# (m) 4/10

#### ELECTRONIC CONFIGURATION

DEFINITIONS - "The knowledge about the distribution of electrons in various energy shells, subshells and orbitals in an atom in the ground state is known as electronic configuration

OR

The distribution of es in different orbitals is known as electronic configuration of the atom"

# AUFBAU PRINCIPLE Aufbau is a German word which means construction

This principle is not based upon scientist name.

In the ground state of the atoms, the orbitals are filled, in order of their increasing energies.

Order in which es can be filled is given as -LS 25 2p 3s 3p 4s 3d 4p 5s 4d 5p 6s 4f 5d....

\* The energy of an orbital is determined by the quantum numbers in 41 with the help of important rule known as (n+1) rule or Bohr Bury's rule.

According to this 
Orbitals are filled in order of increasing value of (n+1)

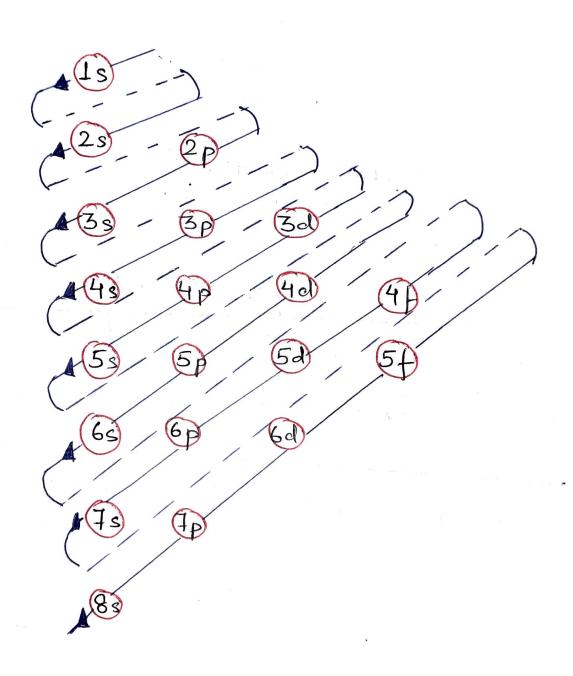
2) If (n+l) is equal then orbital with lower value of n will be first.

for ego- 1) 3s (n+1 = 3+0=3) possesses lower energy than
3p(n+1 = 3+1=4)

2p(n+1=2+1=3) + 3s (n+1=3+0=3) have same

(n+1) value but 2p orbital has lower value of n d-therefore is lower in energy than 3s-orbital.

Sequence of energy level - Systematic diagram



### Exception of Autbou principle

\* In a single e system we can't opply Authors
principle.

Egi- Hatom, Het, Li+++

\* Ale to single et system energy can be shown on the basis of 'm'.

Energy & n

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## HUND'S RULE OF MAXIMUM MULTIPLICITY

According to this rule, electron pairing will not take place in orbitals of same energy (same sub-shell) until each orbital is first singly filled with parallel spins.

ELECTRONIC CONFIGURATION OF ATOMS. At. NO(Z) ELEMENTS ELECTRONIC CONFT. 15 Hydrogen(H) 1 1 Helium (He) 152 2 Lithium(Li) 182 281 III 3 Beryllium(se) 15<sup>2</sup> 25<sup>2</sup>
Boron (B) 15<sup>2</sup> 25<sup>2</sup> 2pl 11 11 4 5 Carbon (c) 152252p2 11 11 6 Nitrogen(N) 152252p3 M M M 11 Ŧ Oxygen (0) 152252p4 III II III 1 8 Fluorine (1) 132252p5 11 11 11/11 9 Neon (Ng) 15252p6 MM MM 11/11/14 10 sodium (Na) 152252p635 AN 11 1V11414 1 11 Magnesium (Mg) 15225226352 MM MU 141414 14 12 13 Silicon (Si) 152252p63523p2 11 11 111111 11 11 14 Phosphorous (P) 15252p6353p3 11 11 11111 11 11 15 Sulphur (s) 152 25 2p635 3p4 TT TT 171111 11 11111 16 Chlorine ((1) 132252p63523p5 11 11 [11/11/11] 17 Argon (Ar) 1822\$2p63823p6 [] [] [] [] [] [] [] [] [] 18 Potassium(k) 152252p63523p645 W W WINTU 19 Calcium. 152 252 2p6352 3p6452 11 11 11 11 11 11 11 11 11 11 20 ((a).

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	22	Titanium	152252 p6 352 3p6 452 3d2				
		(T:)	מע ווע מאועונ מע מעועוע מע מוועועוע מע				
-	0.7						
	23	Vanadium	15 <sup>2</sup> 25 <sup>2</sup> 2p <sup>6</sup> 35 <sup>2</sup> 3p <sup>6</sup> 45 <sup>2</sup> 3d3				
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	24	Chara	1.2 2.4				
	27	Chromium	152252p63523p64s'305				
		(Cr)	14 11 11/11/11/11/11/11/11/11/11/11/11/11/				
	25	Managnese	1s <sup>2</sup> 2s <sup>2</sup> 2p <sup>6</sup> 3s <sup>2</sup> 3p <sup>6</sup> 4s <sup>2</sup> 3d <sup>5</sup>				
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		(Co)	MA MA THANK MA MANATU TO MANATO				
ł	28	Nickel	1s² 2s² 2p6 3s² 3p6 4s² 3d8				
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	29	Copper	1s2 2s2 2p6 3s2 3p6 4s1 3d10				
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		(Cu)					
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ELECTRONIC CONFIGURATION OF JONS.								
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					Diamagnelic			
	£_	1522522p6 11 11 11/11/11	0		Diamagnelic.			
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	» <b>–</b> i 3+(·)		/ //		,			
	Be3+	12 <sup>1</sup>	1		Paramagnelic			
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1	K+	182252 2p6 3523p6	0	a č	"			
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	7:4+	1 s² 2s² 2p6 3s² 3p6	0	,-	Diamagnelic			
	V3+.		2		Paramagnetic			
4	Cr3+	1s2 2s2 2p6 3s2 3p6 3d3	3		21			
	Mn <sup>2+</sup>	132 252 2p6 352 3p6 3d5	5		<b>ນ</b> ,			
	Mo3+	15252 2p6 352 3p6 3d4	4.		3)			
	fe <sup>2+</sup>	15 <sup>2</sup> 25 <sup>2</sup> 2p <sup>6</sup> 35 <sup>2</sup> 3p <sup>6</sup> 3d <sup>6</sup>	4		n			
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