A pericyclic reaction is a concerted reaction in which the number of rings in the transition state is greater than the total number of rings in the reactant molecules.

eg: Cope Rearrangement

\[
\begin{array}{c}
\text{\includegraphics[width=0.3\textwidth]{Cope_Rearrangement.png}} \\
\text{(Cope Rearrangement)}
\end{array}
\]

**Mechanism**

\[
\begin{array}{c}
\text{\includegraphics[width=0.3\textwidth]{Cope_Rearrangement_Mechanism.png}} \\
\text{(Cope Rearrangement mechanism)}
\end{array}
\]

- # covalent bonds broken = 3
- # covalent bonds formed = 3
- # covalent bonds broken + # covalent bonds formed = 3 + 3 = 6
- # steps = 1

Thus, the reaction is a concerted reaction. The transition state of the reaction can be drawn roughly as follows.

\[
\begin{array}{c}
\text{\includegraphics[width=0.3\textwidth]{Cope_Rearrangement_Transition_State.png}}
\end{array}
\]

- # rings in the reactant molecule = 0
- # rings in the transition state = 1
- # rings in the transition state > # rings in the reactant molecule

Thus, the reaction is a pericyclic reaction. For more examples of pericyclic reactions, see Cope elimination, Claisen rearrangement, Diels-Alder reaction

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