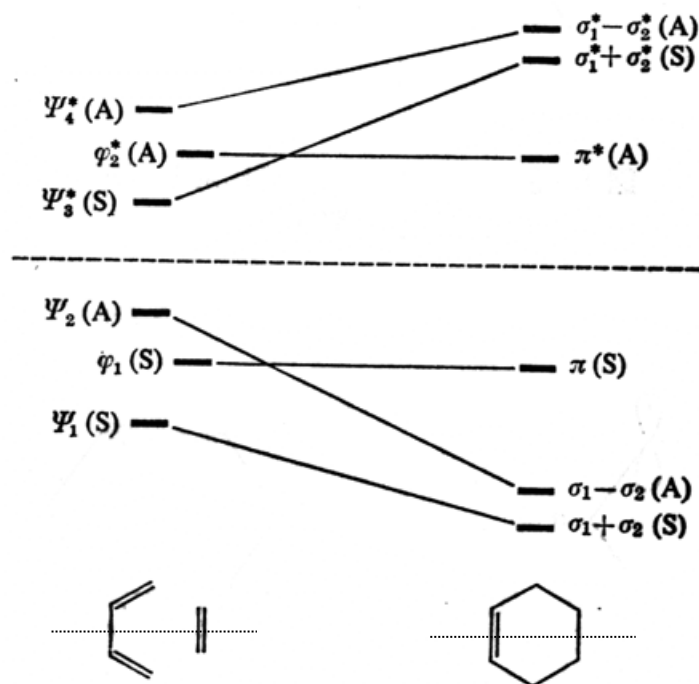


Homework: [4+2]cycloaddition

Complete the explanation with suitable drawings.

Step 1. Orbital diagram:



(Fig. 1) Draw the MO's with phases. Confirm the energy level scheme. Mark the S and A symbols with respect to the reflection symmetry (a mirror plane bisecting the whole supramolecular system).

Step 2. (Fig. 2) Draw the **electron-configuration diagram**. Possible configurations are: butadiene at the GS and ethylene at the GS; butadiene at the first ES and ethylene at the GS; butadiene at the first ES and ethylene at the GS.

Step 3. Apply **the symmetry conservation rule**. Explain the Woodward-Hoffman rule (the symmetry-allowed/forbidden rule) in the [4+2]cycloaddition reactions.