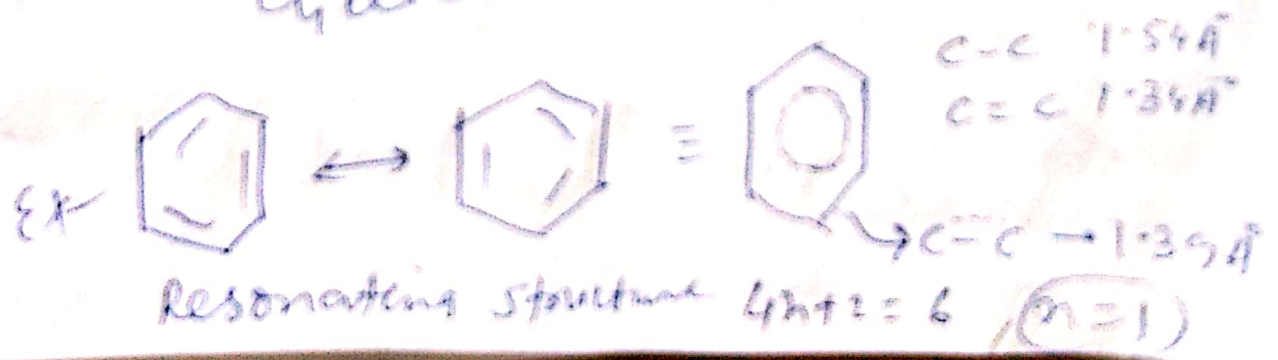


## Discussion on Huckel's rule of Aromaticity

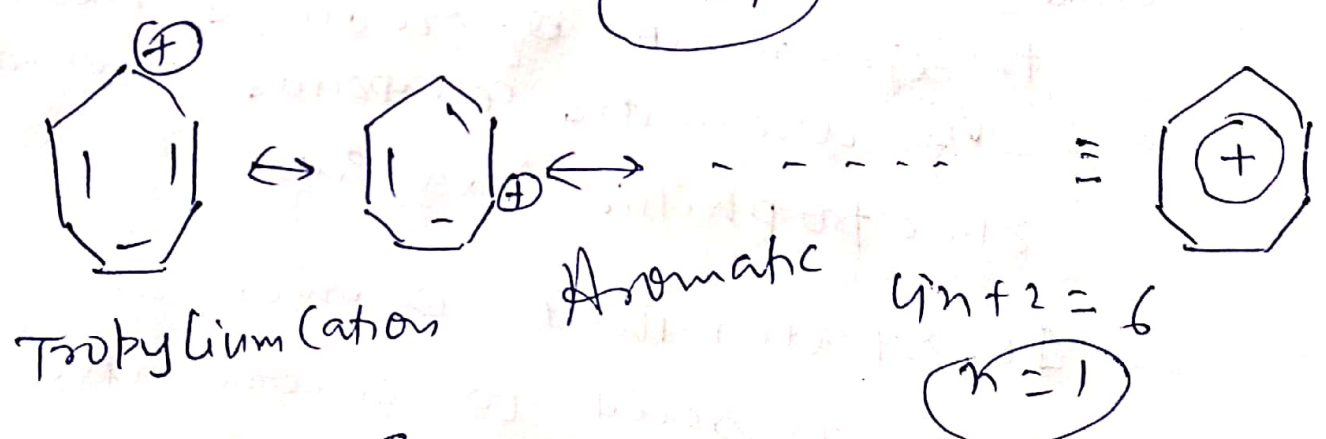
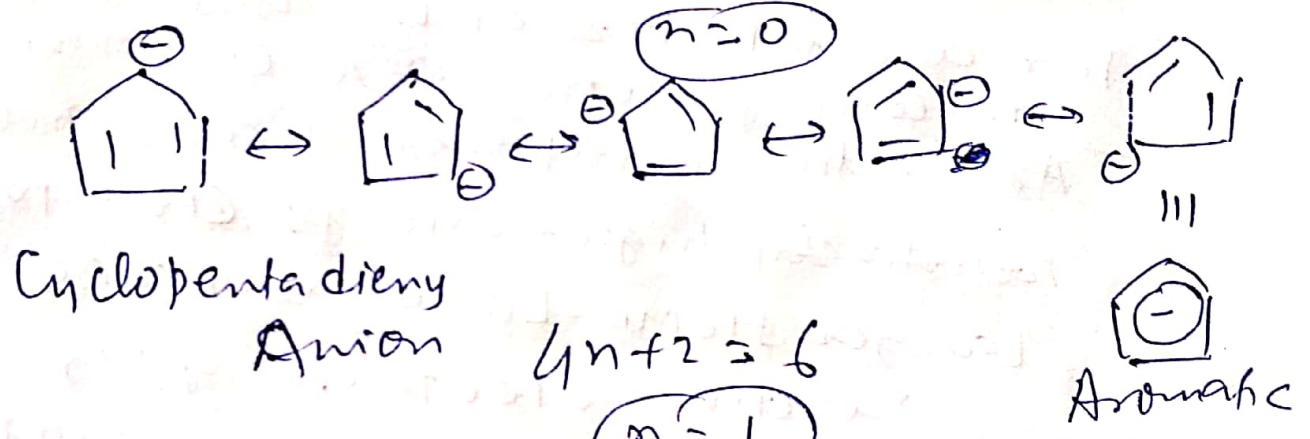
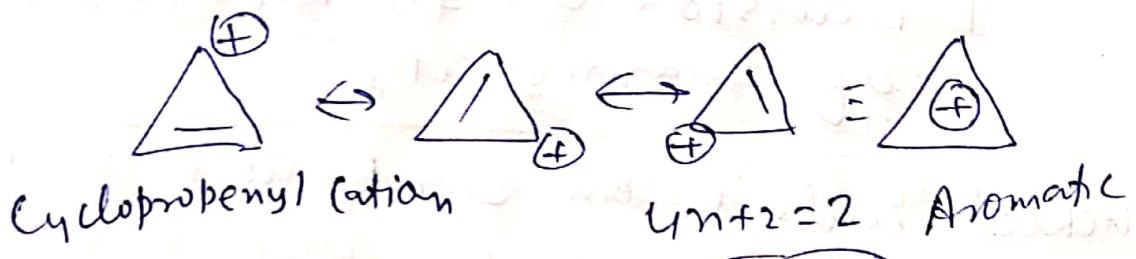
- Huckel's rule is an electronic criteria for aromaticity & it is based on the configuration of  $\pi$ -electrons.
- Aromatic compounds have not relatively high-energy, due to larger HOMO-LUMO gap. Hence absence of reactive electrons gives the agreement of reduced reactivity of aromatic compound towards electrophilic reagents.

- It states that a molecule or ion is said to be aromatic if it contains  $(4n+2)$  cyclic  $\pi$  electrons where  $n = 0, 1, 2, 3, 4, \dots$

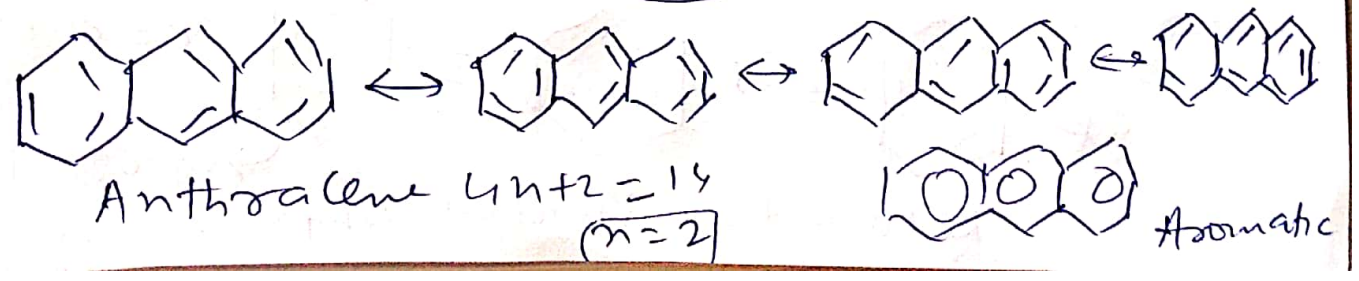
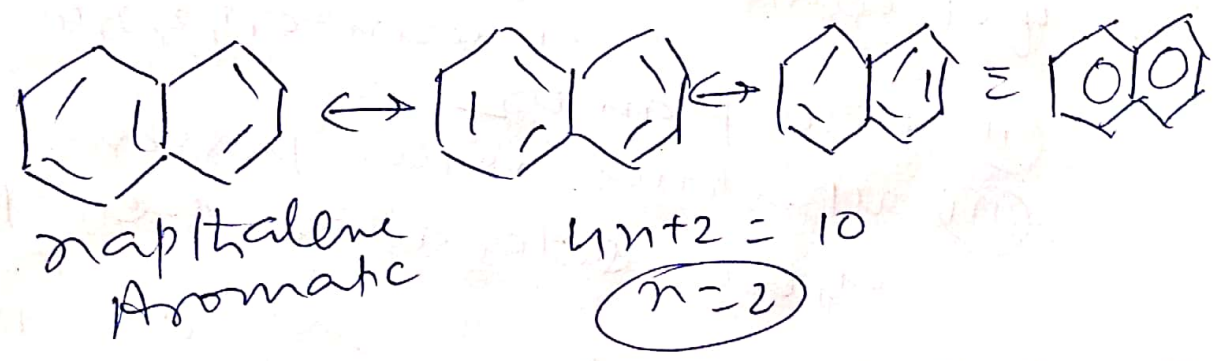
- (i) It is planar
- (ii) all atoms in cycle possess cyclic delocalized  $\pi$ -electrons.



✓ Conjugated Cyclic Cation & anion may also be aromatic



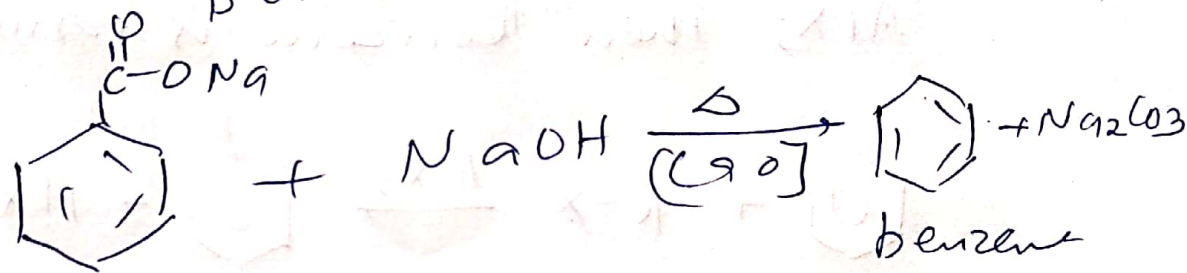
Bimuclear fused Aromatic Compound



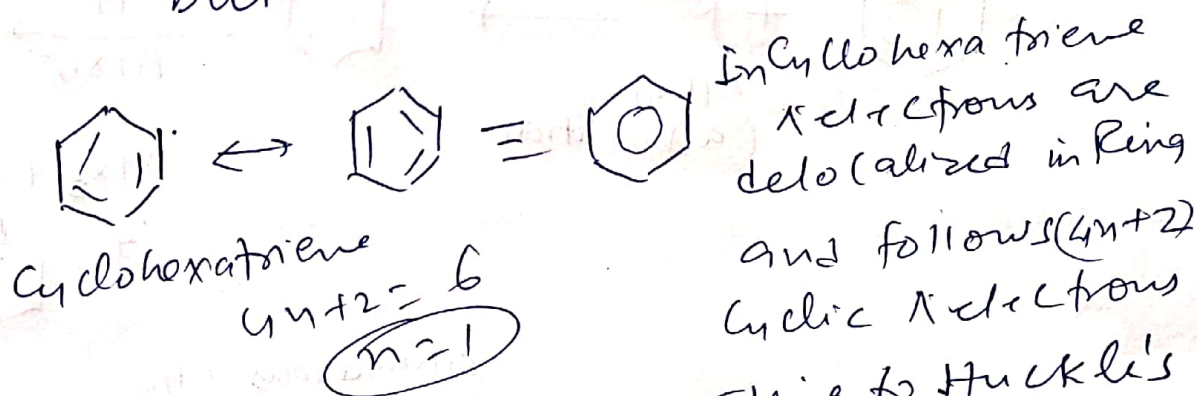
Q. Give Reaction of Na benzoate  
- with soda lime

- When sodium benzoate  
is heated with soda lime

Benzene is formed

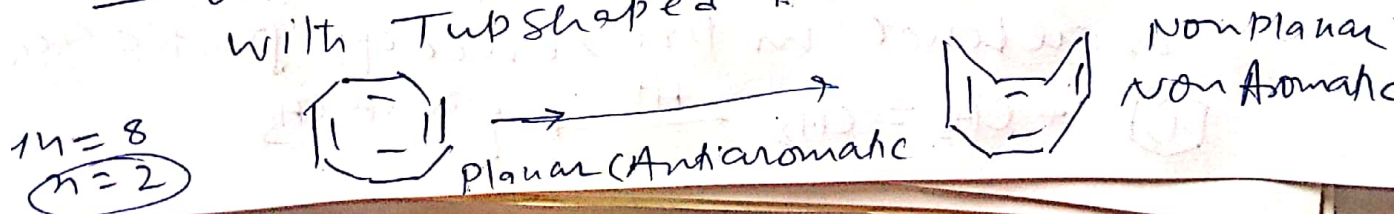


Q Explain Cyclohexatriene is Aromatic  
but Cyclooctatetraene is not



Which is as according to Huckel's  
 Rule of Aromatic. hence it's  
 hybrid is benzene which is  
 Aromatic.

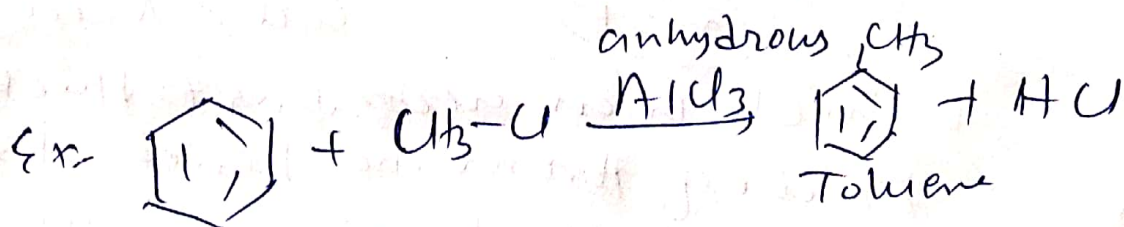
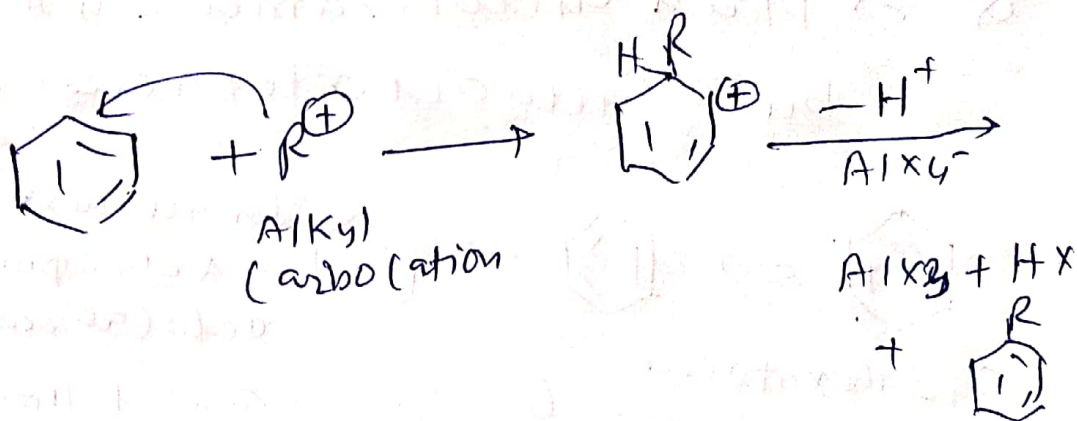
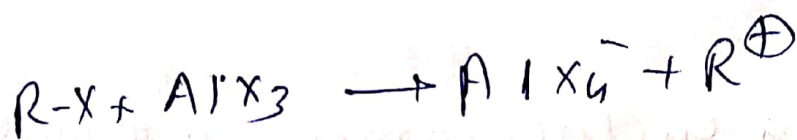
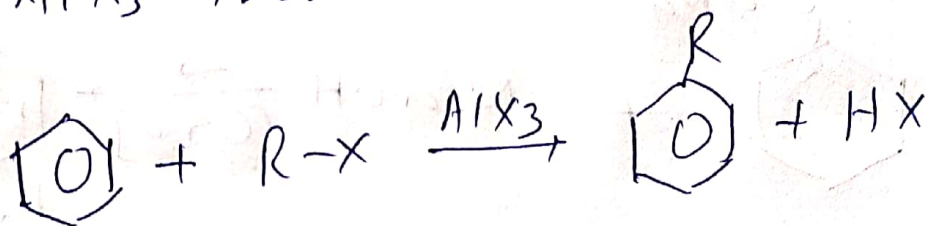
- while Cyclooctatetraene is nonplanar  
 with Tubshaped Non delocalized system



# Alkylation of benzene

- Benzene can be alkylated using Friedel-Crafts reaction.

- When benzene is treated with R-X in presence of anhydrous  $AlX_3$  then <sup>alkyl</sup>benzene is formed



✓ Alkylation can also be carried out by treating benzene with alkene or alcohol in presence of protic acid

