A concerted reaction is a reaction in which 1) \# covalent bonds broken + \# covalent bonds formed > 1, 2) \# steps = 1.

eg. 1:

\[
\begin{align*}
\ce{CH3-Br + KCN &<-> CH3-CN + KBr} \\
&
\end{align*}
\]

mechanism: The reaction is a nucleophilic aliphatic substitution occurring via \textit{SN}2 mechanism.

\[
\begin{align*}
\# \text{covalent bonds broken} &= 1 \\
\# \text{covalent bonds formed} &= 1 \\
\# \text{covalent bonds broken} + \# \text{covalent bonds formed} &= 1 + 1 = 2 \\
\# \text{steps} &= 1
\end{align*}
\]

Thus, the reaction is a concerted reaction.

eg. 2:

\[
\begin{align*}
\ce{CH3-CCCCCH + (si)2BH &<-> CH3-CB(sia)2 + (si)2H} \\
&
\end{align*}
\]

mechanism: The reaction is an electrophilic addition.

\[
\begin{align*}
\# \text{covalent bonds broken} &= 2 \\
\# \text{covalent bonds formed} &= 2 \\
\# \text{covalent bonds broken} + \# \text{covalent bonds formed} &= 2 + 2 = 4 \\
\# \text{steps} &= 1
\end{align*}
\]

Thus, the reaction is a concerted reaction.

see also pericyclic reaction

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**Contributors**

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