. H. is present in Max. oxidation state = old group

eg:- H_2SO_4 , HNO_3 , $KMnO_4$, $K_2Cr_2O_7$, CO_2 etc. All non-metals act as oxidising agent. Oxidising nature increase with ↑ E.N. value of given atom.