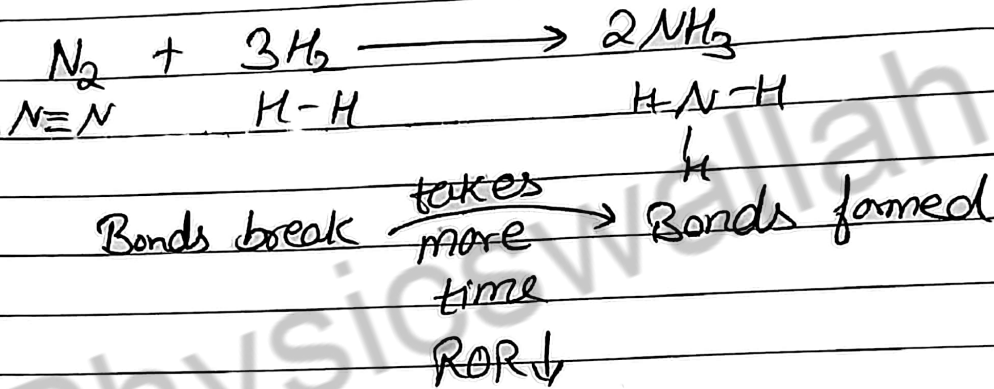
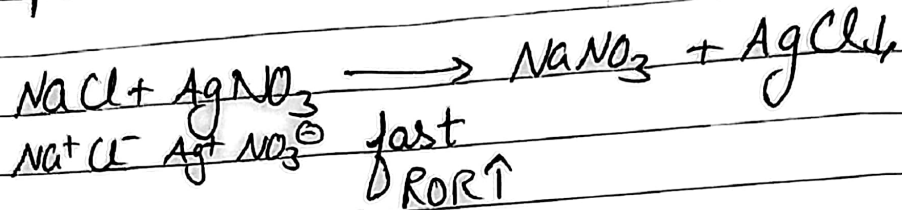


Factors Affecting Rate of Reaction

① Nature of Reactant:

ionic or polar reactants have fast ROR
as compared to non-polar covalent reactants.



The types of bond in reactants & products affect ROR

② Physical State of Reactant:

i) Gaseous > Liquid > Solid

ROR ↑

In gaseous state, there are more chances for effective molecular collisions to give product.

ii) homogeneous > heterogeneous

③ Surface Area of Reactant:

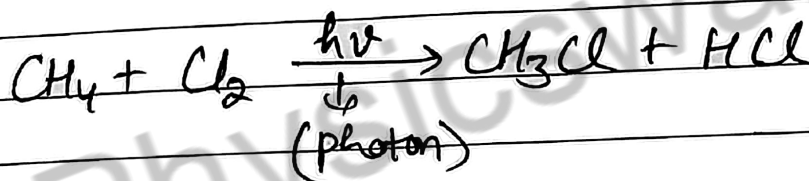
If Reactant is present in solid state,

More Surface Area \Rightarrow More is ROR \uparrow

example: Small cubes of sugar dissolves faster in water/solvent as compared to large cube

④ Light Intensity :-

Certain chemical Reactions are photosensitive.



Intensity of Light $\uparrow \Rightarrow$ no. of photons $\uparrow \Rightarrow$ ROR \uparrow

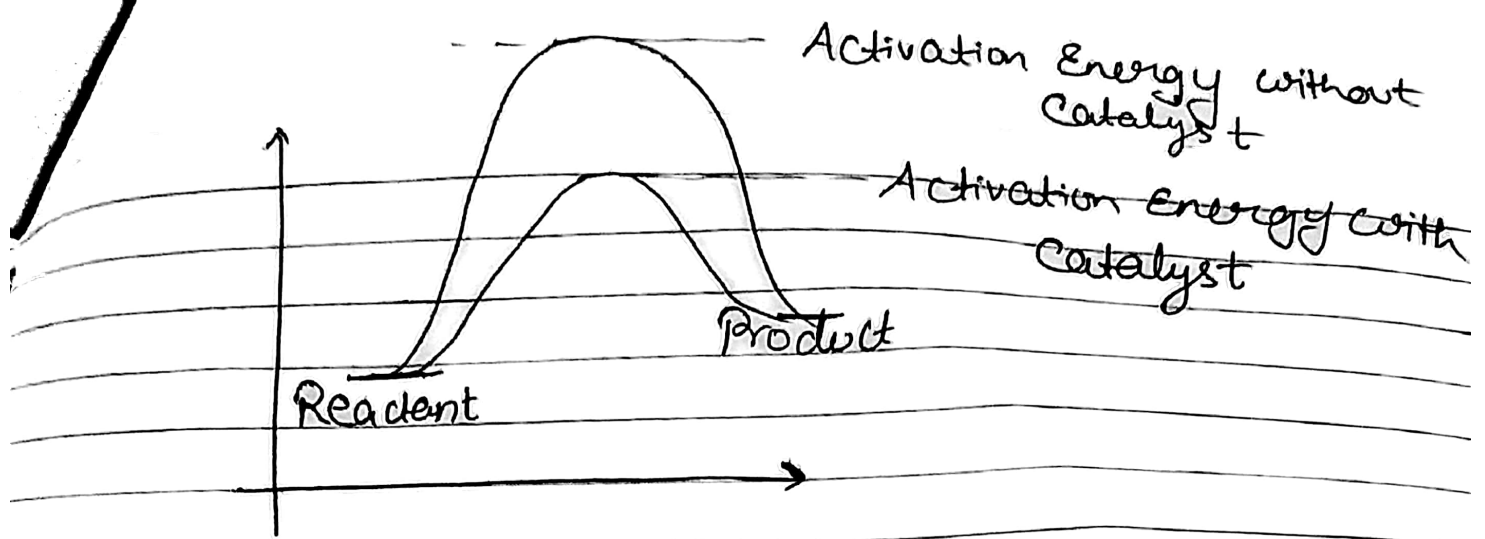
$$\text{ROR} \propto \text{Intensity of Light}$$

$$\text{ROR} \propto I$$

⑤ Catalyst:

Presence of the Catalyst speeds up the reaction (ROR \uparrow).

Catalyst sets up an alternate path with lower Activation Energy & hence increases ROR.



⑥ Temperature:

Generally Rate of Reaction increases on increasing Temperature.

It is observed that a 10°C rise in temperature increases ROR twice to thrice.

⇒ Arrhenius Equation will give correct Relation (In detail)

⑦ Concentration:

Generally Rate of Reaction Increases on increasing Concentration of Reactants.

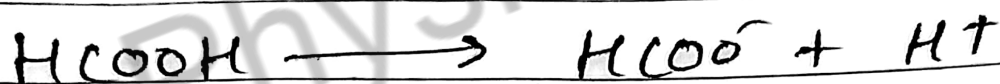
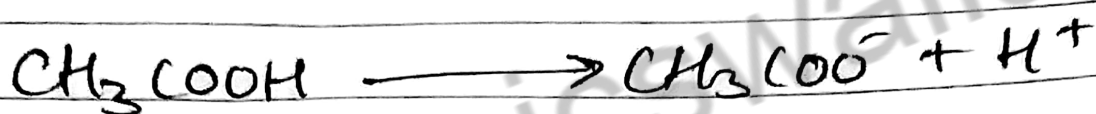
ROR may depend upon Concentration of one, two all or none of reactants

⇒ Rate Law will give correct Relation (In detail)

⑧ Chemical Nature of Reactant

$\text{ROR} \propto \frac{1}{\text{Stability of Reactant}}$

$\text{ROR} \propto \text{Stability of Product.}$



More stable
Product

$\text{ROR} \uparrow$