

1. Predict the product in the following electrocyclic reactions and indicate the stereochemistry. Explain the outcome with the help of FMO or PMO theory.

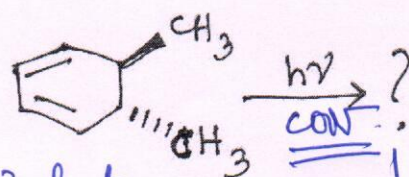
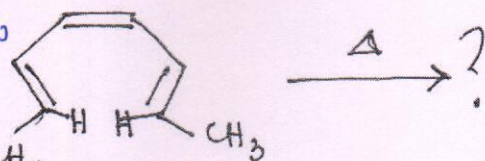


• Process: Disrotatory electrocyclic ring closing

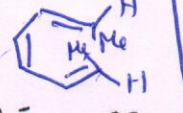
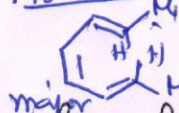
• PMO:



No node Hückel 6 e system (4n+2) Dis is thermally allowed



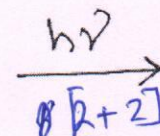
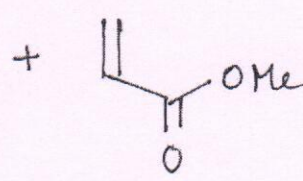
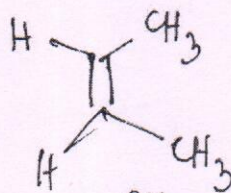
Product



2. Consider the following cycloaddition reactions:

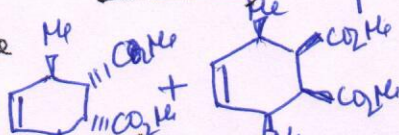
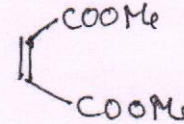
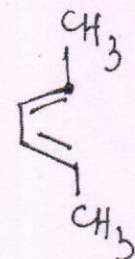
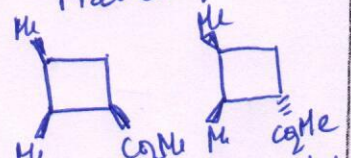
Classify them as per (m+n) reaction.

Also indicate, using FMO/PMO theory, whether the processes go through supra-supra or supra-antara mode?



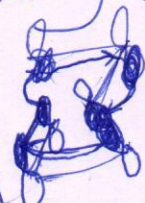
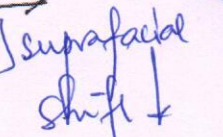
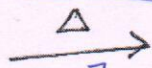
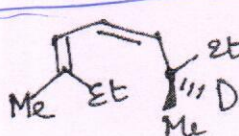
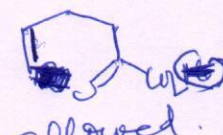
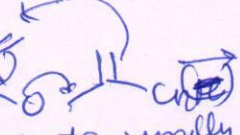
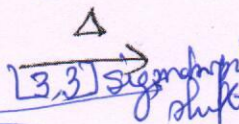
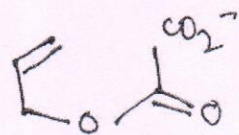
• Process Supra-Supra

• Product:



excited state HOMO LUMO (G<sub>s</sub>) S.S. mode photochemically allowed

3. Draw the structure of the product in the following sigmatropic rxns:



no node Hückel system thermally allowed