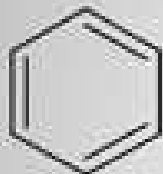


- **Aromaticity (HUCKEL RULE)**

- The aromatic compounds apparently contains alternate double and single bond in a cyclic structure.
- They undergoes substitution reaction rather than addition reaction.
- This characteristic behaviour is called as Aromatic character or Aromaticity.
- **Criteria for Aromaticity**
- **Rule:1-**An aromatic compound is cyclic and planar.
- **Rule:2-** Each atom in an aromatic ring has a p orbital. These p orbital must be parallel for continuous overlapping around the ring.

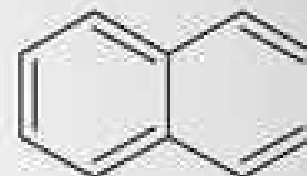
- **Rule:3-** The cyclic pi molecular orbital (electron cloud) formed by overlap of p orbitals must contain  $(4n+2)$  Pi electrons, where  $n=0,1,2,3,$  etc. This is known as "**Huckel rule**".



benzene

Cycloheptatriene

cyclooctatetraene



naphthalene

- **Benzene:** It is a cyclic planar compound. It has p orbital on each carbon of the ring involved in a double bond. It has three double bonds and six pi electrons, which is in accordance with Huckel's rule.
- Therefore  $4n+2=6$  or  $4n=6-2$   
 $4n = 4$       and  $n=1$