

10/20

Pauli Exclusion Principle : It states that in an atom or ion there can be no two electrons having the four quantum numbers identical, for their individuality they must differ at least in one quantum number. This principle indicates that for principal quantum number n there can be maximum $2n^2$ electrons.

shell	n	l	m _l	m _s = ±1/2	No. of electrons	Total no. of electrons
K	1	0	0	+1/2, -1/2	2, 1s ²	2 = 2 × 1 ²
L	2	0	0	+1/2, -1/2	2, 2s ²	2 + 6 = 8
		1	+1, 0, -1	+1/2, -1/2	6, 2p ⁶	= 2 × 2 ²
M	3	0	0	+1/2, -1/2	2, 3s ²	2 + 6 + 10 = 18
		1	+1, 0, -1	+1/2, -1/2	6, 3p ⁶	= 2 × 3 ²
		2	+2, +1, 0, -1, -2	+1/2, -1/2	10, 3d ¹⁰	
N	4	0	0	+1/2, -1/2	2	2 + 6 + 10 + 14 = 32
		1	+1, 0, -1	+1/2, -1/2	6	= 2 × 4 ²
		2	+2, +1, 0, -1, -2	+1/2, -1/2	10	
		3	+3, +2, +1, 0, -1, -2, -3	+1/2, -1/2	14	

l, s, j and S, P, d, f are used to describe the electrons individually and to describe an atom as a whole the capital letters such as L, S, J, and S, P, D, F etc. are used.

Russel - Saunders Coupling : Ground State term symbols of atoms and ions.

$\vec{L} - \vec{S}$ Coupling scheme is known as normal coupling.