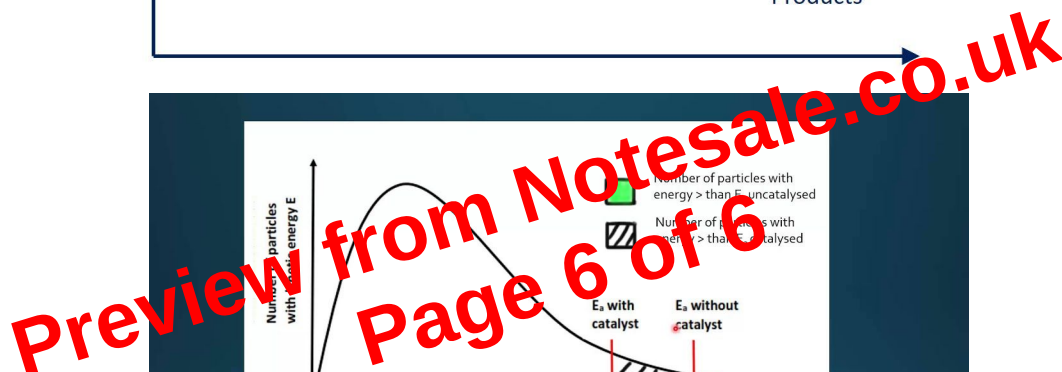
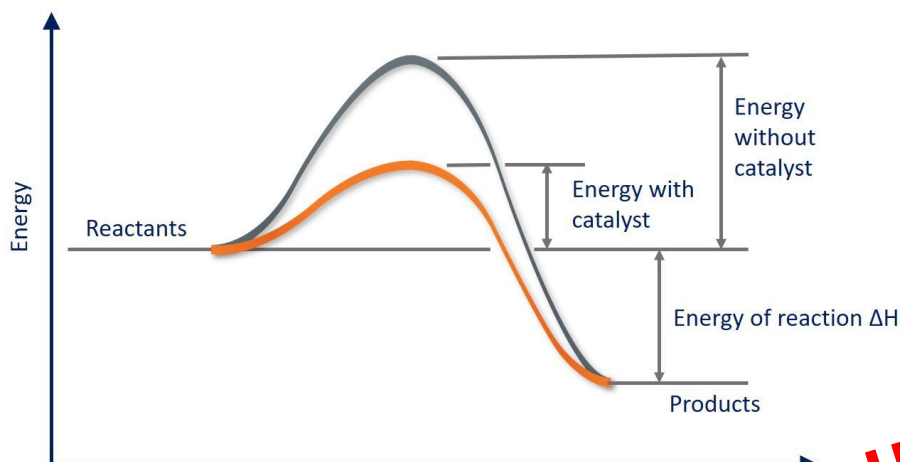


Catalyst must **increase number of effective collisions** or provide **reaction path w/ lower activation energy**

In a reaction mechanism involving a catalyst, the net concentration of the catalyst is constant

- Frequently consumed in rate-determining step of reaction, only to be regenerated in subsequent step in mechanism



A catalyst increases the proportion of particles that have energy greater than the activation energy by providing an alternative reaction pathway with lower activation energy.

Binding catalysis: reactants are either oriented more favorably or react w/ lower activation energy, often a new reaction intermediate in which catalyst is bound to reactants, many enzymes function in this manner

Acid-base catalysis: a reactant or intermediate either gains or loses proton, introduces new reaction intermediate and new elementary reactions involving that intermediate

- **Acid catalysis** adds a proton to the substrate, and **base catalysis** removes a proton to the substrate

Surface catalysis: Adsorption, activation, reaction, release