# PHARMACEUTICAL ORGANIC CHEMISTRY-II- BP301T

UNIT: 1 Benzene and its derivatives

CLASS: 7

## TOPIC: Effect of substituent's on reactivity:

Ortho and Para directing groups contain one (or) more pairs of electrons on the atom and these electrons interact with the ∏ electrons of the benzene increase the electron density.

Hence the benzene ring gets activated for further electrophilic substitution.

So all the ortho and Para directing groups except halogens are activating groups.

Meta directing groups due to the presence of multiple bonds in them with draw electron from the benzene ring and decrease the electron density and hence deactivating the benzene ring further electrophilic substitution. So, all the Meta directing groups are called as deactivating groups.

**Theory of reactivity:**

The rate of electrophilic substitution reaction depends upon the energy of activation. I.e. difference in energy of the transition state and ground state of reactants.

So, the rate depends on the availability of electron in the benzene ring

If the ring is electron rich (-ve) the electrophilic attack is faster. If the ring electron poor (+ve) the electrophilic attack is slower.