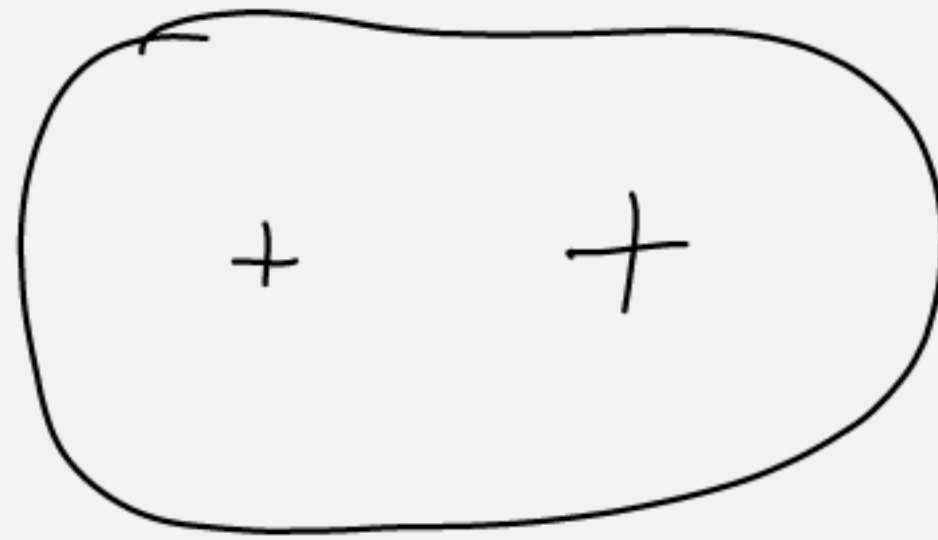
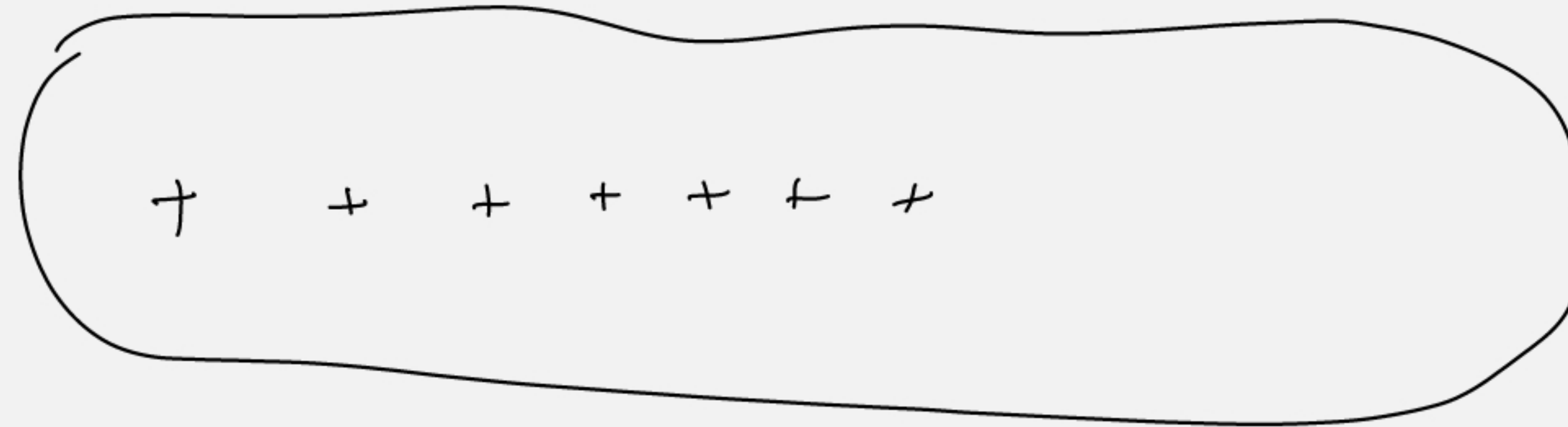


Covalent ( $H_2$ )



Metallic bond

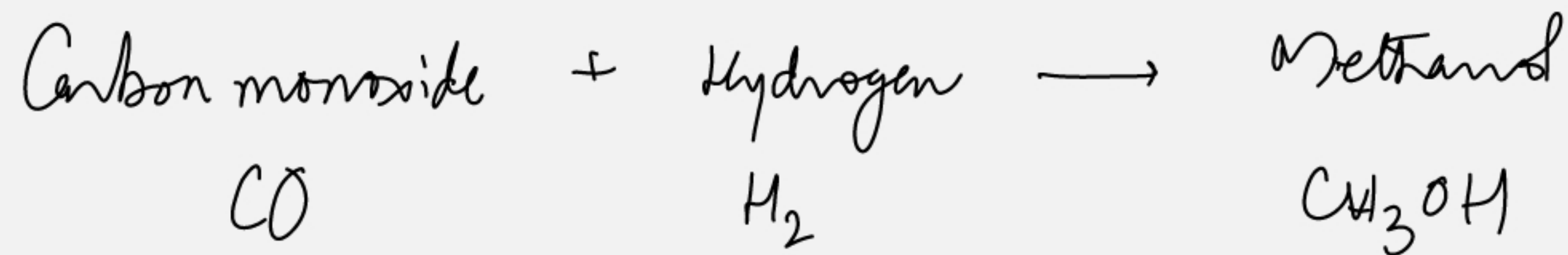


'Energy band'

Valence band

## II Chemical Reactions

~ Bonds broken, bonds made  $\Rightarrow$  Rearrangement of atoms

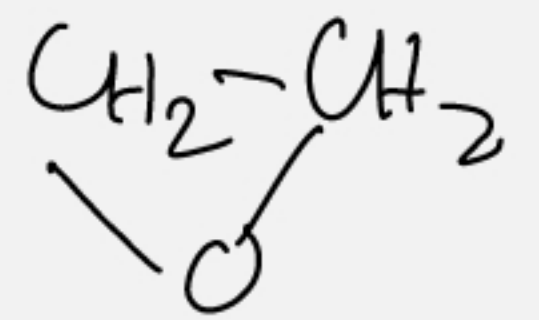
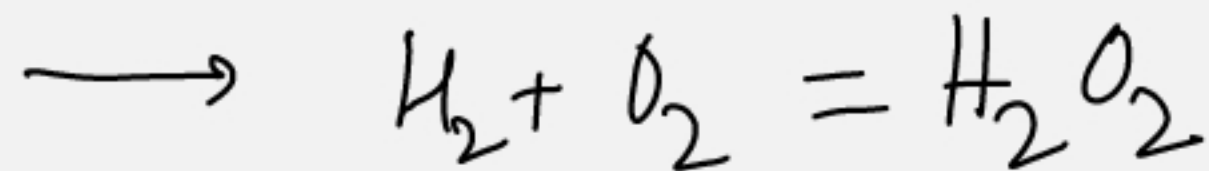
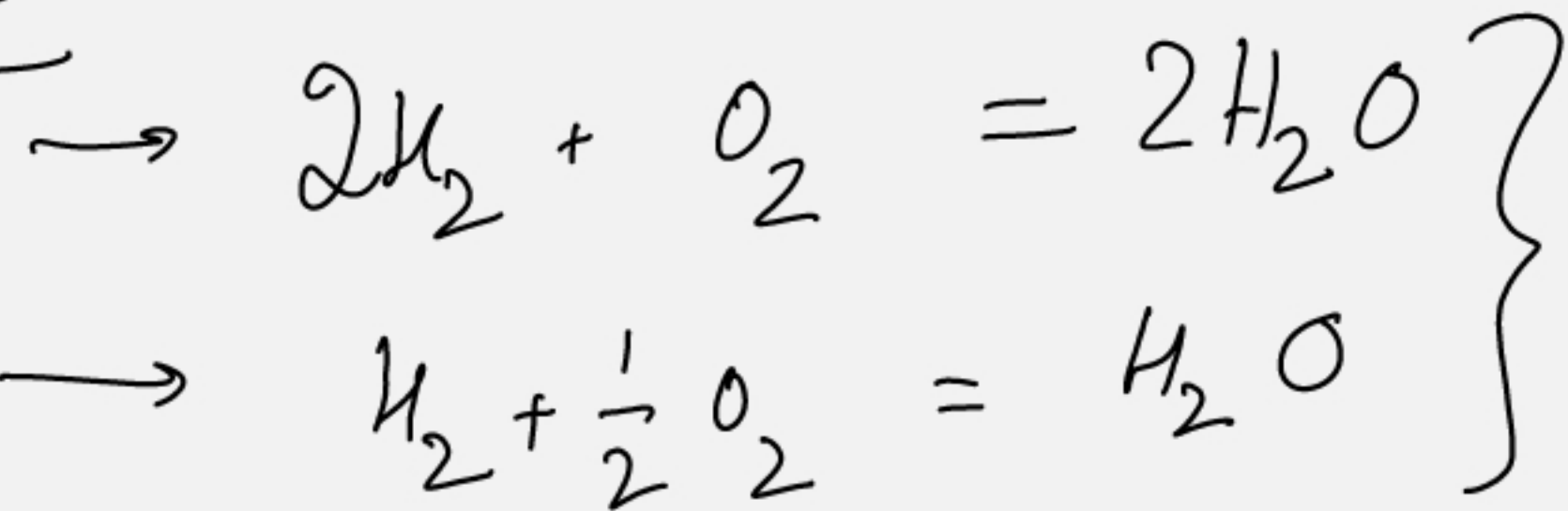


~ Atom conservation:  $\Rightarrow$  Stoichiometry

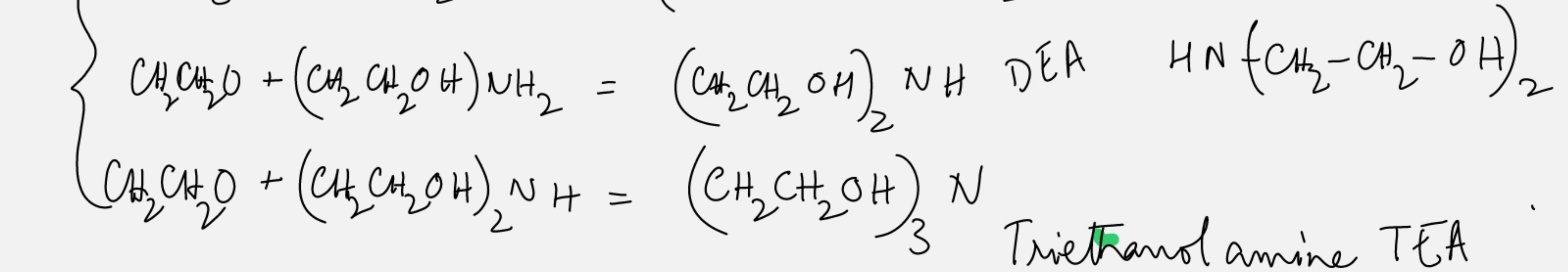
~ Chemical Equations  $\begin{array}{c} aA + bB = cC + dD \\ \underline{\quad} \quad \underline{\quad} \quad \underline{\quad} \quad \underline{\quad} \end{array}$

$$\frac{PV}{RT} = n$$

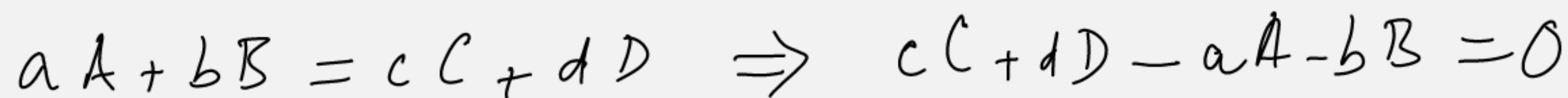
Examples



Multiple  
Reaction  
System



## Notation

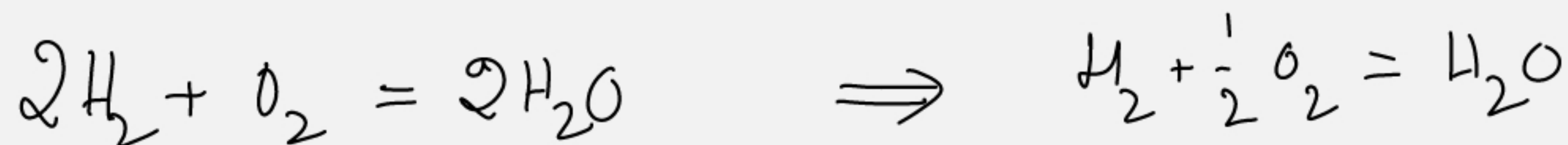


's' Species  $A_1, A_2, \dots, A_s$

$$\Rightarrow \sum_{j=1}^s \nu_j A_j = 0$$

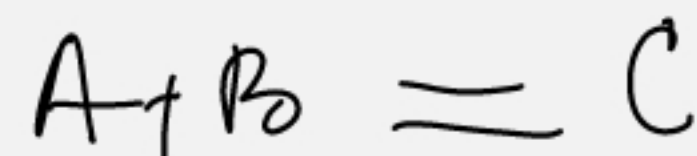
$\nu_j < 0 \Rightarrow A_j$  reactant

$\nu_j > 0 \Rightarrow A_j$  product



Kinetic  
Interpretation?

Rates in which  
 $H_2$  &  $O_2$  react & produce water ✓  
Stoich. interpretation



Elementary Rxns

Stoich sense & Kinetic sense

# Performance of a chemical Rxn

How much  
of react is  
converted  
in how  
much time

'Nature'

How much of  
desired  
product is  
formed?

'Nurture'

