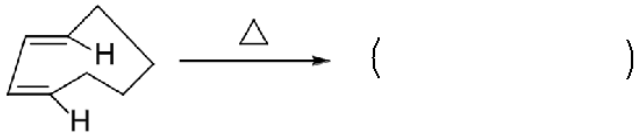
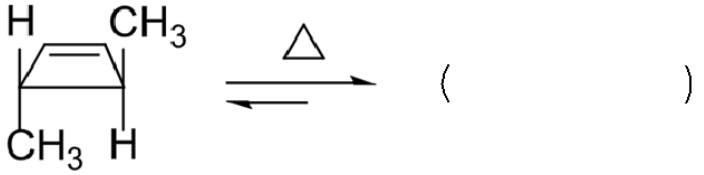
练习五（Pericyclic Reactions）

1. Predict the major products of the following reactions and indicate the stereochemistry of the products..

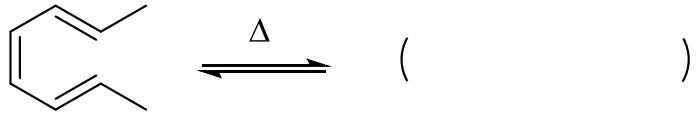
(1)



(2)



(3)



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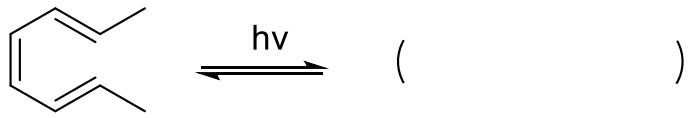
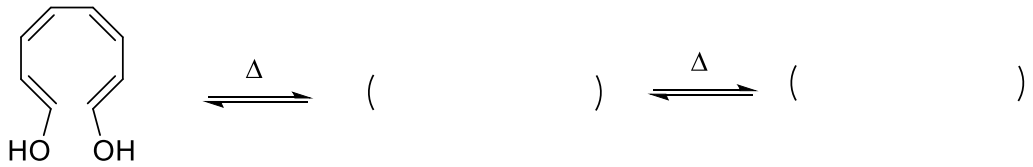
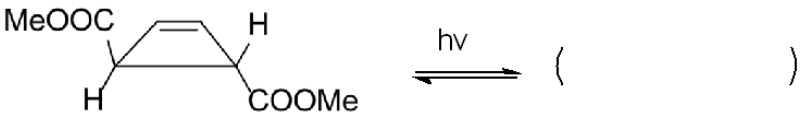


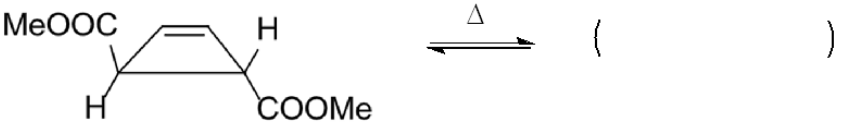
(5)



(6)

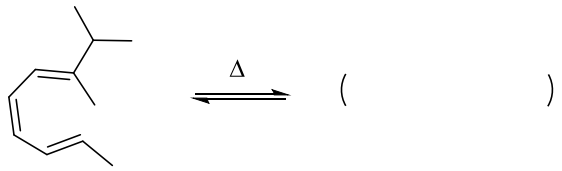


(7)

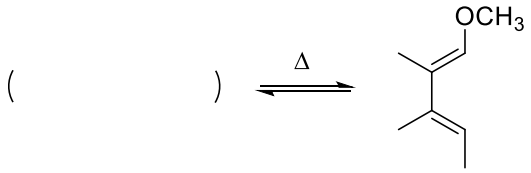


2. Complete the compound structure or reaction conditions (heat or light) in accordance with the given electrocyclization equation.

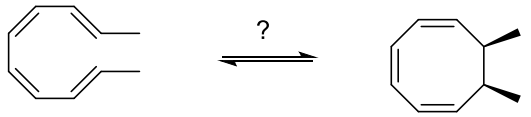
(1)



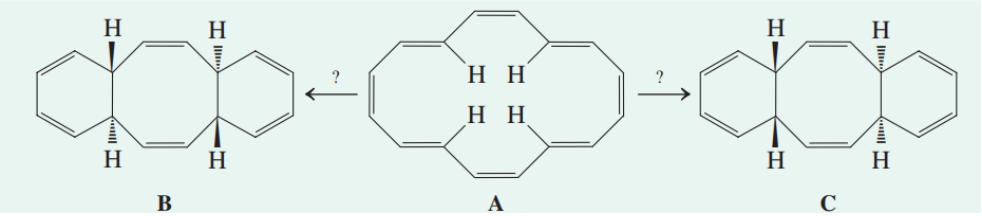
(2)



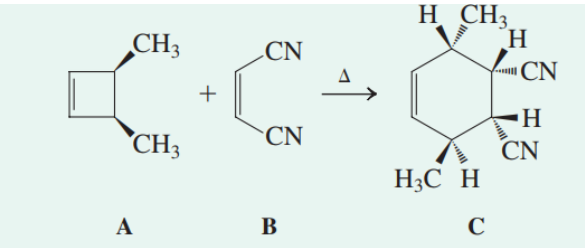
(3)



3. The cyclic polyene A can be converted to either B or C by a sequence of electrocyclic ring closures, depending on whether light or heat are used. Identify the conditions necessary to effect either transformation and identify each step as either con- or disrotatory.



4. Heating cis-3,4-dimethylcyclobutene, A, in the presence of dienophile B gave exclusively the diastereomer C. Explain by a mechanism.



5. Irradiation of ergosterol gives provitamin D2, a precursor of vitamin D2 (a deficiency of which causes softening of the bones, especiallyin children). Is the ring opening conrotatory or disrotatory?