

SRI TRIDANDI DEV GOVT. DEGREE COLLEGE,
SHAHAPUR

Subreel - Chemistry SEM I - MDC-1

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SIGNIFICANCE OF QUANTUM NUMBER

All four quantum no. significance are:-

(1) PRINCIPAL QUANTUM NUMBER (n):- The significance of principal quantum no are as follows:-

(a) It defines the main energy level or shell.

(b) It determines the overall size of the orbital and the average distance of the electron from the nucleus.

(c) Higher value means higher energy and greater distance from the nucleus.

(2) Significance of Azimuthal quantum number are as follows:-

(a) It indicates the subshell or shape of the orbital.

(b) It determines the shape of the orbital.

(c) It helps in identifying the subshell (s, p, d, f)

(d) Allowed value $l = 0$ to $(n-1)$ for a given n

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(3) significance of magnetic quantum no. are as follows:-

- (a) It indicates the orientation of the orbital in a space.
- (b) It determines the no. of orbitals in a subshell.
- (c) Allowed value $m_l = -l$ to 0 to $+l$ (including 0)
- (d) It helps in the spatial orientation of orbitals.

(4) significance of Spin quantum no. are as follows:-

- (a) It indicates the spin of the electron.
- (b) It explains the two possible spins of ~~the~~ an electron.

(c) Allowed value $+\frac{1}{2}$ and $-\frac{1}{2}$
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- (d) It is responsible for electron pairing in an orbital (Pauli's exclusion principle).

