

HUND'S LAW

Hund's rule: Hund's rule states for the ground state (i.e. state with the lowest set of quantum no. of an atom

- (i) The electron spins add to give the maximum possible S consistent with Pauli principle.
- (ii) When the maximum value of S has been thus determined the orbital momenta add in like manner to give the maximum value of L .
- (iii) For an incompletely filled shell we have

$$J = L - S \text{ for a shell less than half filled.}$$

$$J = L + S \text{ for a shell more than half filled}$$

It is required to obtain the cha

racteristics of ground state of an atom or ion whose electronic configuration is shown through $L-S$ coupling. The orbital angular momenta of the 2 electrons in the atom are vectorially added to obtain the total orbital angular momentum of the atom

The contribution from the electron in the closed shell vanishes and so the summation has to be carried only over the electrons outside the close cell in a similar manner the total spin S of the atom is obtained by the summing over the spins of the electron outside the close cell

$$L = L_1 + L_2 + \dots$$