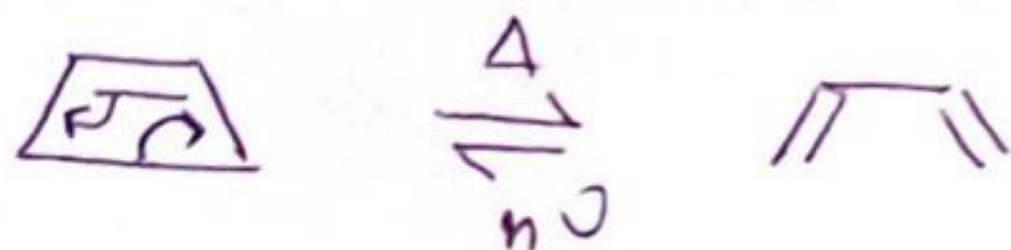


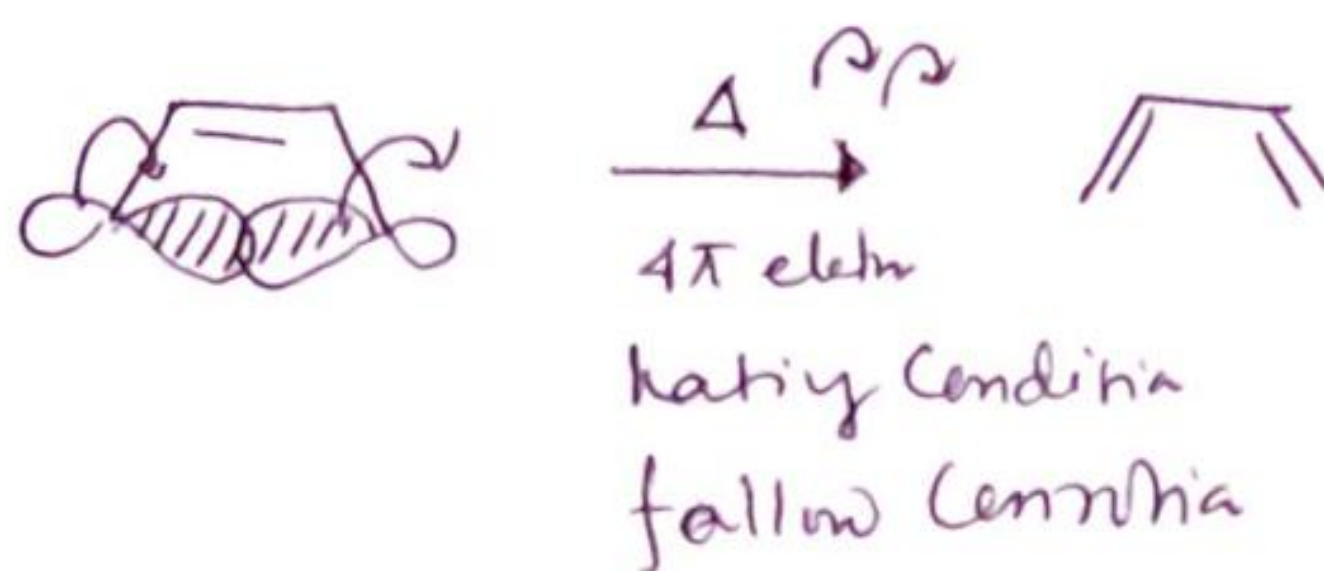
Electrocyclic Ring opening

5th Sem, Chemistry
Rathin Jana

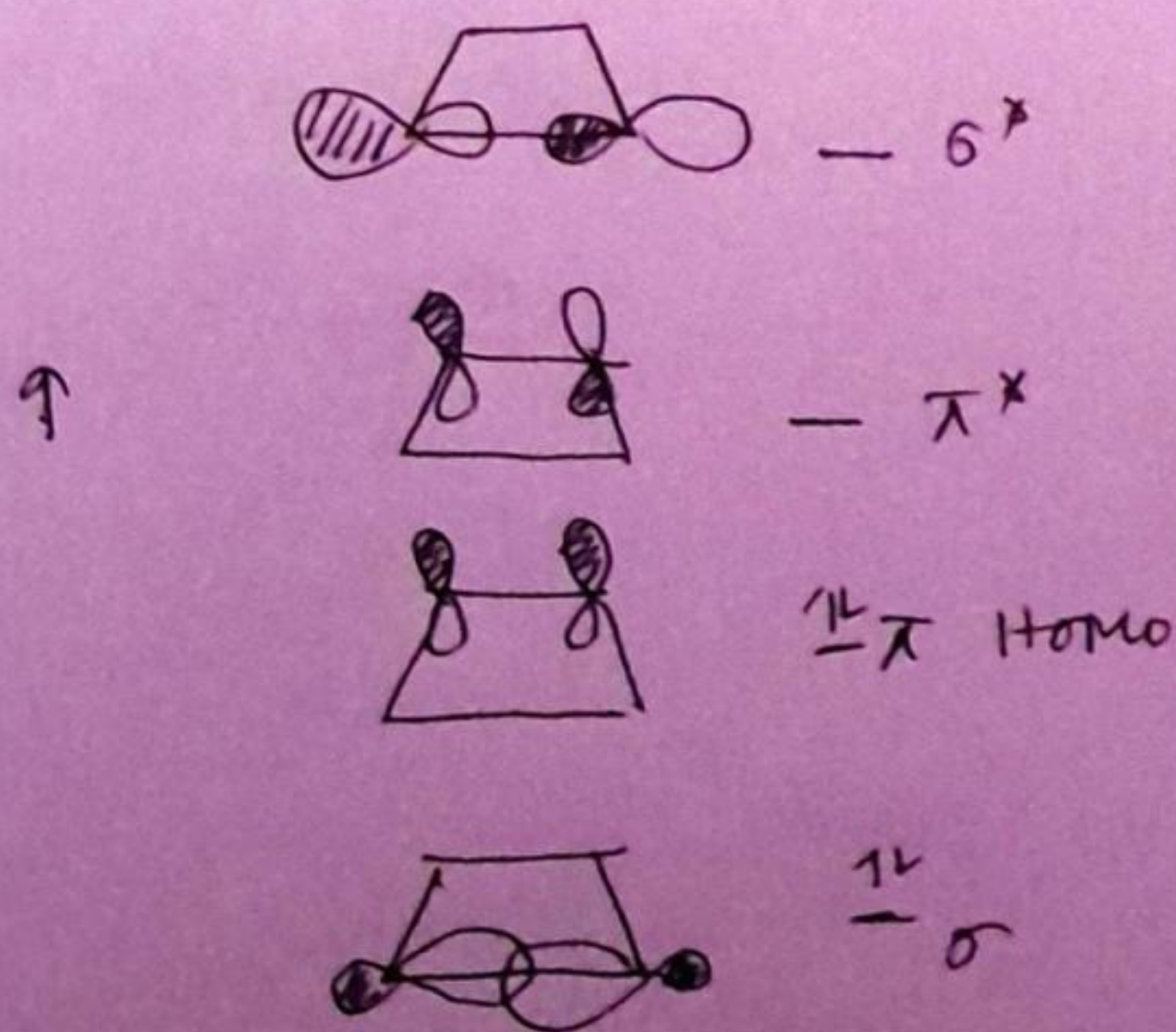
Ring opening of cyclohexene:



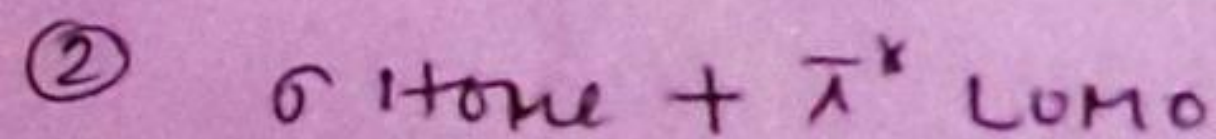
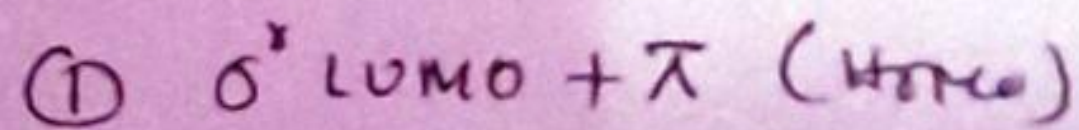
Electrocyclic Ring opening $retro$ follows the microscopic reversibility Principle. that means, if Ring closing follows the Concerted Path then, the Ring opening will also follow the same path.



If we consider the MO of cyclohexene, then it will be easy to explain the Ring opening ~~at~~ reaction by FMO approach.



Here the main interaction will be.

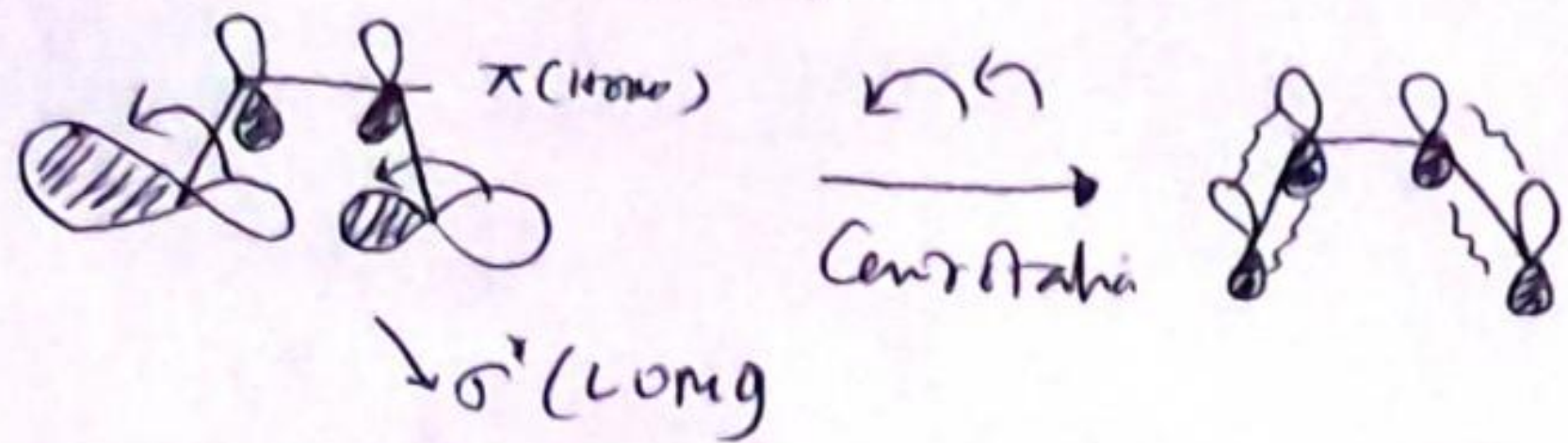


MO of cyclohexene.

Electrocyclic Ring Opening

5th sem, chemistry
Radhika Jana

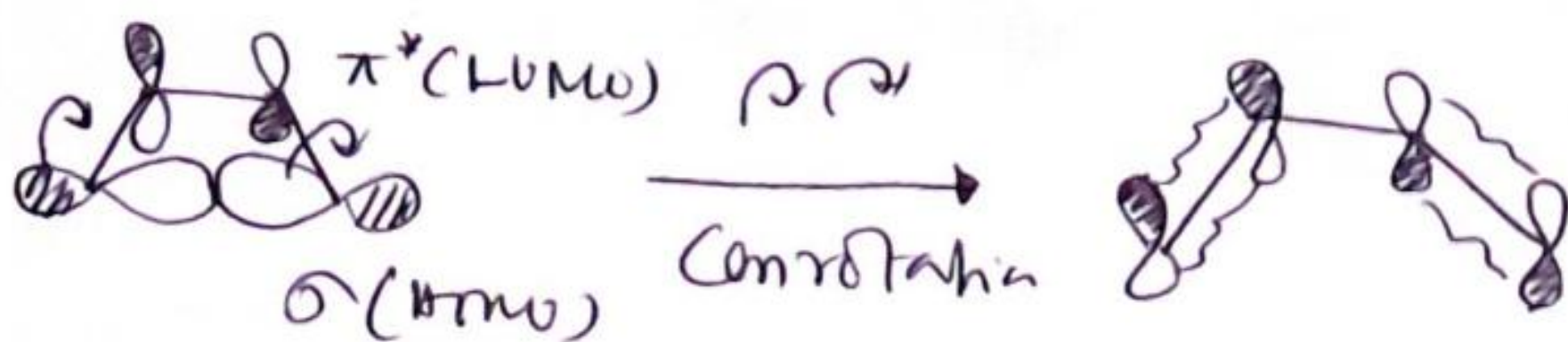
σ^* LUMO + π (HOMO)



Heating Condition
g.s

Other interaction is

σ (HOMO) + π^* (LUMO)

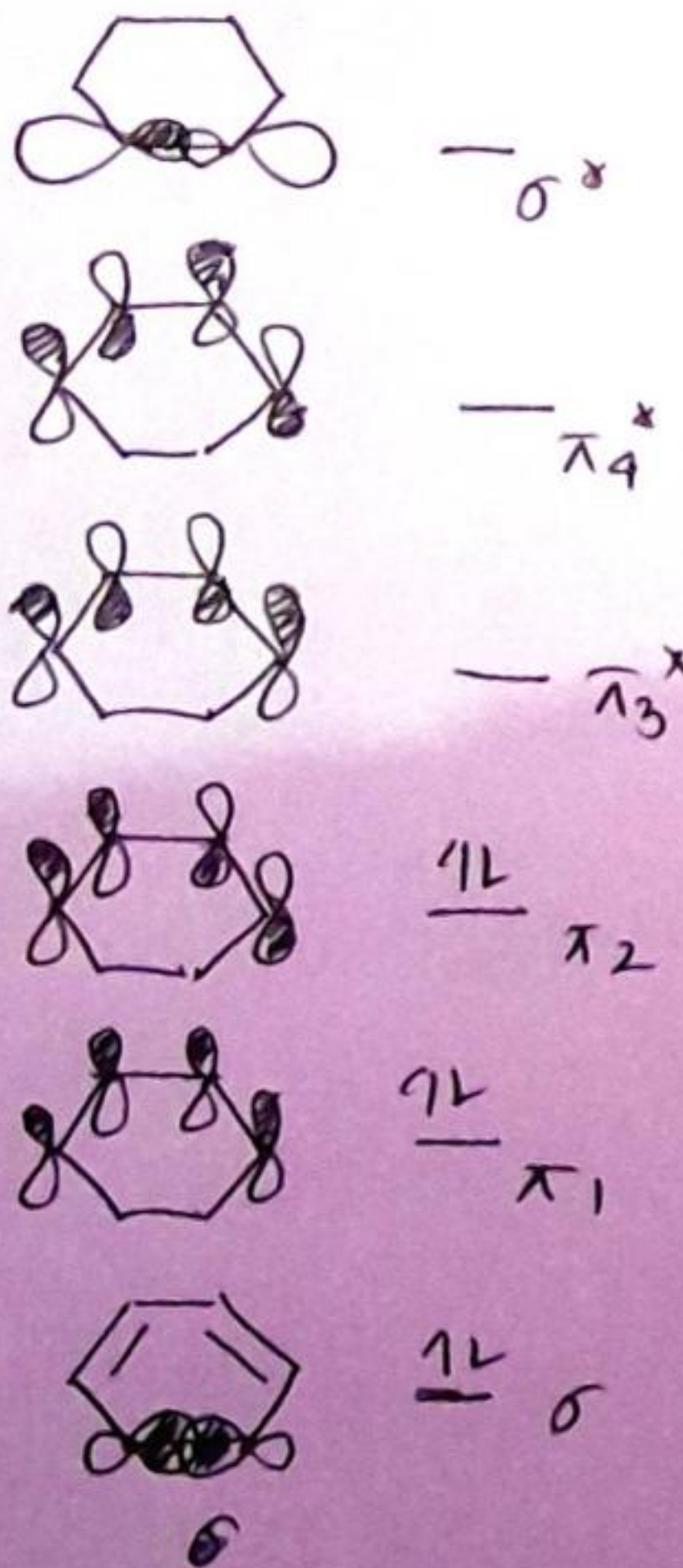


Ring opening at cyclohexadiene system:

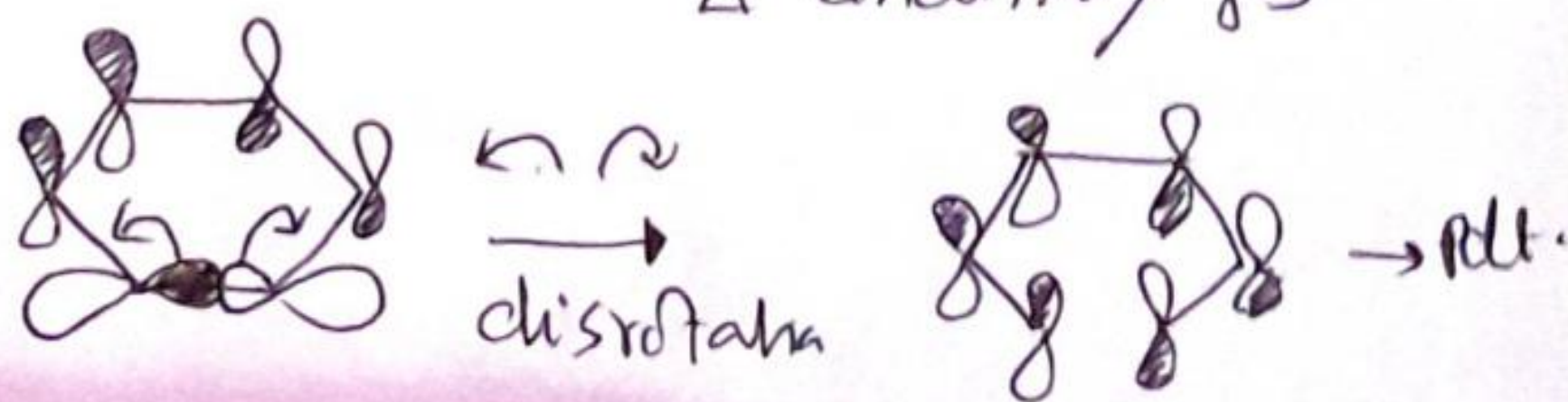
MO:



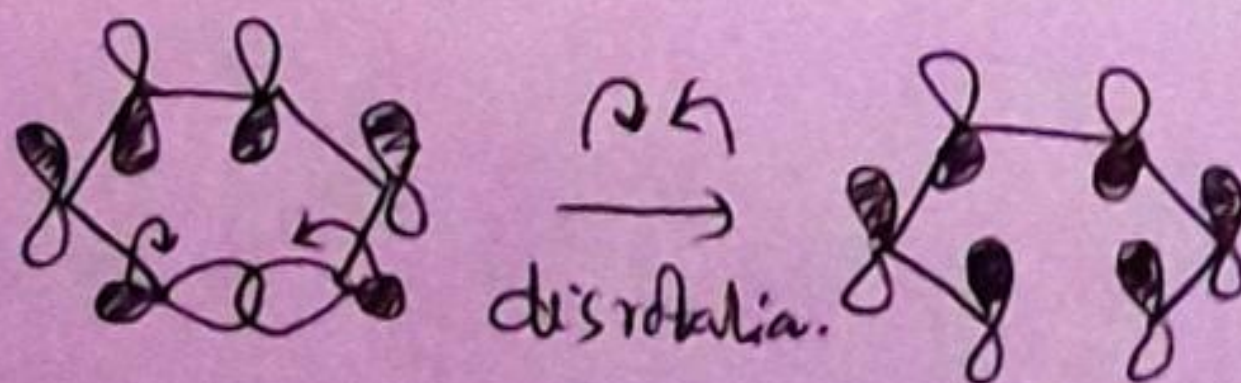
interaction: π_2 (HOMO) + σ^* (LUMO)



Δ condition / g.s

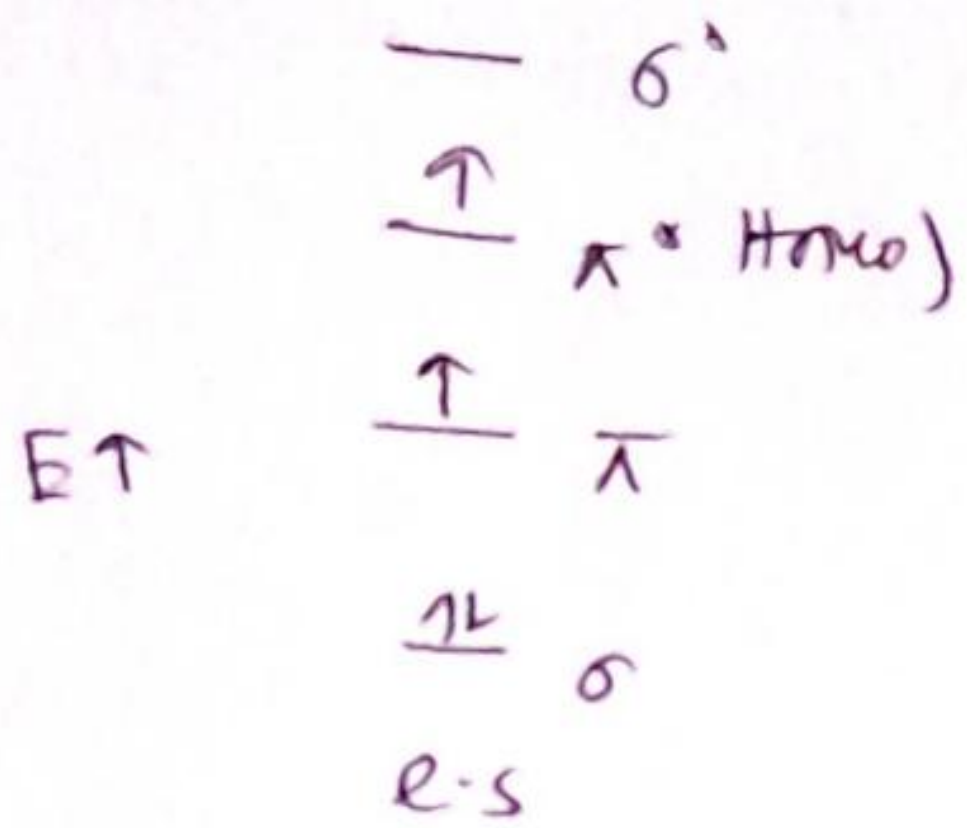


or
 π_3^* (LUMO) + σ (HOMO)

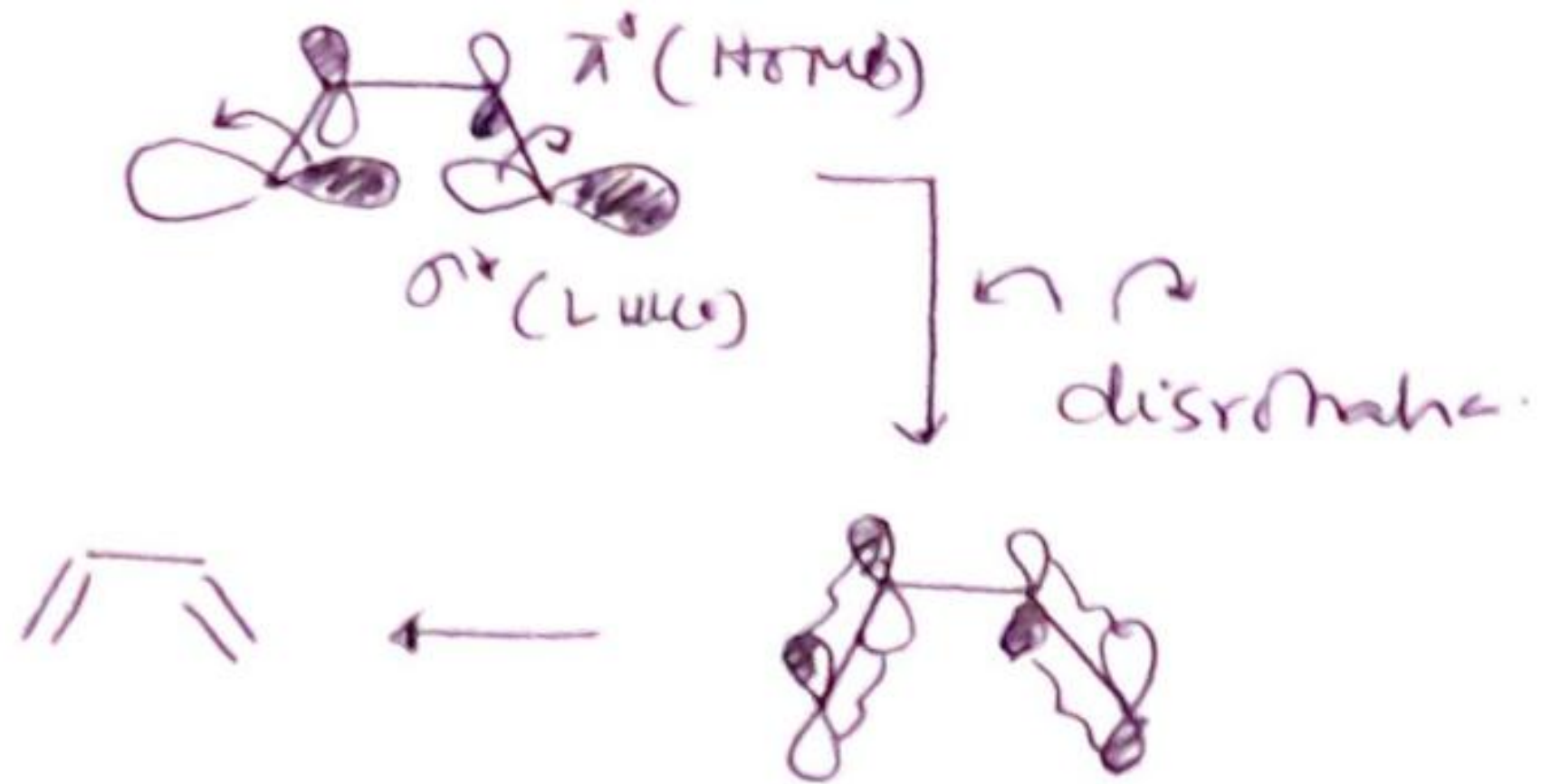


Total 4π and 2σ electron.

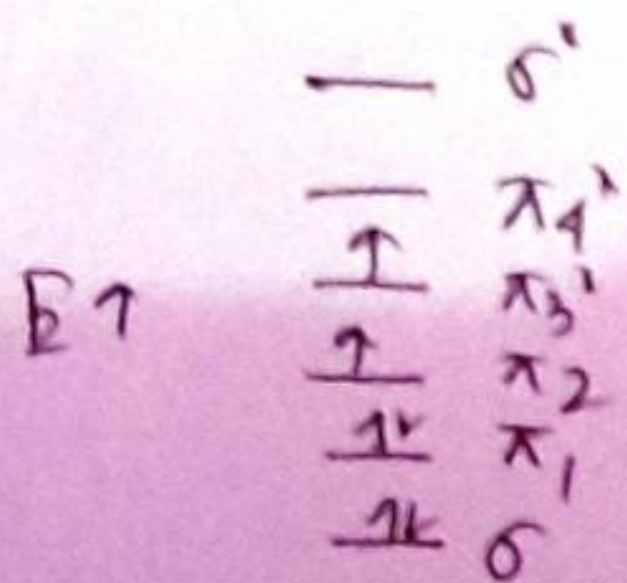
Ring opening of cyclobutene under photochemical conditions:



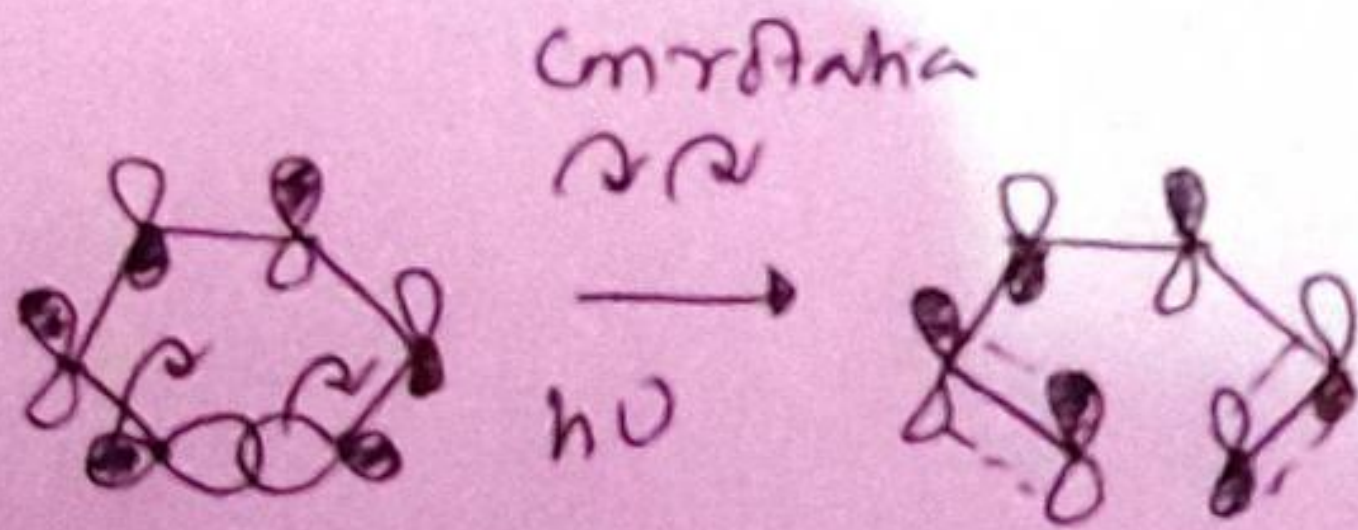
Here the interaction is π^* (HOMO) + σ^* (LUMO)



Ring opening of cyclohexadiene under hν:



σ (HOMO) + π_4^* (LUMO)



π_3^* (HOMO) + σ^* (LUMO)

