Consider a reaction,

$$H_2 + I_2 \longrightarrow 2HI$$
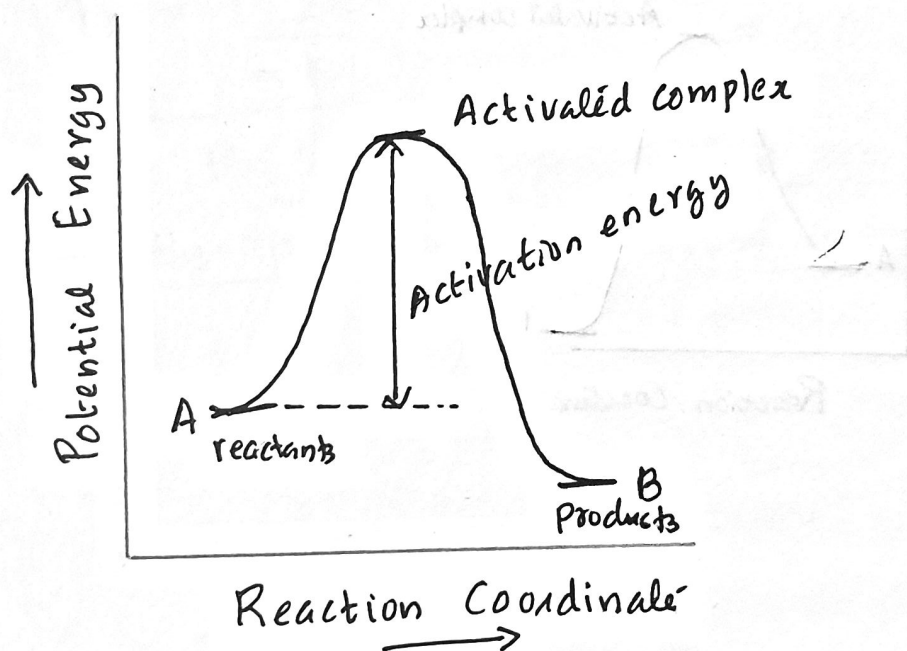
According to Arrhenius, this reaction can take place only when a molecule of hydrogen and a molecule of iodine collide to form an unstable intermediate.

The energy required to form this intermediate (activated complex) is known as activation energy (Ea). It is obtained by plotting potential energy against reaction coordinate



All the molecules in the reacting species do not have the same kinetic energy. Boltzmann and Maxwell used statistics to predict the behaviour of large number of molecules.