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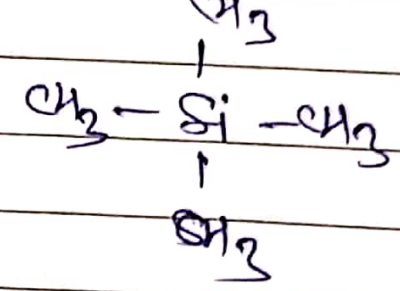
# Position of Signals (chemical shift)

The position of the signals in the spectrum helps us to know the nature of proton viz. aromatic, aliphatic, acetylenic, vinylic etc. Each types of proton will have different electronic environments and thus they absorb at different applied field strength.

For measuring chemical shift of various proton in a molecule, the signal for TMS (tetra methyl silane) is taken as a reference.



The difference in the absorption position of the proton with ~~reference~~ respect to TMS signal is called chemical shift.

It is denoted by $\delta$-value.

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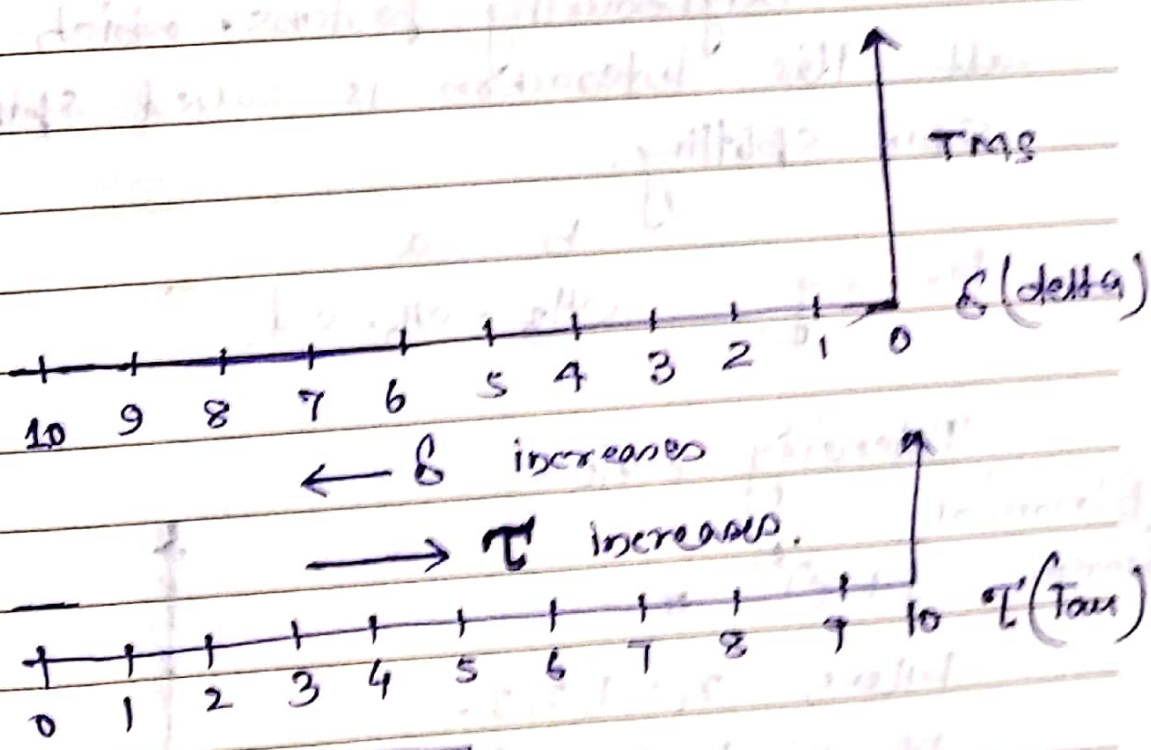
Thus,

$$\delta = \frac{H_s - H_r}{H_o} \times 10^6 \text{ ppm.}$$

where, $H_s$ = magnetic field strength

$H_r$ = field strength at which absorption occurs.

$H_o$ = applied field strength.




$$\tau = 10 - \delta$$