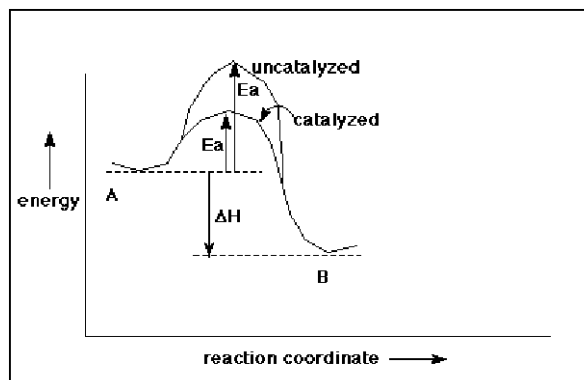


UNIT: KINETICS AND EQUILIBRIUM

1. The **rate**(speed) of a reaction can be affected by:

- adding a **catalyst** (a catalyst lowers activation energy needed for a reaction)



- increasing concentration (increases number of particle collisions)
- increasing temperature (increases speed of particles, increasing number of collisions)
- Increase pressure (for gases, increases number of particle collisions)
- Increase surface area

2. **Equilibrium occurs when the rate of the forward reaction = rate of the reverse reaction**, and the amounts of reactants and products remain constant. (AMOUNTS ARE NOT THE SAME!!!!)

3. LeChateliers Principle describes what happens when a stress is applied to a system at equilibrium.

Types of stress include:

- **Concentration** - shifts to use up excess or make more of what was taken away
- **Temperature** - $\uparrow T$ favors endothermic reaction. $\downarrow T$ favors exothermic reaction
- **Pressure** – ONLY AFFECTS GASES
 - $\uparrow P$ favors smaller volume of gases (less moles).
 - $\downarrow P$ favors larger volume of gases (more moles).
- **Catalyst** - no effect on equilibrium

REMEMBER ADD AWAY TAKE TOWARDS