Complete the following:

6. \[
\text{CH}_2\text{N}_2 \xrightarrow{\text{hv}} \quad \text{(3 pks / 3 stereoisomers)}
\]

5. \[
\text{MeO}_2\text{C} \quad \text{N}_2 \quad \xrightarrow{\text{Rh}_2(\text{OAc})_4} \quad \text{(C - H insertion)}
\]

6. \[
\text{Me}_2\text{C} \quad \text{CO} \quad \text{N}_2 \quad \xrightarrow{\text{AgOAc, H}_2\text{O}} \quad \text{(balif reacr)}
\]

8. \[
\text{Me} \quad \text{CO} \quad \text{N}_2 \quad \xrightarrow{\text{heat}} \quad \text{(Cope)}
\]

Provide a mechanism to account for the following transformations:

Provide reagents that will allow the following transformations to be conducted efficiently.

Suppose that you wish to determine whether compound B could serve as a triplet sensitizer for a reaction that you are interested in studying. A prerequisite is that the triplet energy for B be greater than or equal to that of the energy of the triplet excited state one wishes to generate (call it A). Suppose that E(\text{B}) = 60 \text{ kcal/mol}. Suppose, too, that the 0-0 transition in the phosphorescence spectrum for B appears at 410 nm.

(a) What is E(\text{B})?

(b) Could B be a useful sensitizer?