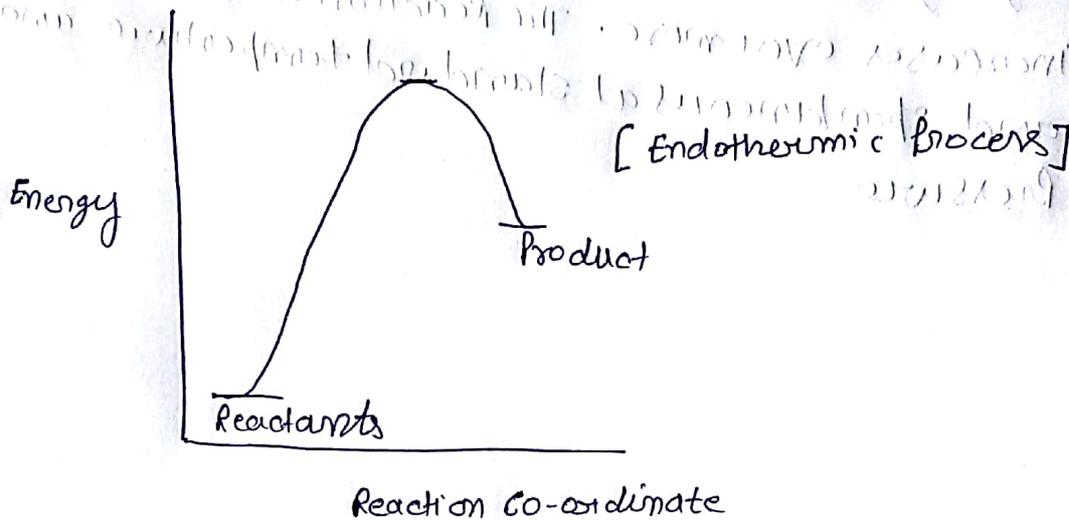Endothermic Process :— Reaction in which the products are Higher Energy than the reactants require an Energy input to occur, and are called Endothermic Process

[Endothermic Process]

Energy

Product

Reactants

Reaction Co-ordinate

Spontaneous Process :— $\Delta G = \Delta H - T\Delta S$

$\Delta G = -ve$

the Process is spontaneous and may Proceed in the forward direction.

If $\Delta H > 0$ for $\Delta G = -ve$, $\Delta S = +ve$

when $\Delta S > 0$ and $\Delta H > 0$, the Process will be spontaneous at Higher temperatures and non spontaneous at low temperature

Example

Photosynthesis is ~~an important~~ is an important Example of an endothermic Process. Energy in the form of Photons (Sun-light) drives the Reaction, which requires chlorophyll as a catalyst.

$$n\,CO_2 + n\,H_2O \xrightarrow{\text{Sun-light}} (CH_2O)_n + n\,O_2$$
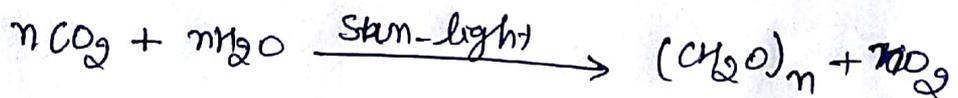
ΔS for this Reaction is +ve

Example- 2

Dissolving Salt in water

If you pour table salt into a container of water, the salt dissolves on its own; the Reaction consumes some energy from the water, lowering its temperature slightly. Even though enthalpy increases, entropy increases even more. The Reaction is both endothermic and spontaneous at standard temperature and Pressure